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Junos® OS

Logical Systems and Tenant Systems User Guide for Security Devices

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JUNOS

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Junos® OS Logical Systems and Tenant Systems User Guide for Security Devices

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About the Documentation

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Use this guide to configure logical systems and tenant Systems in Junos OS on the SRX Series devices to partition a single device into multiple domains to perform security and routing functions.

Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at https://www.juniper.net/documentation/.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at https://www.juniper.net/books.

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

   For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

   ```
   system {
       scripts {
           commit {
               file ex-script.xsl;
           }
       }
   }
   interfaces {
       fxp0 {
           disable;
           unit 0 {
               family inet {
                   address 10.0.0.1/24;
               }
           }
       }
   }
   ```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

   ```
   [edit]
   user@host# load merge /var/tmp/ex-script.conf
   load complete
   ```

Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

   For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

   ```
   commit {
     file ex-script-snippet.xsl; }
   ```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

   ```
   [edit]
   user@host# edit system scripts
   [edit system scripts]
   ```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

   ```
   [edit system scripts]
   user@host# load merge relative /var/tmp/ex-script-snippet.conf
   load complete
   ```

For more information about the **load** command, see CLI Explorer.

Documentation Conventions

Table 1 on page xxi defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page xxi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the **configure** command: user@host> **configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces or emphasizes important new terms. • Identifies guide names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS CLI User Guide* • RFC 1997, *BGP Communities Attribute*

Table 2: Text and Syntax Conventions *(continued)*

Convention	Description	Examples
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Encloses optional keywords or variables.	**stub <default-metric *metric*>;**
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** **(*string1* | *string2* | *string3*)**
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	**community name members [*community-ids*]**

Indention and braces ({ })	Identifies a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		

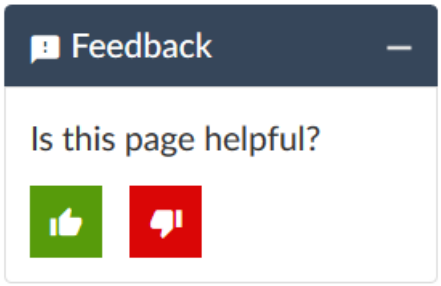
Table 2: Text and Syntax Conventions *(continued)*

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

Documentation Feedback

We encourage you to provide feedback so that we can improve our documentation. You can use either of the following methods:

- Online feedback system—Click TechLibrary Feedback, on the lower right of any page on the Juniper Networks TechLibrary site, and do one of the following:



  - Click the thumbs-up icon if the information on the page was helpful to you.
  - Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active Juniper Care or Partner Support Services support contract, or are

covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf.
- Product warranties—For product warranty information, visit https://www.juniper.net/support/warranty/.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: https://www.juniper.net/customers/support/
- Search for known bugs: https://prsearch.juniper.net/
- Find product documentation: https://www.juniper.net/documentation/
- Find solutions and answer questions using our Knowledge Base: https://kb.juniper.net/
- Download the latest versions of software and review release notes: https://www.juniper.net/customers/csc/software/
- Search technical bulletins for relevant hardware and software notifications: https://kb.juniper.net/InfoCenter/
- Join and participate in the Juniper Networks Community Forum: https://www.juniper.net/company/communities/
- Create a service request online: https://myjuniper.juniper.net

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: https://entitlementsearch.juniper.net/entitlementsearch/

Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit https://myjuniper.juniper.net.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see https://support.juniper.net/support/requesting-support/.

1
CHAPTER

Overview

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Logical Systems and Tenant Systems Overview

With the Junos operating system (Junos OS) on SRX Series device, you can partition a single security device into multiple logical devices that can perform independent tasks. Because logical systems perform a subset of the tasks once handled by the main device, logical systems offer an effective way to maximize the use of a single security platform.

A complex network design requires multiple layers of switches, routers, and security devices, which might lead to challenges in maintenance, configuration, and operation. To reduce such complexity, Juniper Networks supports logical systems. Logical systems perform a subset of the actions of the main device and have their own unique routing tables, interfaces, policies, and routing instances.

For SRX Series devices, you can partition a single device into following secure contexts:

- Logical systems
- Tenant systems

Each logical system has its own discrete administrative domain, logical interfaces, routing instances, security firewall and other security features. A tenant system provides logical partitioning of the SRX device into multiple domains similar to logical systems and provides high scalability.

2

CHAPTER

Logical Systems

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Logical Systems Overview

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- Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices | 33
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Logical systems enable you to partition a single device into multiple secure contexts that perform independent tasks. For more information, see the following topics:

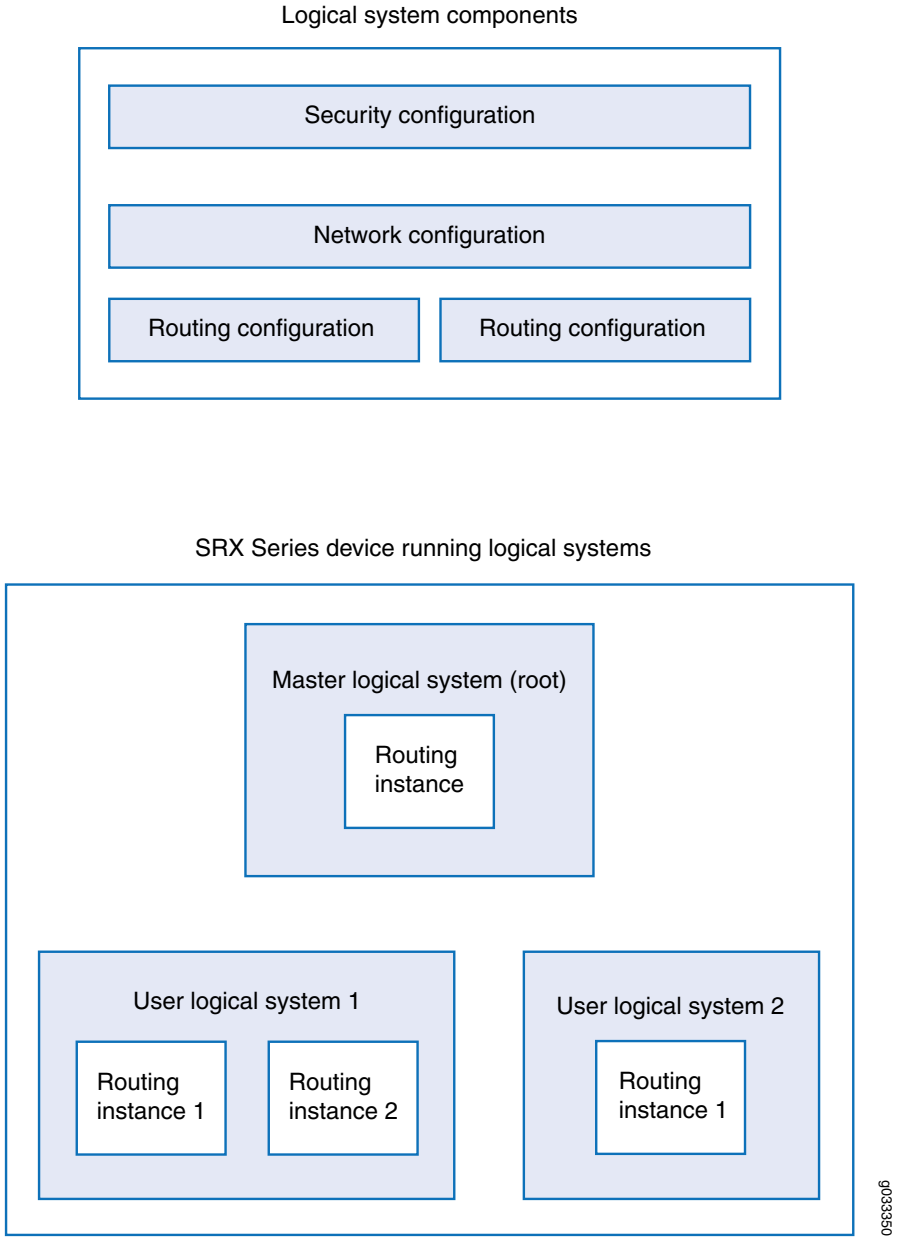
Understanding Logical Systems for SRX Series Services Gateways

Logical systems for SRX Series devices enable you to partition a single device into secure contexts. Each logical system has its own discrete administrative domain, logical interfaces, routing instances, security firewall and other security features. By transforming an SRX Series device into a multitenant logical systems device, you can give various departments, organizations, customers, and partners—depending on your environment—private use of portions of its resources and a private view of the device. Using logical systems, you can share system and underlying physical machine resources among discrete user logical systems and the master logical system.

The top part of Figure 1 on page 30 shows the three main configuration components of a logical system. The lower part of the figure shows a single device with a master logical system and discrete user logical systems.

Logical systems include both master and user logical systems and their administrators. The roles and responsibilities of the master administrator and those of a user logical system administrator differ greatly. This differentiation of privileges and responsibilities is considered role-based administration and control.

Figure 1: Understanding Logical Systems



Logical systems on SRX Series devices offer many benefits, allowing you to:

- Curtail costs. Using logical systems, you can reduce the number of physical devices required for your company. Because you can consolidate services for various groups of users on a single device, you reduce both hardware costs and power expenditure.
- Create many logical systems on a single device and provision resources and services for them quickly. Because services are converged, it is easier for the master, or root, administrator to manage a single device configured for logical systems than it is to manage many discrete devices.

You can deploy an SRX Series device running logical systems in many environments, in particular, in the enterprise and in the data center.

- In the enterprise, you can create and provision logical systems for various departments and groups.

  You can configure logical systems to enable communication among groups sharing the device. When you create logical systems for various departments on the same device, users can communicate with one another without traffic leaving the device if you have configured an interconnect logical system to serve as an internal switch. For example, members of the product design group, the marketing department, and the accounting department sharing an SRX Series Services Gateway running logical systems can communicate with one another just as they could if separate devices were deployed for their departments. You can configure logical systems to interconnect through *logical tunnel (lt-0/0/0)* internal interfaces. The lt-0/0/0 interfaces on the interconnect logical system connect to an lt-0/0/0 interface that you configure for each logical system. The interconnect logical system switches traffic between logical systems. The SRX Series device running logical systems provides for high, fast interaction among all logical systems created on the device when an interconnect logical system is used.

  Logical systems on the same device can also communicate with one another directly through ports on the device, as if they were separate devices. Although this method allows for direct connections between logical systems, it consumes more resources–you must configure interfaces and an external switch–and therefore it is more costly.

- In the data center, as a service provider, you can deploy an SRX Series device running logical systems to offer your customers secure and private user logical systems and discrete use of the device's resources.

  For example, one corporation might require 10 user logical systems and another might require 20. Because logical systems are secure, private, and self-contained, data belonging to one logical system cannot be viewed by administrators or users of other logical systems. That is, employees of one corporation cannot view the logical systems of another corporation.

- SRX4100 and SRX4200 devices support logical system in both transparent and route mode.
- SRX4600 device supports logical system in route mode only.

NOTE: To use the internal switch, which is optional, you must also configure an interconnect logical system. The interconnect logical system does not require an administrator.

NOTE: This feature requires a license. To understand more about SRX Series devices license, see Software Feature Licenses for SRX Series Devices. Please refer to the Juniper Licensing Guide for general information about License Management. Please refer to the product Data Sheets for details, or contact your Juniper Account Team or Juniper Partner.

SEE ALSO

Understanding the Master Logical Systems and the Master Administrator Role | 45
Understanding User Logical Systems and the User Logical System Administrator Role | 73

Features and Limitations of Logical Systems

This topic covers basic information about the features and limitations of logical systems.

- By default, logical systems deliver a master logical system, which exists at the root level. You can purchase licenses for logical systems that you intend to create, with the total not exceeding 32 (1 master logical system and 31 user logical systems).
- You can configure up to 32 security profiles, from 1 through 32, with ID 0 reserved for the internally configured default security profile. When the maximum number of security profiles is reached, if you want to add a new security profile, you must first delete one or more existing security profiles, commit the configuration, and then create the new security profile and commit it. You cannot add a new security profile and remove an existing one within a single configuration commit.

  If you want to add more than one new security profile, the same rule is true. You must first delete the equivalent number of of existing security profiles, commit the configuration, and then create the new security profiles and commit the configuration.
- You can configure one or more master administrators to oversee administration of the device and the logical systems they configure.

  As master administrator for an SRX Series Services Gateway running logical systems, you have root control over the device, its resources, and the logical systems that you create. You allocate security, networking, and routing resources to user logical systems. You can configure one logical system to serve as an interconnect logical system virtual private LAN service (VPLS) switch. The interconnect logical system, which is not mandatory, does not require security resources. However, if you configure an interconnect logical system, you must bind a dummy security profile to it. The master administrator configures it and all lt-0/0/0 interfaces for it.
- A user logical system can have one or more administrators, referred to as user logical system administrators. The master administrator creates login accounts for these administrators and assigns them to a user logical system. Currently, the master administrator must configure all user logical system administrators. The first assigned user logical administrator cannot configure additional user logical system administrators for his or her logical system. As a user logical system administrator, you can configure the resources assigned to your user logical system, including logical interfaces assigned by the master administrator, routing instances and their routes, and security components. You can display configuration information only for your logical system.
- A logical system can include more than one routing instance based on available system resources.

- You cannot configure class of service on lt-0/0/0 interfaces.
- Commit rollback is supported at the root level only.
- Quality-of-service (QoS) classification across interconnected logical systems does not work.
- The master administrator can configure Application Layer Gateways (ALGs) at the root level. The configuration is inherited by all user logical systems. ALGs can also be configured discretely for user logical systems.
- The master administrator can configure IDP policies at the root level and then apply an IDP policy to a user logical system.
- Only the master administrator can create user accounts and login IDs for users for all logical systems. The master administrator creates these user accounts at the root level and assigns them to the appropriate user logical systems.
- The same name cannot be used in two separate logical systems. For example, if logical-system1 includes a user with Bob configured as the username, then other logical systems on the device cannot include a user with the username Bob.
- Configuration for users for all logical systems and all user logical systems administrators must be performed at the root level by the master administrator. A user logical system administrator cannot create other user logical system administrators or user accounts for their logical systems.
- Some of the scaling parameters are different for SRX1500 devices. For example, you can configure a maximum of 512 zones under a logical system.

SEE ALSO

Understanding Logical Systems for SRX Series Services Gateways | 29

Understanding the Master Logical Systems and the Master Administrator Role | 45

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices

This topic provides licensing information for SRX Series devices running logical systems and tenant systems.

Starting in Junos OS Release 18.3R1, an SRX Series device running logical systems or tenant systems includes three licenses by default. One license for a master logical system and the other two licenses for user-defined logical system or tenant system. The system does not allow you to configure additional logical systems or tenant systems if the number of logical systems and tenant systems exceeds the number of

available licenses. In the earlier releases, the system allowed you to configure an additional logical system even if the number of logical systems exceeds the number of available licenses, but with a warning message of non-licensed logical-systems do not pass traffic. You can purchase licenses for additional logical systems and tenant systems that you intend to create. If you intend to configure an interconnect logical system or interconnect tenant system to use as a switch, it also requires separate licenses.

We enforce that you do not configure more logical systems or tenant systems than the number of licenses you have purchased. If the number of logical systems or tenant systems that you attempt to configure exceeds the number of licenses that you have purchased, then the system displays an error message similar to the following:

```
user@host> commit
```

```
error: 2 more multitenancy license(s) are needed!
error: configuration check-out failed
```

You can use the **show system license status all-logical-systems-tenants** or **show system license usage** commands to view the active logical systems and tenant systems on the device.

```
user@host> show system license status all-logical-systems-tenants
```

```
logical system name  license status
root-logical-system  enabled
LSYS2                enabled
LSYS0                enabled
LSYS11               enabled
LSYS12               enabled
LSYS23               enabled
TSYS1                enabled
TSYS2                enabled
TSYS3                enabled
```

```
user@host> show system license usage
```

```
                    Licenses  Licenses     Licenses   Expiry
  Feature name      used      installed    needed
```

```
logical-system       9          11          0        2019-05-18
                                                     08:00:00 CST
```

When you use SRX Series devices running logical systems or tenant systems in a chassis cluster, you must purchase and install the same number of licenses for each node in the chassis cluster. Logical systems or tenant systems licenses pertain to a single chassis, or node, within a chassis cluster and not to the cluster collectively.

SEE ALSO

Understanding Logical Systems for SRX Series Services Gateways | 29

Understanding Tenant Systems | 73

Understanding the Interconnect Logical System and Logical Tunnel Interfaces

This topic covers the interconnect logical system that serves as an internal virtual private LAN service (VPLS) switch connecting one logical system on the device to another. The topic also explains how logical tunnel (lt-0/0/0) interfaces are used to connect logical systems through the interconnect logical system.

A device running logical systems can use an internal VPLS switch to pass traffic without it leaving the device. The interconnect logical system switches traffic across logical systems that use it. Although a virtual switch is used typically, it is not mandatory. If you choose to use a virtual switch, you must configure the interconnect logical system. There can be only one interconnect logical system on a device.

For communication between logical systems on the device to occur, you must configure an lt-0/0/0 interface on each logical system that will use the internal switch, and you must associate it with its peer lt-0/0/0 interface on the interconnect logical system, effectively creating a logical tunnel between them. You define a peer relationship at each end of the tunnel when you configure the logical system's lt-0/0/0 interfaces.

You might want all logical systems on the device to be able to communicate with one another without using an external switch. Alternatively, you might want some logical systems to connect across the internal switch but not all of them.

The interconnect logical system does not require security resources assigned to it through a security profile. However, you must assign a dummy security profile containing no resources to the interconnect logical system. Otherwise you will not be able to successfully commit the configuration for it.

WARNING: If you configure an lt-0/0/0 interface in any user logical system or the master logical system and you do not configure an interconnect logical system containing a peer lt-0/0/0 interface for it, the commit will fail.

An SRX Series device running logical systems can be used in a chassis cluster. Each node has the same configuration, including the interconnect logical system.

When you use SRX Series devices running logical systems within a chassis cluster, you must purchase and install the same number of licenses for each node in the chassis cluster. Logical systems licenses pertain to a single chassis, or node, within a chassis cluster and not to the cluster collectively.

SEE ALSO

Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only) | **127**

Understanding Logical Systems for SRX Series Services Gateways | **29**

Understanding Logical Systems in the Context of Chassis Cluster | **382**

Understanding Packet Flow in Logical Systems for SRX Series Devices

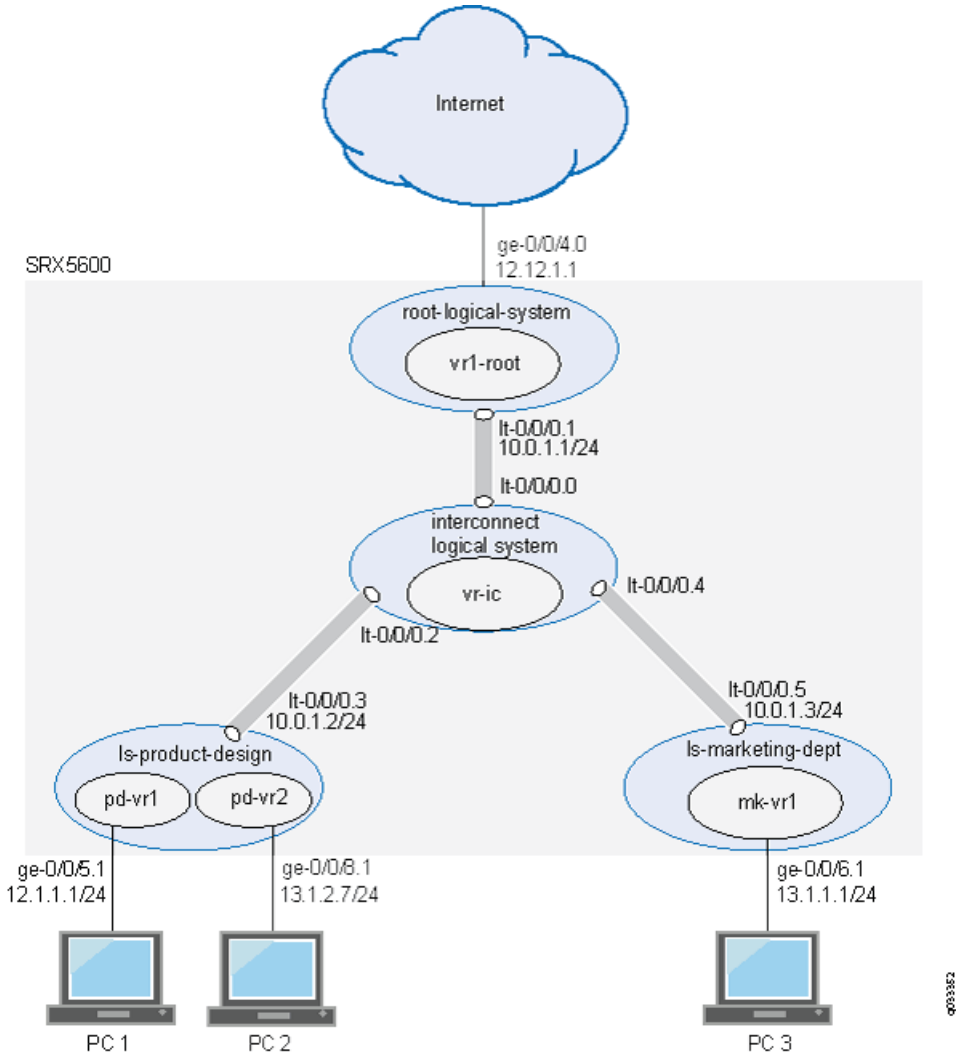
IN THIS SECTION

- Understanding Junos OS SRX Series Services Gateways Architecture | **37**
- Session Creation for Devices Running Logical Systems | **38**
- Understanding Flow on Logical Systems | **39**
- Understanding Packet Classification | **39**
- Handling Pass-Through Traffic for Logical Systems | **40**
- Handling Self-Traffic | **41**
- Understanding Session and Gate Limitation Control | **43**
- Understanding Sessions | **43**
- About Configuring Sessions | **43**

This topic explains how packets are processed in flow sessions on SRX Series devices running logical systems. It describes how an SRX Series device running logical systems handles pass-through traffic in a single logical system and between logical systems. It also covers self-traffic as self-initiated traffic within a logical system and self-traffic terminated on another logical system. Before addressing logical systems, the topic provides basic information about the SRX Series architecture in with respect to packet processing and sessions. Finally, it addresses sessions and how to change session characteristics.

The concepts explained in this example rely on the topology shown in Figure 2 on page 37.

Figure 2: Logical Systems, Their Virtual Routers, and Their Interfaces



Understanding Junos OS SRX Series Services Gateways Architecture

Junos OS is a distributed parallel processing high throughput and high performance system. The distributed parallel processing architecture of the services gateways includes multiple processors to manage sessions

and run security and other services processing. This architecture provides greater flexibility and allows for high throughput and fast performance.

The SRX5000 line devices include I/O cards (IOC) and Services Processing Cards (SPCs) that each contain processing units that process a packet as it traverses the device. A Network Processing Unit (NPU) runs on an IOC. An IOC has one or more NPUs. One or more Services Processing Units (SPUs) run on an SPC.

These processing units have different responsibilities. All flow-based services for a packet are executed on a single SPU. Otherwise, however, the lines are not clearly divided in regard to the kinds of services that run on these processors. (For details on flow-based processing, see *Understanding Traffic Processing on Security Devices*.)

For example:

- An NPU processes packets discretely. It performs sanity checks and applies some screens that are configured for the interface, such as denial-of-service (DoS) screens, to the packet.
- An SPU manages the session for the packet flow and applies security features and other services to the packet. It also applies packet-based stateless firewall filters, classifiers, and traffic shapers to the packet.
- The system uses one processor as a central point to take care of arbitration and allocation of resources and distribute sessions in an intelligent way. The central point assigns an SPU to be used for a particular session when the first packet of its flow is processed.

These discrete, cooperating parts of the system, including the central point, each store the information identifying whether a session exists for a stream of packets and the information against which a packet is matched to determine if it belongs to an existing session.

This architecture allows the device to distribute processing of all sessions across multiple SPUs. It also allows an NPU to determine if a session exists for a packet, to check the packet, and to apply screens to it. How a packet is handled depends on whether it is the first packet of a flow.

Flow-based packet processing treats related packets, or a stream of packets, in the same way. Packet treatment depends on characteristics that are established for the first packet of the packet stream when the flow session is established. Most packet processing occurs within a flow. For the distributed processing architecture of the services gateway, some packet-based processing, such as traffic shaping, occurs on the NPU. Some packet-based processing, such as application of classifiers to a packet, occurs on the SPU.

Configuration settings that determine the fate of a packet—such as the security policy that applies to it, Aplication Layer Gateway (ALG)s configured for it, if NAT should be applied to translate the packet's source and/or destination IP address—are assessed for the first packet of a flow.

Session Creation for Devices Running Logical Systems

Session establishment for SRX Series devices running logical systems differs in minor ways from that of SRX series devices not running logical systems. Despite the complexities that logical systems introduce, traffic is handled in a manner similar to how it is handled on SRX Series devices not running logical systems.

Flow-based packet processing, which is stateful, requires the creation of sessions. In considering flow based processing and session establishment for logical systems, it helps to think of each logical system on the device as a discrete device with respect to session establishment.

A session is created, based on routing and other classification information, to store information and allocate resources for a flow. Basically, a session is established when traffic enters a logical system interface, route lookup is performed to identify the next hop interface, and policy lookup is performed.

Optionally, logical systems enable you to configure an internal software switch. This virtual private LAN switch (VPLS) is implemented as an interconnect logical system. It enables both transit traffic and traffic terminated at a logical system to pass between logical systems. To enable traffic to pass between logical systems, logical tunnel (lt-0/0/0) interfaces across the interconnect logical system are used.

Communication between logical systems across the interconnect logical system requires establishment of two sessions: one for traffic that enters a logical system and exits its lt-0/0/0 interface, and one for traffic that enters the lt-0/0/0 interface of another logical system and either exits the device through one of its physical interface or is destined for it.

NOTE: Packet sequence occurs at the ingress and the egress interfaces. Packets traveling between logical systems might not be processed in the order in which they were received on the physical interface.

Understanding Flow on Logical Systems

To understand how traffic is handled for logical systems, it is helpful to consider each logical system as a discrete device.

NOTE: Traffic is processed for the master logical system in the same way as it is for user logical systems on the device.

NOTE: On SRX1400, SRX3400, SRX3600, SRX5400, SRX5600, and SRX5800 Series devices, J-Flow version 5, version 8, and version 9 are not supported on logical systems.

Understanding Packet Classification

Packet classification is assessed the same way for SRX Series devices running with or without logical systems. Filters and class-of-service features are typically associated with an interface to influence which

packets are allowed to transit the system and to apply special actions to packets as needed. (Within a flow, some packet-based processing also takes place on an SPU.)

Packet classification is based on the incoming interface and performed at the ingress point. Traffic for a dedicated interface is classified to the logical system that contains that interface. Within the context of a flow, packet classification is based on both the physical interface and the logical interface.

Handling Pass-Through Traffic for Logical Systems

IN THIS SECTION

- Pass-Through Traffic Within a Logical System | **40**
- Pass-Through Traffic Between Logical Systems | **41**

For SRX Series devices not running logical systems, pass-through traffic is traffic that enters and exits a device. You can think of pass-through traffic for logical systems similarly, but as having a larger dimension as a result of the nature of a multitenant device. For SRX Series devices running logical systems, pass-through traffic can exist within a logical system or between logical systems.

Pass-Through Traffic Within a Logical System

For pass-through traffic within a logical system, traffic comes in on an interface belonging to one of the logical system's virtual routing instances, and it is sent to another of its virtual routing instances. To exit the device, the traffic is sent out an interface belonging to the second virtual routing instance. The traffic does not transit between logical systems but rather enters and exits the device in a single logical system. Pass-through traffic within a logical system is transmitted according to the routing tables in each of its routing instances.

Consider how pass-through traffic is handled within a logical system given the topology shown in Figure 2 on page 37.

- When a packet arrives on interface ge-0/0/5, it is identified as belonging to the ls-product-design logical system.
- Because ge-0/0/5 belongs to the pd-vr1 routing instance, route lookup is performed in pd-vr1 with pd-vr2 identified as the next hop.
- A second route lookup is performed in pd-vr2 to identify the egress interface to use—in this case—ge-0/0/8.
- The packet is sent out ge-0/0/8 to the network.
- The security policy lookup is performed in ls-product-design, and one session is established.

Pass-Through Traffic Between Logical Systems

Pass-through traffic between logical systems is complicated by fact that each logical system has an ingress and an egress interface that the traffic must transit. It is as if traffic were coming into and going out from two devices.

Two sessions must be established for pass-through traffic between logical systems. (Note that policy lookup is performed in both logical systems).

- On the incoming logical system, one session is set up between the ingress interface (a physical interface) and its egress interface (an lt-0/0/0 interface).
- On the egress logical system, another session is set up between the ingress interface (the lt-0/0/0 interface of the second logical system) and its egress interface (a physical interface).

Consider how pass-through traffic is handled across logical systems in the topology shown in Figure 2 on page 37.

- A session is established in the incoming logical system.
  - When a packet arrives on interface ge-0/0/5, it is identified as belonging to the ls-product-design logical system.
  - Because ge-0/0/5 belongs to the pd-vr1 routing instance, route lookup is performed in pd-vr1.
  - As a result of the lookup, the egress interface for the packet is identified as lt-0/0/0.3 with the next hop identified as lt-0/0/0.5, which is the ingress interface in the ls-marketing-dept.
  - A session is established between ge-0/0/5 and lt-0/0/0.3.
- A session is established in the outgoing logical system.
  - The packet is injected into the flow again from lt-0/0/0.5, and the logical system context identified as ls-marketing-dept is derived from the interface.
  - Packet processing continues in the ls-marketing-dept logical system.
  - To identify the egress interface, route lookup for the packet is performed in the mk-vr1 routing instances.
  - The outgoing interface is identified as ge-0/0/6, and the packet is transmitted from the interface to the network.

Handling Self-Traffic

Self-traffic is traffic that originates in a logical system on the device and is either sent out to the network from that logical system or is terminated on another logical system on the device.

Self-Initiated Traffic

Self-initiated traffic is generated from a source logical system context and forwarded directly to the network from the logical system interface.

The following process occurs:

- When a packet is generated in a logical system, a process for handling the traffic is started in the logical system.
- Route lookup is performed to identify the egress interface, and a session is established.
- The logical system performs a policy lookup and processes the traffic accordingly.
- If required, a management session is set up.

Consider how self-initiated traffic is handled across logical systems given the topology shown in Figure 2 on page 37.

- A packet is generated in the ls-product-design logical system, and a process for handling the traffic is started in the logical system.
- Route lookup performed in pd-vr2 to identifies the egress interface as ge-0/0/8.
- A session is established.
- The packet is transmitted to the network from ge-0/0/8.

Traffic Terminated on a Logical System

When a packet enters the device on an interface belonging to a logical system and the packet is destined for another logical system on the device, the packet is forwarded between the logical systems in the same manner as is pass-through traffic. However, route lookup in the second logical system identifies the local egress interface as the packet destination. Consequently the packet is terminated on the second logical system as self-traffic.

- For terminated self-traffic, two policy lookups are performed, and two sessions are established.
  - On the incoming logical system, one session is set up between the ingress interface (a physical interface) and its egress interface (an lt-0/0/0 interface).
  - On the destination logical system, another session is set up between the ingress interface (the lt-0/0/0 interface of the second logical system) and the local interface.

Consider how terminated self-traffic is handled across logical systems in the topology shown in Figure 2 on page 37.

- A session is established in the incoming logical system.
  - When a packet arrives on interface ge-0/0/5, it is identified as belonging to the ls-product-design logical system.
  - Because ge-0/0/5 belongs to the pd-vr1 routing instance, route lookup is performed in pd-vr1.
  - As a result of the lookup, the egress interface for the packet is identified as lt-0/0/0.3 with the next hop identified as lt-0/0/0.5, the ingress interface in the ls-marketing-dept.
  - A session is established between ge-0/0/5 and lt-0/0/0.3.

- A management session is established in the destination logical system.
  - The packet is injected into the flow again from lt-0/0/0.5, and the logical system context identified as ls-marketing-dept is derived from the interface.
  - Packet processing continues in the ls-marketing-dept logical system.
  - Route lookup for the packet is performed in the mk-vr1 routing instance. The packet is terminated in the destination logical system as self-traffic.
  - A management session is established.

Understanding Session and Gate Limitation Control

The logical systems flow module provides session and gate limitation to ensure that these resources are shared fairly among the logical systems. Resources allocation and limitations for each logical system are specified in the security profile bound to the logical system.

- For session limiting, the system checks the first packet of a session against the maximum number of sessions configured for the logical system. If the maximum is reached, the device drops the packet and logs the event.
- For gate limiting, the device checks the first packet of a session against the maximum number of gates configured for the logical system. If the maximum number of gates for a logical system is reached, the device rejects the gate open request and logs the event.

Understanding Sessions

Sessions are created based on routing and other classification information to store information and allocate resources for a flow. You can change some characteristics of sessions, such as when a session is terminated. For example, you might want to ensure that a session table is never entirely full to protect against an attacker's attempt to flood the table and thereby prevent legitimate users from starting sessions.

About Configuring Sessions

Depending on the protocol and service, a session is programmed with a timeout value. For example, the default timeout for TCP is 1800 seconds. The default timeout for UDP is 60 seconds. When a flow is terminated, it is marked as invalid, and its timeout is reduced to 10 seconds. If no traffic uses the If no traffic uses the session before the service timeout, the session is aged out and freed to a common resource pool for reuse.

You can affect the life of a session in the following ways:

- Age out sessions, based on how full the session table is.
- Set an explicit timeout for aging out TCP sessions.

- Configure a TCP session to be invalidated when it receives a TCP RST (reset) message.
- You can configure sessions to accommodate other systems as follows:
  - Disable TCP packet security checks.
  - Change the maximum segment size.

SEE ALSO

Understanding the Interconnect Logical System and Logical Tunnel Interfaces | 35
Understanding Logical Systems for SRX Series Services Gateways | 29

Logical Systems and Tenant Systems support for VSRX and VSRX 3.0 Instances

Starting in Junos OS Release 20.1R1, you can configure logical systems and tenant systems on vSRX and vSRX 3.0 instances.

Configuring each logical systems creates an extra routing protocol process (RPD), which is cpu and memory intensive. Starting in Junos OS Release 20.1R1-

- vSRX and vSRX3.0 instances with a memory capacity of less than 16GB does not support logical systems and tenant systems.
- vSRX and vSRX3.0 instances with a memory capacity of 16GB or more supports logical systems but limits the logical systems to eight.

Table 3 on page 44 describes the number of logical systems and tenant systems supported on different memory capacities for vSRX and vSRX 3.0.

Table 3: Logical Systems and Tenant Systems supported on different Memory Capacities for VSRX and VSRX 3.0.

Type	4GB	8GB	16GB or more
Logical systems	1	1	8
Tenant systems	0	0	42
Logical systems + Tenant systems (includes the root logical system).	1	1	50

NOTE: Only VSRX 3.0 instances support flexible security profiles based on the device memory. The maximum number of supported security profiles on VSRX 3.0 is related to its memory. For more information, see Security Profiles for Logical Systems.

Use the following command at the **[edit]** hierarchy level to ensure that there are at least two CPU's in the Routing Engine of vSRX and vSRX3.0 instances: **set security forwarding-options resource-manager cpu re 2**.

SEE ALSO

Logical Systems Overview,
Tenant Systems Overview

Master Logical Systems Overview

IN THIS SECTION

- Understanding the Master Logical Systems and the Master Administrator Role | 45
- SRX Series Logical Systems Master Administrator Configuration Tasks Overview | 47
- Example: Configuring Multiple VPLS Switches and LT Interfaces for Logical Systems | 50

Master logical systems can create a user logical system and configure the security resources of the user logical system. Master logical systems assign the logical interfaces to the user logical systems. For more information, see the following topics:

Understanding the Master Logical Systems and the Master Administrator Role

When, as a master administrator, you initialize an SRX Series device running logical systems, a master logical system is created at the root level. You can log in to the device as root and change the root password.

By default, all system resources are assigned to the master logical system, and the master administrator allocates them to the user logical systems.

As master administrator, you manage the device and all its logical systems. You also manage the master logical system and configure its assigned resources. There can be more than one master administrator managing a device running logical systems.

- The master administrator's role and main responsibilities include:
  - Creating user logical systems and configuring their administrators. You can create one or more user logical system administrators for each user logical system.
  - Creating login accounts for users for all logical systems and assigning them to the appropriate logical systems.
  - Configuring an interconnect logical system if you want to allow communication between logical systems on the device. The interconnect logical system acts as an internal switch. It does not require an administrator.

    To configure an interconnect logical system, you configure lt-0/0/0 interfaces between the interconnect logical system and each logical system. These peer interfaces effectively allow for establishment of tunnels.
  - Configuring security profiles to provision portions of the system's security resources to user logical systems and the master logical system.

    Only the master administrator can create, change, and delete security profiles and bind them to logical systems.

    > **NOTE:** A user logical system administrator can configure interface, routing, and security resources allocated to his logical system.

  - Creating logical interfaces to assign to user logical systems. (The user logical system administrator configures logical interfaces assigned to his logical system.)
  - Viewing and managing user logical systems, as required, and deleting user logical systems. When a user logical system is deleted, its allocated reserved resources are released for use by other logical systems.
  - Configuring IDP, AppTrack, application identification, and application firewall features. The master administrator can also use trace and debug at the root level, and he can perform commit rollbacks. The master administrator manages the master logical system and configures all the features that a user logical system administrator can configure for his or her own logical systems including routing

instances, static routes, dynamic routing protocols, zones, security policies, screens, and firewall authentication.

SEE ALSO

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Understanding Logical Systems for SRX Series Services Gateways | 29

Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only) | 127

SRX Series Logical Systems Master Administrator Configuration Tasks Overview

This topic describes the master administrator's tasks in the order in which they are performed.

An SRX Series device running logical systems is managed by a master administrator. The master administrator has the same capabilities as the root administrator of an SRX Series device not running logical systems. However, the master administrator's role and responsibilities extend beyond those of other SRX Series device administrators because an SRX Series device running logical systems is partitioned into discrete logical systems, each with its own resources, configuration, and management concerns. The master administrator is responsible for creating these user logical systems and provisioning them with resources.

For an overview of the master administrator's role and responsibilities, see "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

As the master administrator, you perform the following tasks to configure an SRX Series device running logical systems:

1. Configure a root password. Initially the master administrator logs in to the device as the root user without needing to specify a password. After you log in to the device, you must define a root password for later use.

   See "Example: Configuring Root Password for Logical Systems" on page 74 for configuration information.

2. Create user logical systems and their administrators and users. Optionally, create an interconnect logical system.

   For each user logical system that you want to configure on the device, you must create a logical system, define one or more administrators for it, and add users to it.

The master administrator configures login accounts for user logical system administrators and users and associates them with the user logical system. A user logical system can have more than one administrator; the master administrator must define and add all user logical system administrators and add them to their user logical systems.

The master administrator adds users to user logical systems on behalf of the user logical system administrator. For example, if you have created a user logical system for the product design department, you must create user accounts for the users who belong to that department and associate them with the user logical system. The user logical system administrator does not have the ability to do this. Rather, the user logical administrator tells you the user accounts that you must create and add for his logical system.

- For configuration information, see "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76
- For information on user logical system administrators, see "Understanding User Logical Systems and the User Logical System Administrator Role" on page 73.
- For information on the interconnect logical system, see "Understanding the Interconnect Logical System and Logical Tunnel Interfaces" on page 35.

3. Configure one or more security profiles. Security profiles assign security resources to logical systems. You can assign a single security profile to more than one logical system if you intend to allocate the same kinds and amounts of resources to them.

   - For configuration information, see "Example: Configuring Logical Systems Security Profiles (Master Administrators Only)" on page 94.
   - For information on security profiles, see "Understanding Logical Systems Security Profiles (Master Administrators Only)" on page 88.

4. Configure interfaces, routing instances, and static routes for logical systems, as appropriate.

   - If you plan to use an interconnect logical system, configure its logical tunnel interfaces and add them to its virtual routing instance.
   - Configure interfaces for the master logical system. Optionally, create its logical tunnel interface to allow it to communicate with other logical systems on the device. Create a virtual routing instance for the master logical system and add its interfaces and static routes to it. Also configure logical interfaces for user logical systems with VLAN tagging.

     NOTE: The master administrator tells the user logical system administrators which interfaces are assigned to their logical systems. It is the user logical system administrator's responsibility to configure their interfaces.

- Optionally, configure logical tunnel interfaces for any user logical systems that you want to allow to communicate with one another using the internal VPLS switch. VPLS is a virtual private network (VPN) technology. It allows point-to-point layer 2 tunnels connectivity.

  By creating a VPLS type routing-instance (RI), we define a VPLS switch. VPLS switch behaves like a L2 ethernet switch. We assign multiple LT IFLs to the VPLS switch. Each LT IFL have encapsulation ethernet-vpls and this behaves as L2 switch port. To connect to the VPLS switch, each logical system creates a LT IFL and assigns to a port of the VPLS switch.

  Starting with Junos OS Release 18.2R1, it is not required to define a dedicated interconnect logical system for including VPLS switch. For ease, VPLS switch is defined in root logical system. This approach is enabled by configuring multiple VPLS switches and LT IFLs per logical system.

  When one LT logical interface connects to a VPLS switch, the routing engine assigns VPLS switch unique MAC address from MAC address pool of the LT interface. This determines the number of LT IFLs that connect a VPLS switch.

- For configuration information, see "Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only)" on page 127.
- For information about the interconnect logical system and logical tunnel (lt-0/0/0) interfaces, see "Understanding the Interconnect Logical System and Logical Tunnel Interfaces" on page 35.

5. Enable CPU utilization control and configure the CPU control target and reserved CPU quotas for logical systems. See "Example: Configuring CPU Utilization (Master Administrators Only)" on page 121.

6. Optionally, configure dynamic routing protocols for the master logical system. See "Example: Configuring OSPF Routing Protocol for the Master Logical Systems" on page 137

7. Configure zones, security policies, and security features for the master logical system. See "Example: Configuring Security Features for the Master Logical Systems" on page 179.

8. Configure IDP for the master logical system. See "Example: Configuring an IDP Policy for the Master Logical Systems" on page 269.

9. Configure application firewall services on the master logical system. See "Understanding Logical Systems Application Firewall Services" on page 322 and "Example: Configuring Application Firewall Services for a Master Logical Systems" on page 323.

10. Configure a route-based VPN to secure traffic between a logical system and a remote site. See "Example: Configuring IKE and IPsec SAs for a VPN Tunnel (Master Administrators Only)" on page 229.

SEE ALSO

Example: Configuring Multiple VPLS Switches and LT Interfaces for Logical Systems

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- Verification | 69

This example shows how to interconnect multiple logical systems. This is achieved by configuring multiple logical systems with a Logical Tunnel (LT) interface point-to-point connection (Encapsulation Ethernet, Encapsulation Frame-Relay and Virtual Private LAN Service switch). More than one LT interface under a logical system and multiple VPLS switches are configured to pass the traffic without leaving an SRX Series device. The frame-relay encapsulation adds data-link connection identifier (DLCI) information to the given frame.

Requirements

This example uses an SRX Series device running Junos OS with logical system.

Before you begin:

- Read the "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how and where this procedure fits in the overall master administrator configuration process.
- Read the "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76
- Read the "Understanding the Interconnect Logical System and Logical Tunnel Interfaces" on page 35

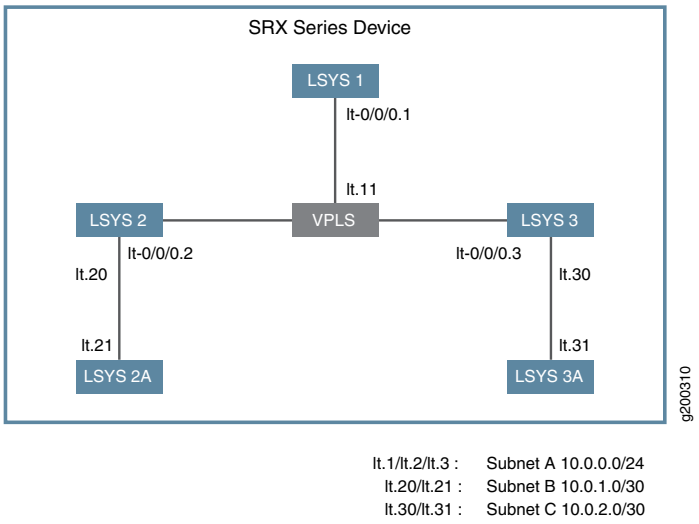
Overview

In this example, we configure multiple LT interfaces and multiple VPLS switches under one logical system.

In this example, we also configure interconnect multiple logical systems with LT interface point-to point connection (Encapsulation Ethernet and Encapsulation Frame-Relay).

Figure 3 on page 51 shows the topology for interconnecting logical systems.

Figure 3: Configuring the interconnect logical systems



- For the interconnect logical system with LT interface point-to-point connection (encapsulation ethernet), the example configures logical tunnel interfaces lt-0/0/0. This example configures security-zone and assigns interfaces to the logical systems.

  The interconnect logical systems lt-0/0/0 interfaces are configured with Ethernet as the encapsulation type. The corresponding peer lt-0/0/0 interfaces in the logical systems are configured with Ethernet as the encapsulation type. A security profile is assigned to the logical systems.

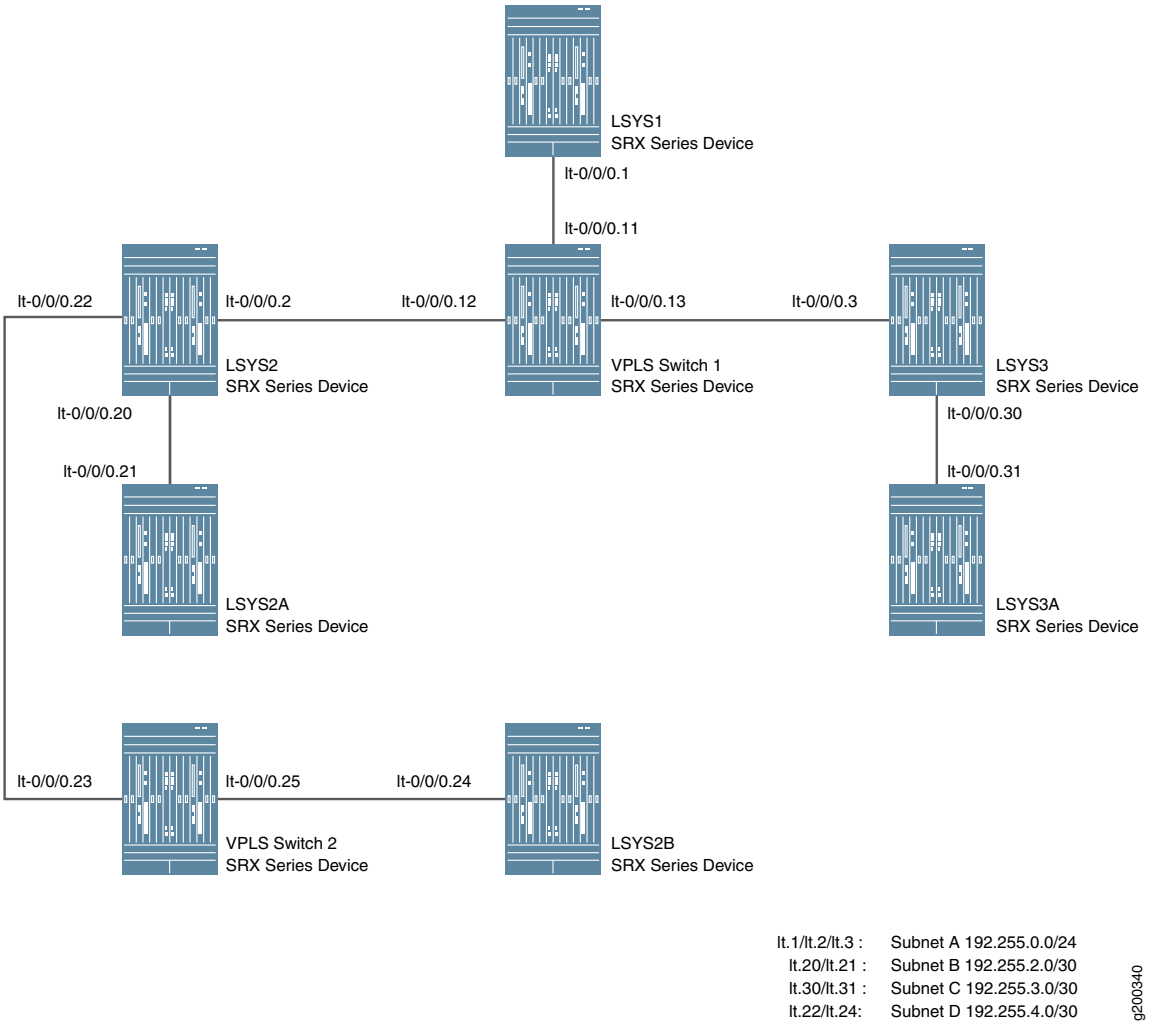
- For the interconnect logical systems with LT interface point-to-point connection (encapsulation frame-relay), this example configures logical tunnel interfaces lt-0/0/0. This example configures security-zone and assigns interfaces to the logical systems.

  The interconnect logical systems lt-0/0/0 interfaces are configured with frame-relay as the encapsulation type. The corresponding peer lt-0/0/0 interfaces in the logical systems are configured with frame-relay as the encapsulation type. A security profile is assigned to the logical systems.

- For interconnect logical systems with multiple VPLS switches, this example configures logical tunnel interfaces lt-0/0/0 with ethernet-vpls as the encapsulation type. The corresponding peer lt-0/0/0 interfaces and security-profiles are assigned to the logical systems. The routing instance for the VPLS switch-1 and VPLS switch-2 are also assigned to the logical systems.

  Figure 4 on page 52 shows the topology for interconnect logical systems with VPLS switches.

Figure 4: Configuring the interconnect logical systems with VPLS switches



NOTE: Multiple LT interfaces can be configured within a logical system.

Configuration

IN THIS SECTION

- Configuring Logical Systems Interconnect with Logical Tunnel Interface point-to-point connection (Encapsulation Ethernet) | 53
- Configuring Logical Systems Interconnect with Logical Tunnel Interface point-to-point connection (Encapsulation Frame-Relay) | 57
- Configuring Logical Systems Interconnect with Multiple VPLS Switches | 62

To configure interfaces for the logical system, perform these tasks:

Configuring Logical Systems Interconnect with Logical Tunnel Interface point-to-point connection (Encapsulation Ethernet)

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile SP-user logical-system LSYS2
set logical-systems LSYS2 interfaces lt-0/0/0 unit 20 encapsulation ethernet
set logical-systems LSYS2 interfaces lt-0/0/0 unit 20 peer-unit 21
set logical-systems LSYS2 interfaces lt-0/0/0 unit 20 family inet address 192.255.2.1/30
set logical-systems LSYS2 security zones security-zone LT interfaces lt-0/0/0.20
set system security-profile SP-user logical-system LSYS2A
set logical-systems LSYS2A interfaces lt-0/0/0 unit 21 encapsulation ethernet
set logical-systems LSYS2A interfaces lt-0/0/0 unit 21 peer-unit 20
set logical-systems LSYS2A interfaces lt-0/0/0 unit 21 family inet address 192.255.2.2/30
set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT match source-address any
set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT match destination-address any
set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT match application any
set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT then permit
set logical-systems LSYS2A security policies default-policy permit-all
set logical-systems LSYS2A security zones security-zone LT host-inbound-traffic system-services all
set logical-systems LSYS2A security zones security-zone LT host-inbound-traffic protocols all
set logical-systems LSYS2A security zones security-zone LT interfaces lt-0/0/0.21
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Define a security profile and assign to a logical system.

```
[edit]
user@host# set system security-profile SP-user logical-system LSYS2
```

2. Set the LT interface as encapsulation ethernet in the logical system.

```
[edit]
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 20 encapsulation ethernet
```

3. Configure a peer relationship for logical systems LSYS2.

```
[edit]
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 20 peer-unit 21
```

4. Specify the IP address for the LT interface.

```
[edit]
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 20 family inet address 192.255.2.1/30
```

5. Set the security zone for the LT interface.

```
[edit]
user@host# set logical-systems LSYS2 security zones security-zone LT interfaces lt-0/0/0.20
```

6. Define a security profile and assign to a logical system.

```
[edit]
user@host# set system security-profile SP-user logical-system LSYS2A
```

7. Set the LT interface as encapsulation ethernet in the logical system 2A.

```
[edit]
user@host# set logical-systems LSYS2A interfaces lt-0/0/0 unit 21 encapsulation ethernet
```

8. Configure a peer relationship for logical systems LSYS2A.

```
[edit]
user@host# set logical-systems LSYS2A interfaces lt-0/0/0 unit 21 peer-unit 20
```

9. Specify the IP address for the LT interface.

```
[edit]
user@host# set logical-systems LSYS2A interfaces lt-0/0/0 unit 21 family inet address 192.255.2.2/30
```

10. Configure a security policy that permits traffic from the LT zone to the LT policy LT zone.

```
[edit]
user@host# set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT match
   source-address any
user@host# set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT match
   destination-address any
user@host# set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT match application
   any
user@host# set logical-systems LSYS2A security policies from-zone LT to-zone LT policy LT then permit
```

11. Configure a security policy that permits traffic from default-policy.

```
[edit]
user@host# set logical-systems LSYS2A security policies default-policy permit-all
```

12. Configure security zones.

```
[edit]
user@host# set logical-systems LSYS2A security zones security-zone LT host-inbound-traffic system-services
   all
user@host# set logical-systems LSYS2A security zones security-zone LT host-inbound-traffic protocols all
user@host# set logical-systems LSYS2A security zones security-zone LT interfaces lt-0/0/0.21
```

Results

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS2** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS2
interfaces {
    lt-0/0/0 {
        unit 20 {
            encapsulation ethernet;
            peer-unit 21;
            family inet {
                address 192.255.2.1/30;
            }
        }
        unit 22 {
            encapsulation ethernet;
            peer-unit 23;
            family inet {
                address 192.255.4.1/30;
            }
        }
    }
}
security {
    zones {
        security-zone LT {
            interfaces {
                lt-0/0/0.22;
                lt-0/0/0.20;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS2A** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS2A
interfaces {
    lt-0/0/0 {
        unit 21 {
            encapsulation ethernet;
            peer-unit 20;
            family inet {
                address 192.255.2.2/30;
```

```
        }
      }
    }
}
security {
    policies {
        from-zone LT to-zone LT {
            policy LT {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
                then {
                    permit;
                }
            }
        }
        default-policy {
            permit-all;
        }
    }
    zones {
        security-zone LT {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.21;
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring Logical Systems Interconnect with Logical Tunnel Interface point-to-point connection (Encapsulation Frame-Relay)

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile SP-user logical-system LSYS3A
set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 encapsulation frame-relay
set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 dlci 16
set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 peer-unit 31
set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 family inet address 192.255.3.1/30
set logical-systems LSYS3 security zones security-zone LT interfaces lt-0/0/0.30
set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 encapsulation frame-relay
set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 dlci 16
set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 peer-unit 30
set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 family inet address 192.255.3.2/30
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match source-address any
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match destination-address any
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match application any
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT then permit
set logical-systems LSYS3A security policies default-policy permit-all
set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic system-services all
set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic protocols all
set logical-systems LSYS3A security zones security-zone LT interfaces lt-0/0/0.31
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

1. Define a security profile and assign to a logical system.

```
[edit]
user@host# set system security-profile SP-user logical-system LSYS3A
```

2. Set the LT interface as encapsulation frame-relay in the logical system.

```
[edit]
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 encapsulation frame-relay
```

3. Configure the logical tunnel interface by including the dlci.

```
[edit]
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 dlci 16
```

4. Configure a peer unit relationship between LT interfaces, thus creating a point-to-point connection.

```
[edit]
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 peer-unit 31
```

5. Specify the IP address for the LT interface.

```
[edit]
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 30 family inet address 192.255.3.1/30
```

6. Set the security zone for the LT interface.

```
[edit]
user@host# set logical-systems LSYS3 security zones security-zone LT interfaces lt-0/0/0.30
```

7. Set the LT interface as encapsulation frame-relay in the logical system.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 encapsulation frame-relay
```

8. Configure the logical tunnel interface by including the dlci.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 dlci 16
```

9. Configure a peer unit relationship between LT interfaces, thus creating a point-to-point connection.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 peer-unit 30
```

10. Specify the IP address for the LT interface.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 31 family inet address 192.255.3.2/30
```

11. Configure a security policy that permits traffic from the LT zone to the LT policy LT zone.

```
[edit]
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match
   source-address any
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match
   destination-address any
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match application
   any
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT then permit
```

12. Configure a security policy that permits traffic from default-policy.

```
[edit]
user@host# set logical-systems LSYS3A security policies default-policy permit-all
```

13. Configure security zones.

```
[edit]
user@host# set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic system-services
   all
user@host# set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic protocols all
user@host# set logical-systems LSYS3A security zones security-zone LT interfaces lt-0/0/0.31
```

Results

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS3** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS3
interfaces {
   lt-0/0/0 {
      unit 30 {
         encapsulation frame-relay;
         dlci 16;
         peer-unit 31;
         family inet {
            address 192.255.3.1/30;
         }
      }
   }
}
```

```
security {
    zones {
        security-zone LT {
            interfaces {
                lt-0/0/0.30;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS3A** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS3A
```

```
    interfaces {
        lt-0/0/0 {
            unit 31 {
                encapsulation frame-relay;
                dlci 16;
                peer-unit 30;
                family inet {
                    address 192.255.3.2/30;
                }
            }
        }
    }
    security {
        policies {
            from-zone LT to-zone LT {
                policy LT {
                    match {
                        source-address any;
                        destination-address any;
                        application any;
                    }
                    then {
                        permit;
                    }
                }
            }
```

```
        default-policy {
            permit-all;
        }
    }
    zones {
        security-zone LT {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.31;
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring Logical Systems Interconnect with Multiple VPLS Switches

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces lt-0/0/0 unit 11 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 11 peer-unit 1
set interfaces lt-0/0/0 unit 12 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 12 peer-unit 2
set interfaces lt-0/0/0 unit 13 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 13 peer-unit 3
set interfaces lt-0/0/0 unit 23 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 23 peer-unit 22
set interfaces lt-0/0/0 unit 25 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 25 peer-unit 24
set routing-instances vpls-switch-1 instance-type vpls
set routing-instances vpls-switch-1 interface lt-0/0/0.11
set routing-instances vpls-switch-1 interface lt-0/0/0.12
set routing-instances vpls-switch-1 interface lt-0/0/0.13
```

```
set routing-instances vpls-switch-2 instance-type vpls
set routing-instances vpls-switch-2 interface lt-0/0/0.23
set routing-instances vpls-switch-2 interface lt-0/0/0.25
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 encapsulation ethernet
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 peer-unit 11
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 family inet address 192.255.0.1/24
set logical-systems LSYS2 interfaces lt-0/0/0 unit 2 encapsulation ethernet
set logical-systems LSYS2 interfaces lt-0/0/0 unit 2 peer-unit 12
set logical-systems LSYS2 interfaces lt-0/0/0 unit 2 family inet address 192.255.0.2/24
set logical-systems LSYS2 interfaces lt-0/0/0 unit 22 encapsulation ethernet
set logical-systems LSYS2 interfaces lt-0/0/0 unit 22 peer-unit 23
set logical-systems LSYS2 interfaces lt-0/0/0 unit 22 family inet address 192.255.4.1/30
set logical-systems LSYS3 interfaces lt-0/0/0 unit 3 encapsulation ethernet
set logical-systems LSYS3 interfaces lt-0/0/0 unit 3 peer-unit 13
set logical-systems LSYS3 interfaces lt-0/0/0 unit 3 family inet address 192.255.0.3/24
set logical-systems LSYS2B interfaces lt-0/0/0 unit 24 encapsulation ethernet
set logical-systems LSYS2B interfaces lt-0/0/0 unit 24 peer-unit 25
set logical-systems LSYS2B interfaces lt-0/0/0 unit 24 family inet address 192.255.4.2/30
set system security-profile SP-user policy maximum 100
set system security-profile SP-user policy reserved 50
set system security-profile SP-user zone maximum 60
set system security-profile SP-user zone reserved 10
set system security-profile SP-user flow-session maximum 100
set system security-profile SP-user flow-session reserved 50
set system security-profile SP-user logical-system LSYS1
set system security-profile SP-user logical-system LSYS2
set system security-profile SP-user logical-system LSYS3
set system security-profile SP-user logical-system LSYS2B
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

1. Configure the lt-0/0/0 interfaces.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 11 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 11 peer-unit 1
user@host# set interfaces lt-0/0/0 unit 12 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 12 peer-unit 2
user@host# set interfaces lt-0/0/0 unit 13 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 13 peer-unit 3
user@host# set interfaces lt-0/0/0 unit 23 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 23 peer-unit 22
```

```
user@host# set interfaces lt-0/0/0 unit 25 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 25 peer-unit 24
```

2. Configure the routing instance for the VPLS switches and add interfaces to it.

```
[edit]
user@host# set routing-instances vpls-switch-1 instance-type vpls
user@host# set routing-instances vpls-switch-1 interface lt-0/0/0.11
user@host# set routing-instances vpls-switch-1 interface lt-0/0/0.12
user@host# set routing-instances vpls-switch-1 interface lt-0/0/0.13
user@host# set routing-instances vpls-switch-2 instance-type vpls
user@host# set routing-instances vpls-switch-2 interface lt-0/0/0.23
user@host# set routing-instances vpls-switch-2 interface lt-0/0/0.25
```

3. Configure LSYS1 with lt-0/0/0.1 interface and peer lt-0/0/0.11.

```
[edit]
user@host# set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 encapsulation ethernet
user@host# set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 peer-unit 11
user@host# set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 family inet address 192.255.0.1/24
```

4. Configure LSYS2 with lt-0/0/0.2 interface and peer lt-0/0/0.12.

```
[edit]
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 2 encapsulation ethernet
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 2 peer-unit 12
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 2 family inet address 192.255.0.2/24
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 22 encapsulation ethernet
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 22 peer-unit 23
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 22 family inet address 192.255.4.1/30
```

5. Configure LSYS3 with lt-0/0/0.3 interface and peer lt-0/0/0.13

```
[edit]
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 3 encapsulation ethernet
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 3 peer-unit 13
user@host# set logical-systems LSYS3 interfaces lt-0/0/0 unit 3 family inet address 192.255.0.3/24
```

6. Configure LSYS2B with lt-0/0/0 interface and peer-unit 24.

```
[edit]
user@host# set logical-systems LSYS2B interfaces lt-0/0/0 unit 24 encapsulation ethernet
user@host# set logical-systems LSYS2B interfaces lt-0/0/0 unit 24 peer-unit 25
user@host# set logical-systems LSYS2B interfaces lt-0/0/0 unit 24 family inet address 192.255.4.2/30
```

7. Assign security-profile for logical-systems.

```
[edit]
user@host# set system security-profile SP-user policy maximum 100
user@host# set system security-profile SP-user policy reserved 50
user@host# set system security-profile SP-user zone maximum 60
user@host# set system security-profile SP-user zone reserved 10
user@host# set system security-profile SP-user flow-session maximum 100
user@host#set system security-profile SP-user flow-session reserved 50
user@host# set system security-profile SP-user logical-system LSYS1
user@host# set system security-profile SP-user logical-system LSYS2
user@host# set system security-profile SP-user logical-system LSYS3
user@host# set system security-profile SP-user logical-system LSYS2B
```

Results

- From configuration mode, confirm your configuration by entering the **show interfaces lt-0/0/0**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it

```
[edit]
user@host# show interfaces lt-0/0/0
unit 11 {
    encapsulation ethernet-vpls;
    peer-unit 1;
}
unit 12 {
    encapsulation ethernet-vpls;
    peer-unit 2;
}
unit 13 {
    encapsulation ethernet-vpls;
    peer-unit 3;
}
unit 23 {
    encapsulation ethernet-vpls;
    peer-unit 22;
}
```

```
unit 25 {
    encapsulation ethernet-vpls;
    peer-unit 24;
}
```

- From configuration mode, confirm your configuration by entering the **show routing-instances**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show routing-instances
vpls-switch-1 {
    instance-type vpls;
    interface lt-0/0/0.11;
    interface lt-0/0/0.12;
    interface lt-0/0/0.13;
}
vpls-switch-2 {
    instance-type vpls;
    interface lt-0/0/0.23;
    interface lt-0/0/0.25;
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS1
interfaces {
    lt-0/0/0 {
        unit 1 {
            encapsulation ethernet;
            peer-unit 11;
            family inet {
                address 192.255.0.1/24;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS2**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS2
interfaces {
    lt-0/0/0 {
        unit 2 {
            encapsulation ethernet;
            peer-unit 12;
            family inet {
                address 192.255.0.2/24;
            }
        }
        unit 22 {
            encapsulation ethernet;
            peer-unit 23;
            family inet {
                address 192.255.4.1/30;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS3**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS3
interfaces {
    lt-0/0/0 {
        unit 3 {
            encapsulation ethernet;
            peer-unit 13;
            family inet {
                address 192.255.0.3/24;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS2B**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS2B
interfaces {
    lt-0/0/0 {
        unit 24 {
            encapsulation ethernet;
            peer-unit 25;
            family inet {
                address 192.255.4.2/30;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show system security-profile**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show system security-profile
SP-user {
    policy {
        maximum 100;
        reserved 50;
    }
    zone {
        maximum 60;
        reserved 10;
    }
    flow-session {
        maximum 100;
        reserved 50;
    }
    logical-system [ LSYS1 LSYS2 LSYS3 LSYS2B ];
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the Security-Profile for all Logical-systems | 69
- Verifying the LT Interfaces for all Logical systems | 69

To confirm that the configuration is working properly, perform these tasks:

Verifying the Security-Profile for all Logical-systems

Purpose

Verify security profile for each logical systems.

Action

From operational mode, enter the **show system security-profile security-log-stream-number logical-system all** command.

```
user@host> show system security-profile security-log-stream-number logical-system all
```

```
logical system name   security profile name       usage    reserved   maximum
root-logical-system   Default-Profile                2           0         2000
LSYS1                 SP-user                        1          10          60
LSYS2                 SP-user                        1          10          60
LSYS2B                SP-user                        1          10          60
LSYS3                 SP-user                        1          10          60
```

Meaning

The output provides the usage and reserved values for the logical systems when security-log-stream is configured.

Verifying the LT Interfaces for all Logical systems

Purpose

Verify interfaces for logical systems.

Action

From operational mode, enter the **show interfaces lt-0/0/0 terse** command.

```
user@host> show interfaces lt-0/0/0 terse
```

```
Interface               Admin Link Proto    Local                 Remote
lt-0/0/0                up    up
lt-0/0/0.1              up    up   inet     192.255.0.1/24
lt-0/0/0.2              up    up   inet     192.255.0.2/24
lt-0/0/0.3              up    up   inet     192.255.0.3/24
lt-0/0/0.11             up    up   vpls
lt-0/0/0.12             up    up   vpls
lt-0/0/0.13             up    up   vpls
lt-0/0/0.22             up    up   inet     192.255.4.1/30
lt-0/0/0.23             up    up   vpls
lt-0/0/0.24             up    up   inet     192.255.4.2/30
lt-0/0/0.25             up    up   vpls
lt-0/0/0.32767          up    up
```

Meaning

The output provides the status of LT interfaces. All the LT interfaces are up.

SEE ALSO

- Understanding the Master Logical Systems and the Master Administrator Role | 45
- Understanding User Logical Systems and the User Logical System Administrator Role | 73
- Understanding the Interconnect Logical System and Logical Tunnel Interfaces | 35
- SRX Series Logical Systems Master Administrator Configuration Tasks Overview | 47

User Logical Systems Overview

IN THIS SECTION

- User Logical Systems Configuration Overview | 71
- Understanding User Logical Systems and the User Logical System Administrator Role | 73

A user logical system enables you to configure zones, security policies, logical interfaces and security resources assigned to its own user logical system. For more information, see the following topics:

User Logical Systems Configuration Overview

When the master administrator creates a user logical system, he assigns a user logical system administrator to manage it. A user logical system can have multiple user logical system administrators.

As a user logical system administrator, you can access and view resources in your user logical system but not those of other user logical systems or the master logical system. You can configure resources allocated to your user logical system, but you cannot modify the numbers of allocated resources.

The following procedure lists the tasks that the user logical system administrator performs to configure resources in the user logical system:

1. Log in to the user logical system with the login and password configured by the master administrator:

   a. SSH to the management IP address configured on the device. Log in to the user logical system with the administrator login and password provided by the master administrator.

      You enter a UNIX shell in the user logical system configured by the master administrator.

      Starting in Junos OS Release 20.1R1, On SRX5400, SRX5600, and SRX5800 Series devices, Trusted Platform Module (TPM) supports only with SRX5K-RE3-128G Routing Engine (RE3). The TPM chip enables by default. To use the TPM functionality in logical systems, you must configure Master-Encryption-key (MEK) at the root logical system only, and the user logical systems will inherit the same MEK to encrypt configuration hash and public key infrastructure (PKI) key-pairs. For more information on TPM, see *Using Trusted Platform Module to Bind Secrets on SRX Series Devices*.

   b. The presence of the > prompt indicates the CLI has started. The prompt is preceded by a string that contains your username, the hostname of the router, and the name of the user logical system. When the CLI starts, you are at the top level in operational mode. You enter configuration mode by entering the **configure** operational mode command. The CLI prompt changes from user@host: *logical-system*> to user@host: *logical-system#*.

      To exit the CLI and return to the UNIX shell, enter the **quit** command.

2. Configure the logical interfaces assigned to the user logical system by the master administrator. Configure one or more routing instances and the routing protocols and options within each instance. See "Example: Configuring Interfaces and Routing Instances for a User Logical Systems" on page 147.

3. Configure security resources for the user logical system:

   a. Create zones for the user logical system and bind the logical interfaces to the zones. Address books can be created that are attached to zones for use in policies. See “Example: Configuring Security Zones for a User Logical Systems” on page 171.

   b. Configure screen options at the zone level. See “Example: Configuring Screen Options for a User Logical Systems” on page 219.

   c. Configure security policies between zones in the user logical system. See “Example: Configuring Security Policies in a User Logical Systems” on page 212.

      Custom applications or application sets can be created for specific types of traffic. To create a custom application, use the **application** configuration statement at the [**edit applications**] hierarchy level. To create an application set, use the **application-set** configuration statement at the [**edit applications**] hierarchy level.

   d. Configure firewall authentication. The master administrator creates access profiles in the master logical system. See “Example: Configuring Access Profiles (Master Administrators Only)” on page 176.

      The user logical system administrator then configures a security policy that specifies firewall authentication for matching traffic and configures the type of authentication (pass-through or Web authentication), default access profile, and success banner. See “Example: Configuring Firewall Authentication for a User Logical System” on page 187.

   e. Configure a route-based VPN tunnel to secure traffic between a user logical system and a remote site. The master administrator assigns a secure tunnel interface to the user logical system and configures IKE and IPsec SAs for the VPN tunnel. See “Example: Configuring IKE and IPsec SAs for a VPN Tunnel (Master Administrators Only)” on page 229.

      The user logical system administrator then configures a route-based VPN tunnel. See “Example: Configuring a Route-Based VPN Tunnel in a User Logical Systems” on page 238.

   f. Configure Network Address Translation (NAT). See “Example: Configuring Network Address Translation for a User Logical Systems” on page 143.

   g. Configure and assigning a predefined IDP policy to the user logical system. The master administrator configures IDP policies at the root level and specifies an IDP policy in the security profile that is bound to a logical system. See “Example: Configuring and Assigning a Predefined IDP Policy for a User Logical System” on page 277.

      The user logical system administrator then enables IDP in a security policy. See “Example: Enabling IDP in a User Logical System Security Policy” on page 280.

   h. Configure and enable an IDP policy at the user logical system. See “Example: Configuring an IDP Policy for a User Logical System” on page 283

   i. Display or clear application system cache (ASC) entries. See “Understanding Logical Systems Application Identification Services” on page 321.

j. Configure application firewall services on a user logical system. See "Understanding Logical Systems Application Firewall Services" on page 322 and "Example: Configuring Application Firewall Services for a User Logical System" on page 329.

k. Configure the AppTrack application tracking tool. See "Example: Configuring AppTrack for a User Logical Systems" on page 335.

SEE ALSO

Example: Configuring User Logical Systems | 157

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Understanding User Logical Systems and the User Logical System Administrator Role

Logical systems allow a master administrator to partition an SRX Series device into discrete contexts called user logical systems. User logical systems are self-contained, private contexts, separate both from one another and from the master logical system. A user logical system has its own security, networking, logical interfaces, routing configurations, and one or more user logical system administrators.

When the master administrator creates a user logical system, he assigns one or more user logical system administrators to manage it. A user logical system administrator has a view of the device that is limited to his logical system. Although a user logical system is managed by a user logical system administrator, the master administrator has a global view of the device and access to all user logical systems. If necessary, the master administrator can manage any user logical system on the device.

The role and responsibilities of a user logical system administrator differ from those of the master administrator. As a user logical system administrator, you can access, configure, and view the configuration for your user logical system resources, but not those of other user logical systems or the master logical system.

As a user logical system administrator, you can:

- Configure zones, address books, security policies, user lists, custom services, and so forth, for your user logical system environment, based on the resources allocated to it.

  For example, if the master administrator allocates 40 zones to your user logical system, you can configure and administer those zones, but you cannot change the allocated number.

- Configure routing instances and assign allotted interfaces to them. Create static routes and add them to your routing instances. Configure routing protocols.

- Configure, enable, and monitor application firewall policy on your user logical system.
- Configure AppTrack.
- View all assigned logical interfaces and configure their attributes. The attributes that you configure for logical interfaces for your user logical system cannot be seen by other user logical system administrators.
- Run operational commands for your user logical system.

SEE ALSO

Understanding Logical Systems for SRX Series Services Gateways | 29

Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only) | 127

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

Setting Up a Logical System

IN THIS SECTION

- Example: Configuring Root Password for Logical Systems | 74
- Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System | 76

Example: Configuring Root Password for Logical Systems

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- Overview | 75
- Configuration | 75

Requirements

Before you begin, read "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how this task fits into the overall configuration process.

The example uses an SRX5600 device running Junos OS with logical systems.

Overview

The Junos OS software is installed on the router before it is delivered from the factory. When you power on your router, it is ready for you to configure. Initially you log in as *root* user without using a password.

After you log in, you can configure a password for the root user, or, in logical systems terms, the master administrator. The master administrator has root privileges over the device.

Configuration

IN THIS SECTION

- Configuring the Root Password | 75

Configuring the Root Password

Step-by-Step Procedure

- Configure a root password for the device.

```
user@host# set system root-authentication Talk22rt6
```

SEE ALSO

Understanding the Master Logical Systems and the Master Administrator Role | 45

Understanding Logical Systems for SRX Series Services Gateways | 29

Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System

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This example shows how to create user logical systems and assign administrators to them. It shows how to add users to a user logical system. And the example shows how to create an interconnect logical system, which is optional.

> **NOTE:** Only the master administrator can create user login accounts for administrators and users. If a user logical system administrator wants to add users to his logical system, he must convey the information to the master administrator, who will add the users.

Requirements

The example uses an SRX5600 device running Junos OS with logical systems.

Overview

Before you begin, read "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how this task fits into the overall configuration process.

This example is for a company that includes product design, marketing, and accounting departments. The company wants to curtail hardware and energy costs, but not at the risk of exposing data across departments or to the Internet.

Each department has its own security requirements in regard both to other departments and to the Internet. To meet its requirements for cost control without forfeiting security, the company deploys the SRX5600 device. The master administrator configures three user logical systems giving each department a logical device that is private and fully secured.

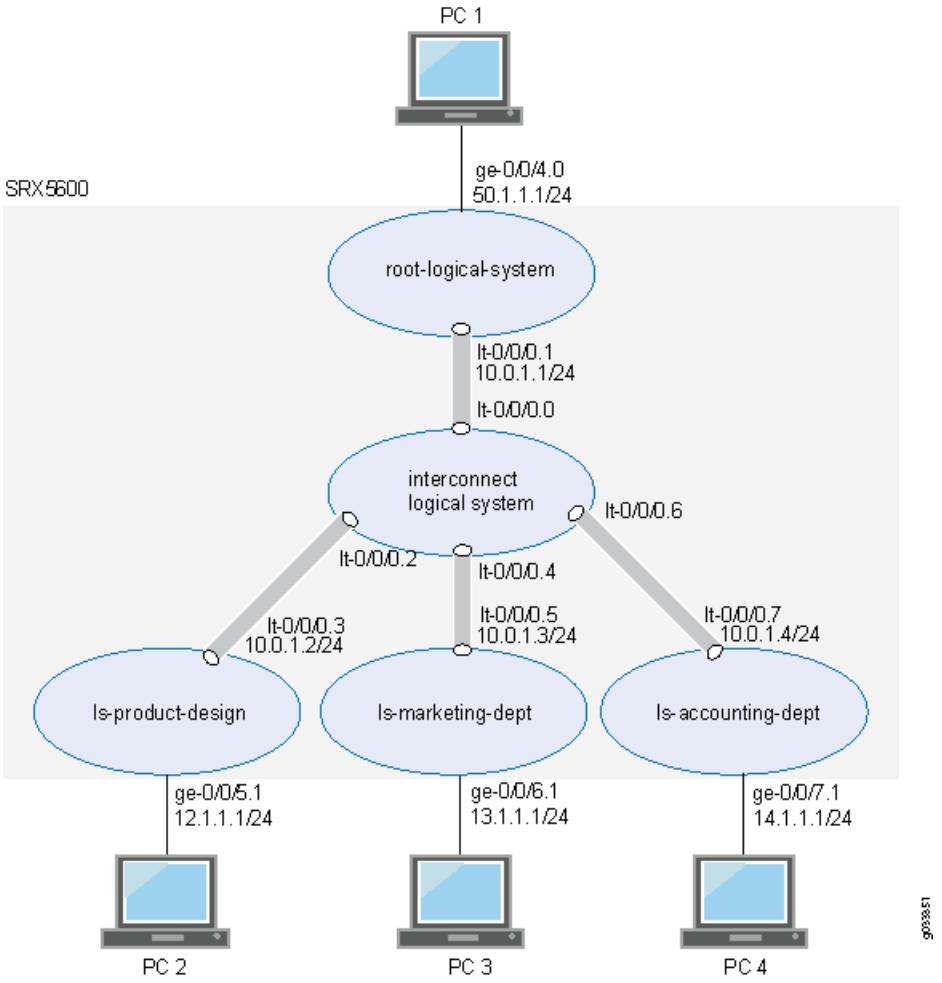
This topic covers how to:

- Create user logical systems and an interconnect logical system that is used as an internal VPLS switch to allow traffic to pass from one logical system to another.
- Create administrators for user logical systems other than the interconnect logical system. A user logical system can have more than one administrator. The interconnect logical system does not require an administrator.
- Add users to a user logical system.

> **NOTE:** This example shows how to configure only two users—lsdesignuser1 and lsdesignuser2. In reality, every user logical system will include many users that would require configurations similar to those shown in this example.

Figure 5 on page 78 shows an SRX5600 device deployed and configured for logical systems. The configuration examples reflect this deployment.

Figure 5: SRX Series Device Configured for Logical Systems



Configuration

IN THIS SECTION

- Configuring User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System | **78**

Configuring User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems ls-product-design
set system login class ls-design-admin logical-system ls-product-design
set system login class ls-design-admin permissions all
set system login user lsdesignadmin1 full-name lsdesignadmin1
set system login user lsdesignadmin1 class ls-design-admin
set system login user lsdesignadmin1 authentication encrypted-password "$ABC123"
set system login class ls-design-user logical-system ls-product-design
set system login class ls-design-user permissions view
set system login user lsdesignuser1 full-name lsdesignuser1
set system login user lsdesignuser1 class ls-design-user
set system login user lsdesignuser1 authentication encrypted-password "$ABC123"
set system login user lsdesignuser2 full-name lsdesignuser2
set system login user lsdesignuser2 class ls-design-user
set system login user lsdesignuser2 authentication encrypted-password "$ABC123"
set logical-systems ls-marketing-dept
set system login class ls-marketing-admin logical-system ls-marketing-dept
set system login class ls-marketing-admin permissions all
set system login user lsmarketingadmin1 class ls-marketing-admin
set system login user lsmarketingadmin1 full-name lsmarketingadmin1
set system login user lsmarketingadmin1 authentication encrypted-password "$ABC123"
set system login user lsmarketingadmin2 full-name lsmarketingadmin2
set system login user lsmarketingadmin2 class ls-marketing-admin
set system login user lsmarketingadmin2 authentication encrypted-password "$ABC123"
set logical-systems ls-accounting-dept
set system login class ls-accounting-admin logical-system ls-accounting-dept
set system login class ls-accounting-admin permissions all
set system login user lsaccountingadmin1 full-name lsaccountingadmin1
set system login user lsaccountingadmin1 class ls-accounting-admin
set system login user lsaccountingadmin1 authentication encrypted-password "$ABC123"
set logical-systems interconnect-logical-system
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

1. Create the first user logical system and define its administrator.

   a. Create the user logical system.

      ```
      [edit]
      user@host# set logical-systems ls-product-design
      ```

   b. Assign the user login class to the user logical system.

```
[edit system]
user@host# set login class ls-design-admin logical-system ls-product-design
```

c. Create the login class to give the user logical system administrator full permission over the user logical system.

```
[edit system]
user@host# set login class ls-design-admin permissions all
```

d. Assign a full name to the user logical system administrator.

```
[edit system]
user@host# set login user lsdesignadmin1 full-name lsdesignadmin1
```

e. Associate the login class with the user logical system administrator to allow the administrator to log in to the user logical system.

```
[edit system]
user@host# set login user lsdesignadmin1 class ls-design-admin
```

f. Create a user login password for the user logical system administrator.

```
[edit system]
user@host# set login user lsdesignadmin1 authentication plain-text-password
New password: Talk1234
Retype new password: Talk1234
```

2. Configure the first user for the logical system.

a. Configure the user login class and assign it to the user logical system.

```
[edit system]
user@host# set login class ls-design-user logical-system ls-product-design
```

b. To give the first user the ability to see the logical system's resources and settings but not change them, assign **view** as the permission to the login class.

```
[edit system]
```

```
user@host# set login class ls-design-user permissions view
```

c. Assign a full name to the logical system user.

```
[edit system]
user@host# set login user lsdesignuser1 full-name lsdesignuser1
```

d. Associate the login class with the user to allow the user to log in to the user logical system.

```
user@host# set login user lsdesignuser1 class ls-design-user
```

e. Create a user login password for the user.

```
[edit system]
user@host# set login user lsdesignuser1 authentication plain-text-password
New password: Talk4234
Retype new password: Talk4234
```

3. Create the second user for logical system ls-product-design.

a. Assign a full name to the user.

```
[edit system]
user@host# set login user lsdesignuser2 full-name lsdesignuser2
```

b. Associate the user with the login class to allow the user to log in to the user logical system.

```
user@host# set login user lsdesignuser2 class ls-design-user
```

c. Create a user login password.

```
[edit system]
user@host# set login user lsdesignuser2 authentication plain-text-password
New password: Talk9234
```

```
Retype new password: Talk9234
```

4. Create the second user logical system and define its administrator.

   a. Create the user logical system.

   ```
   [edit]
   user@host# set logical-systems ls-marketing-dept
   ```

   b. Configure the user login class and assign it to the user logical system.

   ```
   [edit system]
   user@host# set login class ls-marketing-admin logical-system ls-marketing-dept
   ```

   c. To give the user logical system administrator control over the user logical system, assign **all** as the permissions to the login class.

   ```
   [edit system]
   user@host# set login class ls-marketing-admin permissions all
   ```

   d. Assign a full name to the user logical system administrator.

   ```
   [edit system]
   user@host# set login user lsmarketingadmin1 full-name lsmarketingadmin1
   ```

   e. Associate the user logical system administrator with the login class to allow the administrator to log in to the user logical system.

   ```
   [edit system]
   user@host# set login user lsmarketingadmin1 class ls-marketing-admin
   ```

   f. Create a user login password for the user logical system administrator.

   ```
   [edit system]
   user@host# set login user lsmarketingadmin1 authentication plain-text-password
   New password: Talk2345
   ```

```
Retype new password: Talk2345
```

5. Create a second user logical system administrator for the ls-marketing-dept logical system.

   a. Assign a full name to the user logical system administrator.

   ```
   [edit system]
   user@host# set login user lsmarketingadmin2 full-name lsmarketingadmin2
   ```

   b. Associate the user logical system administrator with the login class to allow the administrator to log in to the user logical system.

   ```
   [edit system]
   user@host# set login lsmarketingadmin2 class ls-marketing-admin
   ```

   c. Create a user login password for the user logical system administrator.

   ```
   [edit system]
   user@host# set login user lsmarketingadmin2 authentication plain-text-password
   New password: Talk6345
   Retype new password: Talk6345
   ```

6. Create the third user logical system and define its administrator.

   a. Create the user logical system.

   ```
   [edit]
   user@host# set logical-systems ls-accounting-dept
   ```

   b. Configure the user login class and assign it to the user logical system.

   ```
   [edit system]
   user@host# set login class ls-accounting-admin logical-system ls-accounting-dept
   ```

   c. To give the user logical system administrator control over the user logical system, assign permissions to the login class.

   ```
   [edit system]
   ```

```
user@host# set login class ls-accounting-admin permissions all
```

d. Assign a full name to the user logical system administrator.

```
[edit system]
user@host# set login user lsaccountingadmin1 full-name lsaccountingadmin1
```

e. Associate the user logical system administrator with the login class to allow the administrator to log in to the user logical system.

```
[edit system]
user@host# set login user lsaccountingadmin1 class ls-accounting-admin
```

f. Create a login password for the user logical system administrator.

```
[edit system]
user@host# set login user lsaccountingadmin1 authentication plain-text-password
New password: Talk5678
Retype new password: Talk5678
```

7. Configure an interconnect logical system to allow logical systems to pass traffic from one to another.

```
user@host# set logical-systems interconnect-logical-system
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems** command to verify that the logical systems were created. Also enter the **show system login class** command for each class that you defined.

To ensure that the logical systems administrators were created, enter the **show system login user** command.

If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show logical-systems ?
interconnect-logical-system;
ls-accounting-dept;
ls-marketing-dept;
ls-product-design;
```

```
user@host# show system login class ls-design-admin
logical-system ls-product-design;
permissions all;
```

```
user@host# show system login class ls-design-user
logical-system ls-product-design
permissions view;
```

```
user@host show system login class ls-marketing-admin
logical-system ls-marketing-dept;
permissions all;
```

```
user@host show system login class ls-accounting-admin
logical-system ls-accounting-dept;
permissions all;
```

```
user@host show system login user ?
lsaccountingadmin1 lsaccountingadmin1
lsdesignadmin1 lsdesignadmin1
lsdesignuser2 lsdesignuser2
lsmarketingadmin1 lsmarketingadmin1
lsmarketingadmin2 lsmarketingadmin2
```

Verification

IN THIS SECTION

- Verifying User Logical Systems and Login Configurations from the Master Logical System | **85**
- Verifying User Logical Systems and Login Configurations Using SSH | **86**

To confirm that the configuration is working properly, perform these tasks:

Verifying User Logical Systems and Login Configurations from the Master Logical System

Purpose

Verify that the user logical systems exist and that you, as the master administrator, can enter them from root. Return from a user logical system to the master logical system.

Action

From operational mode, enter the following command:

```
root@host> set cli logical-system ls-product-design
Logical system:ls-product-design
root@host:ls-product-design>
```

```
root@host:ls-product-design> clear cli logical-system
Cleared default logical system
root@host>
```

```
root@host> set cli logical-system ls-marketing-dept
Logical system:ls-marketing-dept
root@host:ls-marketing-dept>
```

```
root@host:ls-marketing-dept> clear cli logical-system
Cleared default logical system
root@host>
```

```
root@host> set cli logical-system ls-accounting-dept
Logical system:ls-accounting-dept
root@host:ls-accounting-dept>
```

```
root@host:ls-accounting-dept> clear cli logical-system
Cleared default logical system
root@host>
```

Verifying User Logical Systems and Login Configurations Using SSH

Purpose

Verify that the user logical systems you created exist and that the administrators' login IDs and passwords that you created are correct.

Action

Use SSH to log in to each user logical system as its user administrator would do.

1. Run SSH specifying the IP address of your SRX Series device.

2. Enter the login ID and password for the administrator for one of the user logical systems that you created. After you log in, the prompt shows the administrator name. Notice how this result differs from

the result produced when you log in to the user logical system from the master logical system at root. Repeat this procedure for all of your user logical systems.

```
login: lsdesignadmin1
Password: Talk1234
lsdesignadmin1@host: ls-product-design>
```

SEE ALSO

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only) | 127

RELATED DOCUMENTATION

Understanding the Master Logical Systems and the Master Administrator Role | 45

Understanding Logical Systems for SRX Series Services Gateways | 29

Security Profiles for Logical Systems

IN THIS SECTION

- Understanding Logical Systems Security Profiles (Master Administrators Only) | 88
- Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94
- Example: Configuring User Logical Systems Security Profiles | 104
- Example: Configuring Security log stream for Logical Systems | 110

Security profiles for logical systems allow you to allocate resources. Security profiles specifies the number of resources to allocate to a logical system to which the security profile is bound. All system resources are allocated to master logical system and the master administrator allocates them to user logical system using security profile. For more information, see the following topics:

Understanding Logical Systems Security Profiles (Master Administrators Only)

IN THIS SECTION

- Logical Systems Security Profiles | 88
- How the System Assesses Resources Assignment and Use Across Logical Systems | 89
- Cases: Assessments of Reserved Resources Assigned Through Security Profiles | 91

Logical systems allow you to virtually divide a supported SRX Series device into multiple devices, isolating one from another, securing them from intrusion and attacks, and protecting them from faulty conditions outside their own contexts. To protect logical systems, security resources are configured in a manner similar to how they are configured for a discrete device. However, as the master administrator, you must allocate the kinds and amounts of security resources to logical systems. The logical system administrator allocates resources for his own logical system.

An SRX Series device running logical systems can be partitioned into user logical systems, an interconnect logical system, if desired, and the default master logical system. When the system is initialized, the master logical system is created at the root level. All system resources are assigned to it, effectively creating a default master logical system security profile. To distribute security resources across logical systems, the master administrator creates security profiles that specify the kinds and amounts of resources to be allocated to a logical system that the security profile is bound to. Only the master administrator can configure security profiles and bind them to logical systems. The user logical system administrator configures these resources for his or her logical system.

Logical systems are defined largely by the resources allocated to them, including security components, interfaces, routing instances, static routes, and dynamic routing protocols. When the master administrator configures a user logical system, he binds a security profile to it. Any attempt to commit a configuration for a user logical system without a security profile bound to it will fail.

This topic includes the following sections:

Logical Systems Security Profiles

As master administrator, you can configure a single security profile to assign resources to a specific logical system, use the same security profile for more than one logical system, or use a mix of both methods. You can configure up to 32 security profiles on an SRX Series device running logical systems. When you reach the limit, you must delete a security profile and commit the configuration change before you can create

and commit another security profile. In many cases fewer security profiles are needed because you might bind a single security profile to more than one logical system.

Security profiles allow you to:

- Share the device's resources, including policies, zones, addresses and address books, flow sessions, and various forms of NAT, among all logical systems appropriately. You can dedicate various amounts of a resource to the logical systems and allow them to compete for use of the free resources.

  Security profiles protect against one logical system exhausting a resource that is required at the same time by other logical systems. Security profiles protect critical system resources and maintain a fair level of performance among user logical systems when the device is experiencing heavy traffic flow. They defend against one user logical system dominating the use of resources and depriving other user logical systems of them.
- Configure the device in a scalable way to allow for future creation of additional user logical systems.

You must delete a logical system's security profile before you delete that logical system.

How the System Assesses Resources Assignment and Use Across Logical Systems

To provision a logical system with security resources, you, as a master administrator, configure a security profile that specifies for each resource:

- A reserved quota that guarantees that the specified resource amount is always available to the logical system.
- A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems must compete for global resources.

If a reserved quota is not configured for a resource, the default value is 0. If a maximum allowed quota is not configured for a resource, the default value is the global system quota for the resource (global system quotas are platform-dependent). The master administrator must configure appropriate maximum allowed quota values in the security profiles so the maximum resource usage of a specific logical system does not negatively impact other logical systems configured on the device. The master administrator must configure the appropriate maximum-allowed quota values in the security profiles so that the maximum resource usage of a specific logical system does not negatively impact other logical systems configured on the device.

The system maintains a count of all allocated resources that are reserved, used, and made available again when a logical system is deleted. This count determines whether resources are available to use for new logical systems or to increase the amount of the resources allocated to existing logical systems through their security profiles.

When a user logical system is deleted, its reserved resource allocations are released for use by other logical systems.

Resources configured in security profiles are characterized as static modular resources or dynamic resources. For static resources, we recommend setting a maximum quota for a resource equal or close to the amount specified as its reserved quota, to allow for scalable configuration of logical systems. A high maximum quota for a resource might give a logical system greater flexibility through access to a larger amount of that resource, but it would constrain the amount available to allocate to a new user logical system.

The difference between reserved and maximum allowed amounts for a dynamic resource is not important because dynamic resources are aged out and do not deplete the pool available for assignment to other logical systems.

The following resources can be specified in a security profile:

- Security policies, including schedulers
- Security zones
- Addresses and address books for security policies
- Application firewall rule sets
- Application firewall rules
- Firewall authentication
- Flow sessions and gates
- NAT, including:
  - Cone NAT bindings
  - NAT destination rule
  - NAT destination pool
  - NAT IP address in source pool without Port Address Translation (PAT)

    NOTE: IPv6 addresses in IPv6 source pools without PAT are not included in security profiles.

  - NAT IP address in source pool with PAT
  - NAT port overloading
  - NAT source pool
  - NAT source rule
  - NAT static rule

NOTE: All resources except flow sessions are static.

You can modify a logical system security profile dynamically while the security profile is assigned to other logical systems. However, to ensure that the system resource quota is not exceeded, the system takes the following actions:

- If a static quota is changed, system daemons that maintain logical system counts for resources specified in security profiles revalidate the security profile. This check identifies the number of resources assigned across all logical systems to determine whether the allocated resources, including their increased amounts, are available.

  These quota checks are the same quota checks that the system performs when you add a new user logical system and bind a security profile to it. They are also performed when you bind a different security profile from the security profile that is presently assigned to it to an existing user logical system (or the master logical system).

- If a dynamic quota is changed, no check is performed, but the new quota is imposed on future resource usage.

Cases: Assessments of Reserved Resources Assigned Through Security Profiles

To understand how the system assesses allocation of reserved resources through security profiles, consider the following three cases that address allocation of one resource, zones. To keep the example simple, 10 zones are allocated in security-profile-1: 4 reserved zones and 6 maximum zones. This example assumes that the full maximum amount specified–six zones–is available for the user logical systems. The system maximum number of zones is 10.

These cases address configuration across logical systems. They test to see whether a configuration will succeed or fail when it is committed based on allocation of zones.

Table 4 on page 91 shows the security profiles and their zone allocations.

Table 4: Security Profiles Used for Reserved Resource Assessments

Two Security Profiles Used in the Configuration Cases
security-profile-1 • zones reserved quota = 4 • zones maximum quota = 6 **NOTE:** Later the master administrator dynamically increases the reserved zone count specified in this profile.

Table 4: Security Profiles Used for Reserved Resource Assessments *(continued)*

Two Security Profiles Used in the Configuration Cases
master-logical-system-profile • zones maximum quota = 10 • no reserved quota

Table 5 on page 92 shows three cases that illustrate how the system assesses reserved resources for zones across logical systems based on security profile configurations.

- The configuration for the first case succeeds because the cumulative reserved resource quota for zones configured in the security profiles bound to all logical systems is 8, which is less than the system maximum resource quota.
- The configuration for the second case fails because the cumulative reserved resource quota for zones configured in the security profiles bound to all logical systems is 12, which is greater than the system maximum resource quota.
- The configuration for the third case fails because the cumulative reserved resource quota for zones configured in the security profiles bound to all logical systems is 12, which is greater than the system maximum resource quota.

Table 5: Reserved Resource Allocation Assessment Across Logical Systems

Reserved Resource Quota Checks Across Logical Systems
Example 1: Succeeds This configuration is within bounds: 4+4+0=8, maximum capacity =10. Security Profiles Used • The security profile security-profile-1 is bound to two user logical systems: user-logical-system-1 and user-logical-system-2. • The master-logical-system-profile profile is used exclusively for the master logical system. • user-logical-system-1 = 4 reserved zones. • user-logical-system-2 = 4 reserved zones. • master-logical-system = 0 reserved zones.

Table 5: Reserved Resource Allocation Assessment Across Logical Systems *(continued)*

Reserved Resource Quota Checks Across Logical Systems
Example 2: Fails This configuration is out of bounds: 4+4+4=12, maximum capacity =10. • user-logical-system-1 = 4 reserved zones. • user-logical-system-2 = 4 reserved zones. • master-logical-system = 0 reserved zones. • new-user-logical-system = 4 reserved zones. Security Profiles • The security profile security-profile-1 is bound to two user logical systems: user-logical-system-1 and user-logical-system-2. • The master-logical-system-profile is bound to the master logical system and used exclusively for it. • The master administrator configures a new user logical system called new-user-logical-system and binds security-profile-1 to it.
Example 3: Fails This configuration is out of bounds: 6+6=12, maximum capacity =10. The master administrator modifies the reserved zones quota in security-profile-1, increasing the count to 6. • user-logical-system-1 = 6 reserved zones. • user-logical-system-2 = 6 reserved zones. • master-logical-system = 0 reserved zones.

SEE ALSO

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

Understanding the Master Logical Systems and the Master Administrator Role | 45

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Example: Configuring Logical Systems Security Profiles (Master Administrators Only)

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This example shows how a master administrator configures three logical system security profiles to assign to user logical systems and the master logical system to provision them with security resources.

Requirements

The example uses an SRX5600 device running Junos OS with logical systems.

Before you begin, read "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how this task fits into the overall configuration process.

Overview

This example shows how to configure security profiles for the following logical systems:

- The root-logical-system logical system. The security profile master-profile is assigned to the master, or root, logical system.
- The ls-product-design logical system. The security profile ls-design-profile is assigned to the logical system.
- The ls-marketing-dept logical system. The security profile ls-accnt-mrkt-profile is assigned to the logical system.
- The ls-accounting-dept logical system. The security profile ls-accnt-mrkt-profile is assigned to the logical system.
- The interconnect-logical-system, if you use one. You must assign a dummy, or null, security profile to it.

This configuration relies on the deployment shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

Configuration

IN THIS SECTION

- Configuring Logical System Security Profiles | 95

Configuring Logical System Security Profiles

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile master-profile policy maximum 65
set system security-profile master-profile policy reserved 60
set system security-profile master-profile zone maximum 22
set system security-profile master-profile zone reserved 17
set system security-profile master-profile flow-session maximum 3000
set system security-profile master-profile flow-session reserved 2100
set system security-profile master-profile icap-redirect-profile maximum 64
set system security-profile master-profile icap-redirect-profile reserved 30
set system security-profile master-profile nat-nopat-address maximum 115
set system security-profile master-profile nat-nopat-address reserved 100
set system security-profile master-profile nat-static-rule maximum 125
set system security-profile master-profile nat-static-rule reserved 100
set system security-profile master-profile idp
set system security-profile master-profile root-logical-system
set system security-profile ls-accnt-mrkt-profile policy maximum 65
set system security-profile ls-accnt-mrkt-profile policy reserved 60
set system security-profile ls-accnt-mrkt-profile zone maximum 22
set system security-profile ls-accnt-mrkt-profile zone reserved 17
set system security-profile ls-accnt-mrkt-profile flow-session maximum 2500
set system security-profile ls-accnt-mrkt-profile flow-session reserved 2000
set system security-profile master-profile icap-redirect-profile maximum 64
set system security-profile master-profile icap-redirect-profile reserved 30
set system security-profile ls-accnt-mrkt-profile nat-nopat-address maximum 125
set system security-profile ls-accnt-mrkt-profile nat-nopat-address reserved 100
set system security-profile ls-accnt-mrkt-profile nat-static-rule maximum 125
set system security-profile ls-accnt-mrkt-profile nat-static-rule reserved 100
set system security-profile ls-accnt-mrkt-profile logical-system ls-marketing-dept
set system security-profile ls-accnt-mrkt-profile logical-system ls-accounting-dept
```

```
set system security-profile ls-design-profile policy maximum 50
set system security-profile ls-design-profile policy reserved 40
set system security-profile ls-design-profile zone maximum 10
set system security-profile ls-design-profile zone reserved 5
set system security-profile ls-design-profile flow-session maximum 2500
set system security-profile ls-design-profile flow-session reserved 2000
set system security-profile master-profile icap-redirect-profile maximum 64
set system security-profile master-profile icap-redirect-profile reserved 30
set system security-profile ls-design-profile nat-nopat-address maximum 120
set system security-profile ls-design-profile nat-nopat-address reserved 100
set system security-profile ls-design-profile logical-system ls-product-design
set system security-profile interconnect-profile logical-system interconnect-logical-system
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

Create three security profiles.

1. Create the first security profile.
   a. Specify the number of maximum and reserved policies.

      ```
      [edit system security-profile]
      user@host# set master-profile policy maximum 65 reserved 60
      ```

   b. Specify the number of maximum and reserved zones.

      ```
      [edit system security-profile]
      user@host# set master-profile zone maximum 22 reserved 17
      ```

   c. Specify the number of maximum and reserved sessions.

      ```
      [edit system security-profile]
      user@host# set master-profile flow-session maximum 3000 reserved 2100
      ```

   d. Specify the number of maximum and reserved ICAP redirect profiles

      ```
      [edit system security-profile]
      user@host# set master-profile icap-redirect-profile maximum 64 reserved 30
      ```

e. Specify the number of maximum and reserved source NAT no-PAT addresses and static NAT rules.

```
[edit system security-profile]
user@host# set master-profile nat-nopat-address maximum 115 reserved 100
user@host# set master-profile nat-static-rule maximum 125 reserved 100
```

f. Enable intrusion detection and prevention (IDP). You can enable IDP only for the master (root) logical system.

```
[edit system security-profile]
user@host# set idp
```

g. Bind the security profile to the logical system.

```
[edit system security-profile]
user@host# set master-profile root-logical-system
```

2. Create the second security profile.

a. Specify the number of maximum and reserved policies.

```
[edit system security-profile]
user@host# set ls-accnt-mrkt-profile policy maximum 65 reserved 60
```

b. Specify the number of maximum and reserved zones.

```
[edit system security-profile]
user@host# set ls-accnt-mrkt-profile zone maximum 22 reserved 17
```

c. Specify the number of maximum and reserved sessions.

```
[edit system security-profile]
user@host# set ls-accnt-mrkt-profile flow-session maximum 2500 reserved 2000
```

d. Specify the number of maximum and reserved ICAP redirect profiles

```
[edit system security-profile]
user@host# set ls-accnt-mrkt-profile icap-redirect-profile maximum 64 reserved 30
```

e. Specify the number of maximum and reserved source NAT no-PAT addresses.

```
[edit system security-profile]
user@host# set ls-accnt-mrkt-profile nat-nopat-address maximum 125 reserved 100
```

f. Specify the number of maximum and reserved static NAT rules.

```
[edit system security-profile]
user@host# set ls-accnt-mrkt-profile nat-static-rule maximum 125 reserved 100
```

g. Bind the security profile to two logical systems.

```
[edit system]
user@host# set security-profile ls-accnt-mrkt-profile logical-system ls-marketing-dept
user@host# set security-profile ls-accnt-mrkt-profile logical-system ls-accounting-dept
```

3. Create the third security profile.

a. Specify the number of maximum and reserved policies.

```
[edit system security-profile]
user@host# set ls-design-profile policy maximum 50 reserved 40
```

b. Specify the number of maximum and reserved zones.

```
[edit system security-profile]
user@host# set ls-design-profile zone maximum 10 reserved 5
```

c. Specify the number of maximum and reserved sessions.

```
[edit system security-profile]
user@host# set ls-design-profile flow-session maximum 2500 reserved 2000
```

d. Specify the number of maximum and reserved ICAP redirect profiles

```
[edit system security-profile]
user@host# setls-design-profile icap-redirect-profile maximum 64 reserved 30
```

e. Specify the number of maximum and reserved source NAT no-PAT addresses.

```
[edit system security-profile]
user@host# set ls-design-profile nat-nopat-address maximum 120 reserved 100
```

4. Bind the security profile to a logical system.

```
user@host# set system security-profile ls-design-profile logical-system ls-product-design
```

5. Bind a null security profile to the interconnect logical system.

```
user@host# set system security-profile interconnect-profile logical-system interconnect-logical-system
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile** command to see all security profiles configured.

To see individual security profiles, enter the **show system security-profile master-profile**, the **show system security-profile ls-accnt-mrkt-profile** and, the **show system security-profile ls-design-profile** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show system security-profile
   interconnect-profile {
      logical-system interconnect-logical-system;
   }
      ls-accnt-mrkt-profile {
         policy {
            maximum 65;
            reserved 60;
         }
         zone {
            maximum 22;
            reserved 17;
         }
         flow-session {
            maximum 2500;
            reserved 2000;
         }
         icap-redirect-profile {
            maximum 64;
```

```
            reserved 30;
        }
        nat-nopat-address {
            maximum 125;
            reserved 100;
        }
        nat-static-rule {
            maximum 125;
            reserved 100;
        }
        logical-system [ ls-marketing-dept ls-accounting-dept ];
    }
    ls-design-profile {
        policy {
            maximum 50;
            reserved 40;
        }
        zone {
            maximum 10;
            reserved 5;
        }
        flow-session {
            maximum 2500;
            reserved 2000;
        }
        icap-redirect-profile {
            maximum 64;
            reserved 30;
        }
        nat-nopat-address {
            maximum 120;
            reserved 100;
        }
        nat-static-rule {
            maximum 125;
            reserved 100;
        }
        logical-system ls-product-design;
    }
    master-profile {
        policy {
            maximum 65;
            reserved 60;
        }
```

```
        zone {
            maximum 22;
            reserved 17;
        }
        flow-session {
            maximum 3000;
            reserved 2100;
        }
        icap-redirect-profile {
            maximum 64;
            reserved 30;
        }
        nat-nopat-address {
            maximum 115;
            reserved 100;
        }
        nat-static-rule {
            maximum 125;
            reserved 100;
        }
        root-logical-system;
    }
```

```
user@host# show system security-profile master-profile
    policy {
        maximum 65;
        reserved 60;
        }
        zone {
            maximum 22;
            reserved 17;
        }
        flow-session {
            maximum 3000;
            reserved 2100;
        }
        icap-redirect-profile {
            maximum 64;
            reserved 30;
        }
        nat-nopat-address {
            maximum 115;
            reserved 100;
        }
```

```
        nat-static-rule {
            maximum 125;
            reserved 100;
        }
    root-logical-system;
```

```
user@host# show system security-profile ls-accnt-mrkt-profile
    policy {
        maximum 65;
        reserved 60;
        }
        zone {
            maximum 22;
            reserved 17;
        }
        flow-session {
            maximum 2500;
            reserved 2000;
        }
        icap-redirect-profile {
            maximum 64;
            reserved 30;
        }
        nat-nopat-address {
            maximum 125;
            reserved 100;
        }
        nat-static-rule {
            maximum 125;
            reserved 100;
        }
    logical-system [ ls-accounting-dept ls-marketing-dept ];
```

```
user@host# show system security-profile ls-design-profile
    policy {
        maximum 50;
        reserved 40;
        }
        zone {
            maximum 10;
            reserved 5;
        }
        flow-session {
```

```
        maximum 2500;
        reserved 2000;
    }
    icap-redirect-profile {
        maximum 64;
        reserved 30;
    }
    nat-nopat-address {
        maximum 120;
        reserved 100;
    }
    nat-static-rule {
        maximum 125;
        reserved 100;
    }
logical-system ls-product-design;
```

If you are done configuring the device, enter commit from configuration mode.

Verification

IN THIS SECTION

- Verifying That Security Profile Resources Are Effectively Allocated for Logical Systems | **103**

To confirm that the security resources that you allocated for logical systems have been assigned to them, follow this procedure for each logical system and for all its resources.

Verifying That Security Profile Resources Are Effectively Allocated for Logical Systems

Purpose

Verify security resources for each logical system. Follow this process for all configured logical systems.

Action

1. Use SSH to log in to each user logical system as its user logical system administrator.

   Run SSH, specifying the IP address of your SRX Series device.

2. Enter the login ID and password for one of the user logical systems that you created.

```
login: lsmarketingadmin1
password: Talk2345
lsmarketingadmin1@host:ls-marketing-dept>
```

3. Enter the following statement to identify the resources configured for the profile.

```
lsmarketingadmin1@host:ls-marketing-dept> show system security-profile ?
```

4. Enter the following command at the resulting prompt. Do this for each feature configured for the profile.

```
lsmarketingadmin1@host:ls-marketing-dept> show system security-profile zone detail
logical system name : ls-marketing-dept
security profile name : ls-accnt-mrkt-profile
used amount : 0
reserved amount : 17
maximum quota : 22
```

SEE ALSO

- Understanding Logical Systems Security Profiles (Master Administrators Only) | 88
- Understanding the Master Logical Systems and the Master Administrator Role | 45
- Understanding User Logical Systems and the User Logical System Administrator Role | 73

Example: Configuring User Logical Systems Security Profiles

IN THIS SECTION

- Requirements | 105
- Overview | 105
- Configuration | 106
- Verification | 109

In this example, you configure the user logical systems security profiles. It provides the information about a resource allocated to the logical system in a security profile.

NOTE:

- SRX4100 and SRX4200 devices support logical system in both transparent and route mode.
- SRX4600 device supports logical system in route mode only.
- Layer 2 cross logical system traffic is not supported.

Requirements

This example uses an SRX4100 and SRX4200 devices running Junos OS with logical systems.

Before you begin:

- Understand the logical system configuration process. See "User Logical Systems Configuration Overview" on page 71 to understand how this task fits into the overall configuration process.

Overview

Logical systems allow a master administrator to partition an SRX Series device into discrete contexts called user logical systems. User logical systems are self-contained, private contexts, separate both from one another and from the master logical system. A user logical system has its own security, networking, logical interfaces, routing configurations, and one or more user logical system administrators.

In this example, you configure security features for the user logical system described in Table 6 on page 106. This configuration used by the user logical system administrator to display resource information for a user logical system.

Table 6: Resource Information for a User Logical System

Field Name	Field Description
MAC flags	Status of MAC address learning properties for each interface: • **S**—Static MAC address is configured • **D**—Dynamic MAC address is configured • **L**—Locally learned MAC address is configured • **P**—Persistent static • **C**—Control MAC • **SE**—MAC accounting is enabled • **NM**—Non-configured MAC • **R**—Locally learned MAC address is configured • **O**—Open vSwitch Database (OVSDB) MAC
Ethernet switching table	For learned entries, the time at which the entry was added to the Ethernet switching table.
Logical system	Name of the logical system
Routing instance	Name of the routing instance
VLAN name	Name of the VLAN
MAC address	MAC address or addresses learned on a logical interface
Age	This field is not supported
Logical interface	Name of the logical interface
RTR ID	ID of the routing device
NH Index	Software index of the next hop that is used to route the traffic for a given prefix.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile security-profile-name logical-system logical-system-name
set logical-systems logical-system-name interfaces xe-0/0/0 unit 0 family ethernet-switching interface-mode
    access
set logical-systems logical-system-name interfaces xe-0/0/0 unit 0 family ethernet-switching vlan members
    VLAN100
set logical-systems logical-system-name interfaces xe-0/0/1 unit 0 family ethernet-switching interface-mode
    access
set logical-systems logical-system-name interfaces xe-0/0/1 unit 0 family ethernet-switching vlan members
    VLAN100
set logical-systems logical-system-name interfaces xe-0/0/2 unit 0 family ethernet-switching interface-mode
    trunk
set logical-systems logical-system-name interfaces xe-0/0/2 unit 0 family ethernet-switching vlan members
    VLAN200
set logical-systems logical-system-name interfaces xe-0/0/1.0 unit 0 family ethernet-switching interface-mode
    trunk
set logical-systems logical-system-name interfaces xe-0/0/2.0 unit 0 family ethernet-switching vlan members
    vlan200
set logical-systems logical-system-name interfaces irb unit 22 family inet address 10.11.11.150/24
set logical-systems logical-system-name security policies default-policy permit-all
set logical-systems logical-system-name security zones security-zone trust host-inbound-traffic system-services
    all
set logical-systems logical-system-name security zones security-zone trust host-inbound-traffic protocols all
set logical-systems logical-system-name security zones security-zone trust interfaces xe-0/0/2.0
set logical-systems logical-system-name security zones security-zone untrust host-inbound-traffic system-services
    all
set logical-systems logical-system-name security zones security-zone untrust host-inbound-traffic protocols
    all
set logical-systems logical-system-name security zones security-zone untrust interfaces xe-0/0/2.0
set logical-systems logical-system-name security zones security-zone untrust interfaces xe-0/0/3.0
set logical-systems logical-system-name vlans VLAN100 vlan-id 100
set logical-systems logical-system-name vlans VLAN100 l3-interface irb.22
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure user logical systems security profiles:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
[edit]
admin@host> configure
admin@host#
```

2. Configure a security profile and assign it to a logical-system.

```
[edit system security-profile ]
admin@host# set system security-profile security-profile-name logical-system
```

3. Set the interfaces to the appropriate interface modes and specify that the logical interface that will receive the untagged data packets is a member of the native VLAN.

```
[edit logical-systems]
admin@host#set logical-systems logical-system-name interfaces xe-0/0/0 unit 0 family ethernet-switching
   interface-mode access
admin@host# set logical-systems logical-system-name interfaces xe-0/0/2 unit 0 family ethernet-switching
   vlan members VLAN100
admin@host#set logical-systems logical-system-name interfaces xe-0/0/1 unit 0 family ethernet-switching
   interface-mode access
admin@host# set logical-systems logical-system-name interfaces xe-0/0/3 unit 0 family ethernet-switching
   vlan members VLAN100
admin@host#set logical-systems logical-system-name interfaces xe-0/0/2 unit 0 family ethernet-switching
   interface-mode trunk
admin@host#set logical-systems logical-system-name interfaces xe-0/0/2 unit 0 family ethernet-switching
   vlan members VLAN100
admin@host#set logical-systems logical-system-name interfaces xe-0/0/1.0 unit 0 family ethernet-switching
   interface-mode trunk
admin@host#set logical-systems logical-system-name interfaces xe-0/0/2.0 unit 0 family ethernet-switching
   vlan members vlan200
```

4. Create the IRB interface and assign it an address in the subnet.

```
[edit interface]
admin@host# set interfaces irb unit 22 family inet address 10.11.11.150/24
```

5. Create the security policy to permit traffic from the trust zone to the untrust zone and assign interfaces to each zone.

```
[edit security policies]
admin@host# set security policies default-policy permit-all
admin@host# set security zones security-zone trust host-inbound-traffic system-services all
admin@host# set security zones security-zone trust host-inbound-traffic protocols all
admin@host# set security zones security-zone trust interfaces xe-0/0/2.0
admin@host# set security zones security-zone untrust host-inbound-traffic system-services all
admin@host# set security zones security-zone untrust host-inbound-traffic protocols all
```

```
admin@host# set security zones security-zone untrust interfaces xe-0/0/2.0
admin@host# set security zones security-zone untrust interfaces xe-0/0/3.0
```

6. Associate an IRB interface with the VLAN.

```
[edit logical-systems]
admin@host# set logical-systems logical-system-name vlans VLAN100 vlan-id 100
admin@host# set logical-systems logical-system-name vlans VLAN100 l3-interface irb.22
```

Results

From configuration mode, confirm your configuration by entering the **show ethernet-switching table** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
admin@host# show ethernet-switching table
ethernet-switching table {
    filter;
    inner-vlan;
    inter-switch-link;
    interface-mode;
    policer;
    recovery-timeout;
    storm-control;
    vlan;
    vlan-auto-sense;
    vlan-rewrite;
}
```

Verification

IN THIS SECTION

- Verifying User Logical Systems Security Profiles Configuration | **110**

To confirm that the configuration is working properly, perform these tasks:

Verifying User Logical Systems Security Profiles Configuration

Purpose

Verify security policies information.

Action

From operational mode, enter the **show ethernet-switching table** command.

admin@host> **show ethernet-switching table**

```
MAC flags (S - static MAC, D - dynamic MAC, L - locally learned, P - Persistent
static, C - Control MAC
          SE - statistics enabled, NM - non configured MAC, R - remote PE MAC, O
 - ovsdb MAC)


Ethernet switching table : 1 entries, 1 learned
Logical system   : LD2
Routing instance : default
    Vlan                MAC                 MAC         Age    Logical
     NH        RTR
    name                address             flags              interface
     Index     ID
    VLAN100             d4:04:ff:89:fd:30   D             -    xe-0/0/2.0
    0         0
```

Example: Configuring Security log stream for Logical Systems

IN THIS SECTION

- Requirements | **111**
- Overview | **111**
- Configuration | **111**
- Verification | **112**

This example shows how to configure a security profiles for a logical system.

Requirements

This example uses the SRX Series devices running Junos OS with logical systems.

Before you begin:

- Read "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how this task fits into the overall configuration process.
- See "Example: Configuring Logical Systems Security Profiles (Master Administrators Only)" on page 94.

Overview

As master administrator, you can configure a single security profile to assign resources to a specific logical system. Yo can use the same security profile for more than one logical system, or use a mix of both methods. The **set logical-system LSYS1 security log** command is introduced for logging support on SRX Series devices.

Configuration

IN THIS SECTION

- Configuring Logical System Security Profiles logical-system | **111**
- Results | **112**

Configuring Logical System Security Profiles logical-system

CLI Quick Configuration

To quickly configure this example this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile p1 security-log-stream-number reserved 1
set system security-profile p1 security-log-stream-number maximum 2
set system security-profile p1 logical-system LSYS1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Configure a security profile and specify the number of maximum and reserved policies..

```
[edit system]
user@host# set security-profile p1 security-log-stream-number reserved 1
user@host# set security-profile p1 security-log-stream-number maximum 2
```

2. Assign the configured security profile to LSYS1.

```
user@host# set security-profile p1 logical-system LSYS1
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile** command to see all security profiles configured.

```
[edit]
user@host# show system security-profile
p1 {
   security-log-stream-number {
      maximum 2;
      reserved 1;
   }
   logical-system LSYS1;
}
```

Verification

IN THIS SECTION

- Verifying Security Profile Resources for Logical Systems | **113**
- Verifying security-log-stream-number for logical-systems | **114**
- Verifying security-log-stream-number summary for logical-systems | **114**
- Verifying security-log-stream-number detail for logical-systems | **115**

To confirm that the configuration is working properly, perform the below tasks:

Verifying Security Profile Resources for Logical Systems

Purpose

Verify the security resources for each logical system.

Action

From operational mode, enter the **show system security-profile all-resource**, **show system security-profile security-log-stream-number logical-system all**, **show system security-profile security-log-stream-number summary**, or **show system security-profile security-log-stream-number detail logical-system all** command to see the output:

show system security-profile all-resource

```
user@host> show system security-profile all-resource
```

```
resource                                usage    reserved     maximum
[logical system name:   root-logical-system]
[security profile name: Default-Profile]
address-book                                0           0         512
auth-entry                                  0           0  2147483647
cpu on CP                                0.00%       1.00%      80.00%
cpu on SPU                               0.00%       1.00%      80.00%
flow-gate                                   0           0      524288
flow-session                                2           0     6291456
nat-cone-binding                            0           0       65536
nat-destination-pool                        0           0        4096
nat-destination-rule                        0           0        8192
nat-nopat-address                           0           0     1048576
nat-pat-address                             0           0        2048
nat-port-ol-ipnumber                        0           0           4
nat-rule-referenced-prefix                  0           0     1048576
nat-source-pool                             0           0        2048
nat-source-rule                             0           0        8192
nat-static-rule                             0           0       20480
policy                                      0           0       40000
policy-with-count                           0           0        1024
scheduler                                   0           0          64
zone                                        0           0         512
```

Meaning

The sample outputs displays information about the resources allocated to the logical system in a security profile. For each resource specified, the number used by the logical system and the configured maximum and reserved values are displayed.

Verifying security-log-stream-number for logical-systems

Purpose

Verify the security-log-stream-number for each logical system.

Action

From operational mode, enter the **show system security-profile security-log-stream-number logical-system all** command to see the output:

show system security-profile security-log-stream-number logical-system all

```
user@host> show system security-profile security-log-stream-number logical-system all
```

```
logical system name   security profile name       usage    reserved     maximum
root-logical-system   Default-Profile                1          0           3
LSYS1                 sp1                            0          1           3
LSYS2                 sp2                            1          0           3
```

Meaning

The sample output displays the information about a resource allocated to the logical system in a security profile with security profile name. For each resource specified, the number used by the logical system and the configured maximum and reserved values are displayed.

Verifying security-log-stream-number summary for logical-systems

Purpose

Verify the security-log-stream-number summary.

Action

From operational mode, enter the **show system security-profile security-log-stream-number summary** command to see the output:

show system security-profile security-log-stream-number summary

```
user@host> show system security-profile security-log-stream-number summary
```

```
global used amount      : 0
global maximum quota    : 32
global available amount : 32
```

```
total logical systems   : 1
total security profiles : 0
heaviest usage / user   : 0     / root-logical-system
lightest usage / user   : 0     / root-logical-system
```

Meaning

The sample output displays the summary information about the resource for all logical systems.

Verifying security-log-stream-number detail for logical-systems

Purpose

Verify the security-log-stream-number detail.

Action

From operational mode, enter the **show system security-profile security-log-stream-number detail logical-system all** command to see the output:

show system security-profile security-log-stream-number detail logical-system all

`user@host>` **show system security-profile security-log-stream-number detail logical-system all**

```
logical system name     : root-logical-system
security profile name   : Default-Profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8
logical system name     : lsys0
security profile name   : lsys_profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8
logical system name     : lsys1
security profile name   : lsys_profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8
logical system name     : lsys2
security profile name   : lsys_profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8
```

Meaning

The sample output displays the detailed level of output for all logical systems.

SEE ALSO

security-profile-resources | 809

CPU Allocation for Logical Systems

IN THIS SECTION

- Understanding CPU Allocation and Control | 116
- Example: Configuring CPU Utilization (Master Administrators Only) | 121

The CPU allocation for logical systems assign the reserved CPU resources to a logical system used to calculate the amount of CPU usage based on the runtime utilization. For more information, see the following topics:

Understanding CPU Allocation and Control

IN THIS SECTION

- CPU Control | 117
- Reserved CPU Utilization Quota for Logical Systems | 117
- CPU Control Target | 118
- Shared CPU Resources and CPU Quotas | 119
- Monitoring CPU Utilization | 120

When device CPU utilization is low, logical systems can acquire and use CPU resources above their allocated reserve quotas as long as the system-wide utilization remains within a stable range. CPU utilization on a device should never reach 100 percent because a device running at 100 percent CPU utilization might be slow to respond to management or system events or be unable to handle traffic bursts.

CPU resources are used on a first-come first-served basis. Without controls, logical systems can compete for CPU resources and drive CPU utilization up to 100 percent. You cannot rely on the configuration of static resources, such as security policies and zones, to directly control CPU usage because a logical system with small numbers of static resources allocated could still consume a large amount of CPU. Instead, the master administrator can enable CPU resource control and configure CPU utilization parameters for logical systems.

> **NOTE:** Only the master administrator can enable CPU control and configure CPU utilization parameters. User logical system administrators can use the **show system security-profile cpu** command to view CPU utilization for their logical systems.

This topic includes the following sections:

CPU Control

The master administrator enables CPU control with the **cpu-control** configuration statement at the [**edit system security-profile resources**] hierarchy level.

> **NOTE:** The **resources** security profile is a special security profile that contains global settings that apply to all logical systems in the device. Other security profiles configured by the master administrator are bound to specific logical systems.

When CPU control is enabled, the master administrator can then configure the following CPU utilization parameters:

- A reserved CPU quota is the percentage of CPU utilization that is guaranteed for a logical system.
- The CPU control target is the upper limit, in percent, for system-wide CPU utilization on the device under normal operating conditions.

Reserved CPU Utilization Quota for Logical Systems

A configured reserved CPU quota guarantees that a specified percentage of CPU is always available to a logical system. During runtime, CPU utilization by each logical system is measured every two seconds. The

reserved CPU quota is used to calculate the amount of CPU each logical system can use based on the runtime utilization.

The master administrator specifies the reserved CPU quota in a logical system security profile with the **cpu reserved** configuration statement at the [**edit system security-profile** *profile-name*] hierarchy level. The security profile is bound to one or more logical systems. Unlike other resources that are allocated to a logical system in a security profile, no maximum allowed quota can be configured for CPU utilization.

The Junos OS software checks to ensure that the sum of reserved CPU quotas for all logical systems on the device is less than 90 percent of the CPU control target value. If CPU control is enabled and reserved CPU quotas are not configured, the default reserved CPU quota for the master logical system is 1 percent and the default reserved CPU quota for user logical systems is 0 percent. The master administrator can configure reserved CPU quotas even if CPU control is not enabled. The master administrator can enable or disable CPU control without changing security profiles.

CAUTION: The master logical system must not be bound to a security profile that is configured with a 0 percent reserved CPU quota because traffic loss could occur.

CPU Control Target

CPU control target is the upper limit, in percent, for CPU utilization on the device under normal operating conditions. If CPU utilization on the device surpasses the configured target value, the Junos OS software initiates controls to bring CPU utilization between the target value and 90 percent of the target value. For example, if the CPU control target value is 80 and CPU utilization on the device surpasses 80 percent, then controls are initiated to bring CPU utilization within the range of 72 (90 percent of 80) and 80 percent.

During runtime, CPU utilization by each logical system is measured every two seconds. Dropping packets reduces the CPU usage for a logical system. If the CPU usage of a logical system exceeds its quota, CPU utilization control drops the packets received on that logical system. The packet drop rate is calculated every two seconds based on CPU utilization of all logical systems.

The master administrator configures the CPU control target with the **cpu-control-target** configuration statement at the [**edit system security-profile resources**] hierarchy level. A stable level of CPU utilization should be relatively close to 100 percent but allow for bursts in CPU utilization. The master administrator should configure the CPU control target level based on an understanding of the usage pattern of the logical system's deployment on the device.

CPU control must be enabled for the Junos OS software to control CPU usage. If the master administrator enables CPU control without specifying a CPU control target value, the default CPU control target is 80 percent.

Shared CPU Resources and CPU Quotas

The sum of the reserved CPU quotas for all logical systems on the device must be less than 90 percent of the CPU control target; the difference is called the shared CPU resource. The shared CPU resource is dynamically allocated among the logical systems that need additional CPU. This means that a logical system can use more CPU than its reserved CPU quota.

The CPU quota for a logical system is the sum of its reserved CPU quota and its portion of the shared CPU resource. If multiple logical systems need more CPU resources, they split the shared CPU resource based on the relative weights of their reserved CPU quotas. Logical systems with larger reserved CPU quotas receive larger portions of the shared CPU resource. The goal for CPU control is to keep the actual CPU utilization of a logical system at its CPU quota. If a logical system's CPU needs are greater than its CPU quota, packets are dropped for that logical system.

The following scenarios illustrate CPU control for logical systems. In each scenario, the CPU control target value is 80, which means that CPU controls will keep the maximum system-wide CPU utilization between 72 and 80 percent. The reserved CPU quotas for the logical systems are configured as follows: master and lsys1 logical systems are 10 percent each and the lsys2 logical system is 5 percent.

CPU Utilization Scenario 1

In this scenario, each of the three logical systems needs 40 percent of CPU. Table 7 on page 119 shows the CPU quotas for each logical system. Because the CPU needed by each logical system is greater than its CPU quota, packets are dropped for each logical system.

Table 7: CPU Utilization Scenario 1

Logical System	Needed CPU	CPU Quotas	Packets Dropped?
master	40%	28.8%	Yes
lsys1	40%	28.8%	Yes
lsys2	40%	14.4%	Yes

CPU Utilization Scenario 2

In this scenario, the master logical system needs 25 percent of CPU while the two user logical systems need 40 percent. Table 8 on page 119 shows the CPU quota for the master logical system is equal to the CPU it needs, so no packets are dropped for the master logical system and CPU control monitors the CPU utilization of the master logical system. Packets are dropped for lsys1 and lsys2.

Table 8: CPU Utilization Scenario 2

Logical System	Needed CPU	CPU Quotas	Packets Dropped?
master	25%	25%	No

Table 8: CPU Utilization Scenario 2 *(continued)*

Logical System	Needed CPU	CPU Quotas	Packets Dropped?
lsys1	40%	31.3%	Yes
lsys2	40%	15.6%	Yes

CPU Utilization Scenario 3

In this scenario, the master and lsys2 logical systems need 5 percent and 3 percent of CPU, respectively, while lsys1 needs 40 percent. Table 9 on page 120 shows system-wide CPU utilization is 48 percent, which is less than 72 percent (90 percent of the CPU control target), so no packets are dropped and CPU control monitors all logical systems.

Table 9: CPU Utilization Scenario 3

Logical System	Needed CPU	CPU Quota	Packets Dropped?
master	5%	5%	No
lsys1	40%	40%	No
lsys2	3%	3%	No

Monitoring CPU Utilization

CPU utilization can be monitored by either the master administrator or the user logical system administrators. The master administrator can monitor CPU utilization for the master logical system, a specified user logical system, or all logical systems. User logical system administrators can only monitor CPU utilization for their logical system.

The **show system security-profile cpu** command shows the usage and drop rate in addition to the reserved CPU quota configured for the logical system. During runtime, CPU utilization by each logical system is measured every two seconds. The usage and drop rates displayed are the values at the interval prior to when the **show** command is run. If the **detail** option is not specified, the utilization of the central point (CP) and the average utilization of all services processing units (SPUs) is shown. The **detail** option displays the CPU utilization on each SPU.

The CPU utilization log file **lsys-cpu-utilization-log** contains utilization data for all logical systems on the device. Only the master administrator can view the log file with the **show log lsys-cpu-utilization-log** command.

SEE ALSO

Example: Configuring CPU Utilization (Master Administrators Only) | 121
Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Example: Configuring CPU Utilization (Master Administrators Only)

IN THIS SECTION

- Requirements | 121
- Overview | 121
- Configuration | 122
- Verification | 124

The master administrator can enable CPU control and configure CPU utilization parameters. This example shows how to enable CPU utilization control and configure CPU utilization quotas and a control target.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.
- Bind security profiles to the master logical system and user logical systems configured on the device. See "Example: Configuring Logical Systems Security Profiles (Master Administrators Only)" on page 94.

Overview

In this example, you enable CPU control and set the CPU control target to be 85 percent. You allocate reserved CPU quotas to the logical systems shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76. The logical systems are bound to the security profiles shown in Table 10 on page 121 and are assigned the reserved CPU quotas in the security profiles.

Table 10: Logical Systems, Security Profiles, and Reserved CPU Quotas

Logical System	Security Profile	Reserved CPU Quotas
root-logical-system (master)	master-profile	2 percent

Table 10: Logical Systems, Security Profiles, and Reserved CPU Quotas *(continued)*

Logical System	Security Profile	Reserved CPU Quotas
ls-product-design	ls-design-profile	2 percent
ls-marketing-dept, ls-accounting-dept	ls-accnt-mrkt-profile	1 percent

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile resources cpu-control
set system security-profile resources cpu-control-target 85
set system security-profile master-profile cpu reserved 2
set system security-profile ls-design-profile cpu reserved 2
set system security-profile ls-accnt-mrkt-profile cpu reserved 1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure CPU utilization control parameters:

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
[edit]
admin@host> configure
admin@host#
```

2. Enable CPU control.

```
[edit system security-profile resources]
admin@host# set cpu-control
```

3. Configure the CPU control target.

```
[edit system security-profile resources]
```

```
admin@host# set cpu-control-target 85
```

4. Configure the reserved CPU quotas in the security profiles.

```
[edit system]
admin@host# set security-profile security-profile master-profile cpu reserved 2
admin@host# set security-profile security-profile ls-design-profile cpu reserved 2
admin@host# set security-profile security-profile ls-accnt-mrkt-profile cpu reserved 1
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile** command. If the output does not display the intended configuration, repeat the \ instructions in this example to correct the configuration.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
admin@host# show system security-profile
   resources {
      cpu-control;
      cpu-control-target 85;
   }
      ls-accnt-mrkt-profile {
         ...
         cpu {
            reserved 1;
         }
         logical-system [ ls-marketing-dept ls-accounting-dept ];
      }
      ls-design-profile {
         ...
         cpu {
            reserved 2;
         }
         logical-system ls-product-design;
      }
      master-profile {
         ...
         cpu {
            reserved 2;
         }
```

```
        logical-system root-logical-system;
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying CPU Utilization | **124**

Confirm that the configuration is working properly.

Verifying CPU Utilization

Purpose

Display the configured reserved CPU quota, the actual CPU usage, and the drop rate.

Action

From operational mode, enter the **show system security-profile cpu logical-system all** command.

```
admin@host> show system security-profile cpu logical-system all
```

```
CPU control: TRUE
CPU control target: 85.00%
logical system name    profile name    CPU name    usage(%)    reserved(%)    drop
 rate(%)
root-logical-system    master-profile CP             0.10%          2.00%
    0.00%
root-logical-system    master-Profile SPU            0.25%          2.00%
    0.00%
ls-product-design      ls-design-profile CP          0.53%          2.00%
    0.00%
ls-product-design      ls-design-profile SPU         0.26%          2.00%
    0.00%
ls-marketing-dept      ls-acct-mrkt-profile CP       0.10%          1.00%
    0.00%
ls-marketing-dept      ls-acct-mrkt-profile SPU      0.15%          1.00%
    0.00%
ls-accounting-dept     ls-acct-mrkt-profile CP       0.23%          1.00%
```

```
    0.00%
ls-accounting-dept     ls-acct-mrkt-profile SPU       0.34%          1.00%
    0.00%
```

SEE ALSO

Understanding CPU Allocation and Control | 116

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Routing and Interfaces for Master Logical Systems

IN THIS SECTION

- Understanding Logical Systems Interfaces and Routing Instances | 125
- Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only) | 127
- Example: Configuring OSPF Routing Protocol for the Master Logical Systems | 137

Logical systems enables you to configure the interfaces, routing instances and the routing protocol. The master logical system administrator can display or clear the routing protocol parameters for all logical systems whereas the administrator for the user logical system can display or clear the protocol parameters for their own logical system. For more information, see the following topics:

Understanding Logical Systems Interfaces and Routing Instances

Logical interfaces on the device are allocated among the user logical systems by the master administrator. The user logical system administrator configures the attributes of the interfaces, including IP addresses, and assigns them to routing instances and zones.

A routing instance is a collection of routing tables, interfaces, and routing protocol parameters. There can be multiple routing tables for a single routing instance—for example, unicast IPv4, unicast IPv6, and multicast

IPv4 routing tables can exist in a single routing instance. Routing protocol parameters and options control the information in the routing tables.

Interfaces and routing instances can be configured in the master logical system and in user logical systems. Configuring an interface or routing instance in a logical system is the same as configuring an interface or routing instance on a device that is not configured for logical systems. Any routing instance created within a logical system is only applicable to that logical system.

The default routing instance, master, refers to the main inet.0 routing table in the logical system. The master routing instance is reserved and cannot be specified as a routing instance. Routes are installed in the master routing instance by default, unless a routing instance is specified. Configure global routing options and protocols for the master routing instance by including statements at the [**edit protocols**] and [**edit routing-options**] hierarchy levels in the logical system.

You can configure only virtual router routing instance type in a user logical system. Only one virtual private LAN service (VPLS) routing instance type can be configured on the device and it must be in the interconnect logical system.

The user logical system administrator can configure and view all attributes for an interface or routing instance in a user logical system. All attributes of an interface or routing instance in a user logical system are also visible to the master administrator.

Multicast is a “one source, many destinations” method of traffic distribution, which means the destinations needing to receive the information from a particular source receive the traffic stream. The master and user logical system administrators can configure a logical system to support multicast applications. The same multicast configurations to configure a device as a node in a multicast network can be used in a logical system.

SEE ALSO

Example: Configuring Interfaces and Routing Instances for a User Logical Systems | **147**

User Logical Systems Configuration Overview | **71**

Understanding User Logical Systems and the User Logical System Administrator Role | **73**

Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only)

IN THIS SECTION

- Requirements | 127
- Overview | 127
- Configuration | 129
- Verification | 136

This topic covers configuration of interfaces, static routes, and routing instances for the master and interconnect logical systems. It also covers configuration of logical tunnel interfaces for user logical systems.

Requirements

The example uses an SRX5600 device running Junos operating system (Junos OS) with logical systems.

Before you begin:

- Read "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how and where this procedure fits in the overall master administrator configuration process.
- Read "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76
- Understanding the Interconnect Logical System and Logical Tunnel Interfaces on page 35

Overview

This scenario shows how to configure interfaces for the logical systems on the device, including an interconnect logical system.

- For the interconnect logical system, the example configures logical tunnel interfaces lt-0/0/0.0, lt-0/0/0.2, lt-0/0/0.4, and lt-0/0/0.6. The example configures a routing instance called vr-ic and assigns the interfaces to it.

  Because the interconnect logical system acts as a virtual switch, it is configured as a virtual private LAN service (VPLS) routing instance type. The interconnect logical system's lt-0/0/0 interfaces are configured

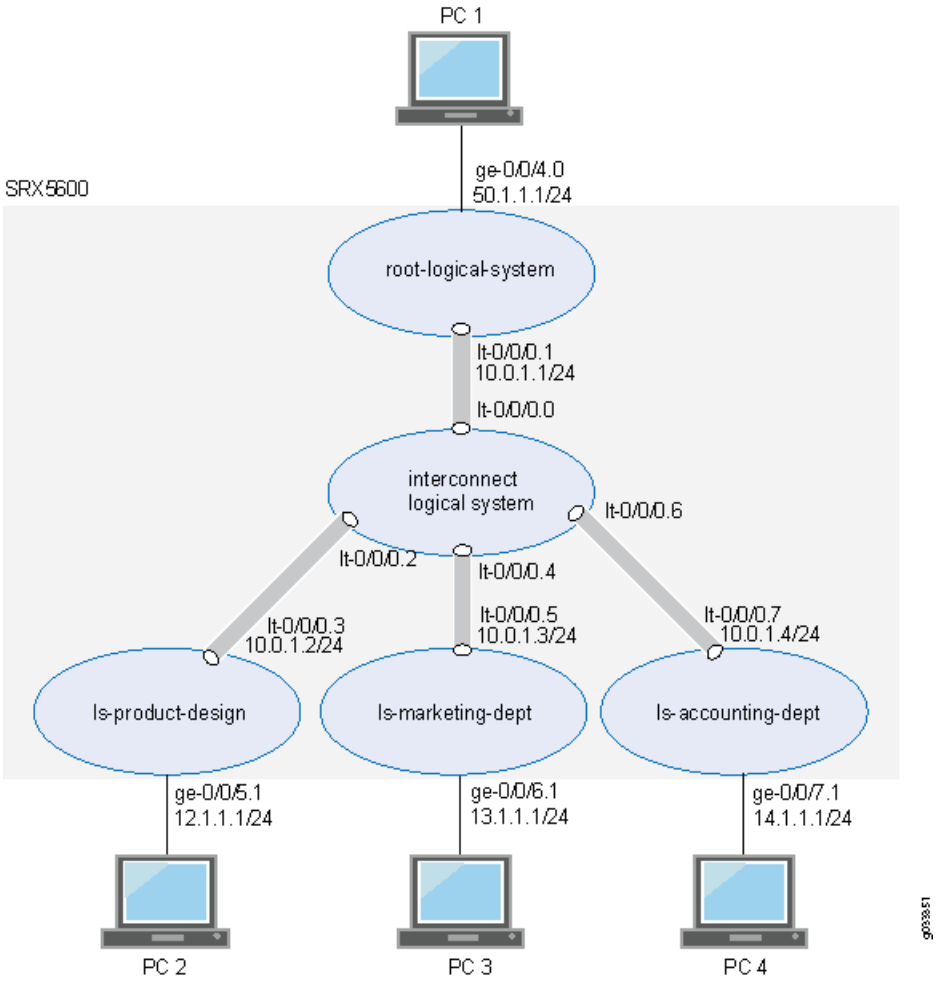
with ethernet-vpls as the encapsulation type. The corresponding peer lt-0/0/0 interfaces in the master and user logical systems are configured with Ethernet as the encapsulation type.

  - lt-0/0/0.0 connects to lt-0/0/0.1 on the root logical system.
  - lt-0/0/0.2 connects to lt-0/0/0.3 on the ls-product-design logical system.
  - lt-0/0/0.4 connects to lt-0/0/0.5 on the ls-marketing-dept logical system.
  - lt-0/0/0.6 connects to lt-0/0/0.7 on the ls-accounting-dept logical system.

- For the master logical system, called root-logical-system, the example configures ge-0/0/4.0 and assigns it to the vr1-root routing instance. The example configures lt-0/0/0.1 to connect to lt-0/0/0.0 on the interconnect logical system and assigns it to the vr1-root routing instance. The example configures static routes to allow for communication with other logical systems and assigns them to the vr1-root routing instance.
- For the ls-product-design logical system, the example configures lt-0/0/0.3 to connect to lt-0/0/0.2 on the interconnect logical system.
- For the ls-marketing-dept logical system, the example configures lt-0/0/0.5 to connect to lt-0/0/0.4 on the interconnect logical system.
- For the ls-accounting-dept logical system, the example configures lt-0/0/0.7 to connect to lt-0/0/0.6 on the interconnect logical system.

Figure 6 on page 129 shows the topology for this deployment including virtual routers and their interfaces for all logical systems.

Figure 6: Configuring Logical Tunnel Interfaces, Logical Interfaces, and Virtual Routers



Configuration

IN THIS SECTION

- Configuring Logical Tunnel Interfaces and a Routing Instance for the Interconnect Logical System | **130**
- Configuring Interfaces, a Routing Instance, and Static Routes for the Master Logical System | **132**
- Configuring Logical Tunnel Interfaces for the User Logical Systems | **134**

This topic explains how to configure interfaces for logical systems.

Configuring Logical Tunnel Interfaces and a Routing Instance for the Interconnect Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 0 encapsulation ethernet-vpls
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 0 peer-unit 1
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 2 encapsulation ethernet-vpls
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 2 peer-unit 3
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 4 encapsulation ethernet-vpls
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 4 peer-unit 5
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 6 encapsulation ethernet-vpls
set logical-systems interconnect-logical-system interfaces lt-0/0/0 unit 6 peer-unit 7
set logical-systems interconnect-logical-system routing-instances vr-ic instance-type vpls
set logical-systems interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.0
set logical-systems interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.2
set logical-systems interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.4
set logical-systems interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.6
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure the interconnect system lt-0/0/0 interfaces and routing instances:

1. Configure the lt-0/0/0 interfaces.

```
[edit logical-systems]
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 0 encapsulation ethernet-vpls
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 0 peer-unit 1
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 2 encapsulation ethernet-vpls
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 2 peer-unit 3
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 4 encapsulation ethernet-vpls
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 4 peer-unit 5
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 6 encapsulation ethernet-vpls
user@host# set interconnect-logical-system interfaces lt-0/0/0 unit 6 peer-unit 7
```

2. Configure the routing instance for the interconnect logical system and add its lt-0/0/0 interfaces to it.

```
[edit logical-systems]
user@host# set interconnect-logical-system routing-instances vr-ic instance-type vpls
```

```
user@host# set interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.0
user@host# set interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.2
user@host# set interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.4
user@host# set interconnect-logical-system routing-instances vr-ic interface lt-0/0/0.6
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems interconnect-logical-system** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

If you are done configuring the device, enter **commit** from configuration mode.

```
user@host# show logical-systems interconnect-logical-system
    interfaces {
        lt-0/0/0 {
            unit 0 {
                encapsulation ethernet-vpls;
                peer-unit 1;
            }
            unit 2 {
                encapsulation ethernet-vpls;
                peer-unit 3;
            }
            unit 4 {
                encapsulation ethernet-vpls;
                peer-unit 5;
            }
            unit 6 {
                encapsulation ethernet-vpls;
                peer-unit 7;
            }
        }
    }
        routing-instances {
            vr-ic {
                instance-type vpls;
                interface lt-0/0/0.0;
                interface lt-0/0/0.2;
                interface lt-0/0/0.4;
                interface lt-0/0/0.6;
            }
        }
```

Configuring Interfaces, a Routing Instance, and Static Routes for the Master Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces ge-0/0/4 vlan-tagging
set interfaces ge-0/0/4 unit 0 vlan-id 600
set interfaces ge-0/0/4 unit 0 family inet address 50.1.1.1/24
set interfaces ge-0/0/5 vlan-tagging
set interfaces ge-0/0/6 vlan-tagging
set interfaces ge-0/0/7 vlan-tagging
set interfaces lt-0/0/0 unit 1 encapsulation ethernet
set interfaces lt-0/0/0 unit 1 peer-unit 0
set interfaces lt-0/0/0 unit 1 family inet address 10.0.1.1/24
set routing-instances vr1-root instance-type virtual-router
set routing-instances vr1-root interface ge-0/0/4.0
set routing-instances vr1-root interface lt-0/0/0.1
set routing-instances vr1-root routing-options static route 12.1.1.0/24 next-hop 10.0.1.2
set routing-instances vr1-root routing-options static route 13.1.1.0/24 next-hop 10.0.1.3
set routing-instances vr1-root routing-options static route 14.1.1.0/24 next-hop 10.0.1.4
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure the master logical system interfaces:

1. Configure the master (root) logical and lt-0/0/0.1 interfaces.

```
[edit interfaces]
user@host# set ge-0/0/4 vlan-tagging
user@host# set ge-0/0/4 unit 0 vlan-id 600
user@host# set ge-0/0/4 unit 0 family inet address 50.1.1.1/24
user@host# set lt-0/0/0 unit 1 encapsulation ethernet
user@host# set lt-0/0/0 unit 1 peer-unit 0
user@host# set lt-0/0/0 unit 1 family inet address 10.0.1.1/24
```

2. Configure the interfaces for other logical systems to support VLAN tagging.

```
[edit interfaces]
user@host# set ge-0/0/5 vlan-tagging
```

```
user@host# set ge-0/0/6 vlan-tagging
user@host# set ge-0/0/7 vlan-tagging
```

3. Configure a routing instance for the master logical system, assign its interfaces to it, and configure static routes for it.

```
[edit routing-instances]
user@host# set vr1-root instance-type virtual-router
user@host# set vr1-root interface ge-0/0/4.0
user@host# set vr1-root interface lt-0/0/0.1
user@host# set vr1-root routing-options static route 12.1.1.0/24 next-hop 10.0.1.2
user@host# set vr1-root routing-options static route 13.1.1.0/24 next-hop 10.0.1.3
user@host# set vr1-root routing-options static route 14.1.1.0/24 next-hop 10.0.1.4
```

Results

From configuration mode, confirm your configuration by entering the **show interfaces** and **show routing-instances** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show interfaces
   ge-0/0/4 {
      vlan-tagging;
      unit 0 {
         vlan-id 600;
         family inet {
            address 50.1.1.1/24;
         }
      }
   }
      ge-0/0/5 {
         vlan-tagging;
      }
      ge-0/0/6 {
         vlan-tagging;
      }
      ge-0/0/7 {
         vlan-tagging;
      }
      lt-0/0/0 {
         unit 1 {
```

```
            encapsulation ethernet;
            peer-unit 0;
            family inet {
               address 10.0.1.1/24;
            }
         }
      }
```

```
[edit]
user@host# show routing-instances
   vr1-root {
      instance-type virtual-router;
      interface ge-0/0/4.0;
      interface lt-0/0/0.1;
      routing-options {
         static {
            route 14.1.1.0/24 next-hop 10.0.1.4;
            route 12.1.1.0/24 next-hop 10.0.1.2;
            route 13.1.1.0/24 next-hop 10.0.1.3;
         }
      }
   }
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring Logical Tunnel Interfaces for the User Logical Systems

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems ls-product-design interfaces lt-0/0/0 unit 3 encapsulation ethernet
set logical-systems ls-product-design interfaces lt-0/0/0 unit 3 peer-unit 2
set logical-systems ls-product-design interfaces lt-0/0/0 unit 3 family inet address 10.0.1.2/24
set logical-systems ls-marketing-dept interfaces lt-0/0/0 unit 5 encapsulation ethernet
set logical-systems ls-marketing-dept interfaces lt-0/0/0 unit 5 peer-unit 4
set logical-systems ls-marketing-dept interfaces lt-0/0/0 unit 5 family inet address 10.0.1.3/24
set logical-systems ls-accounting-dept interfaces lt-0/0/0 unit 7 encapsulation ethernet
set logical-systems ls-accounting-dept interfaces lt-0/0/0 unit 7 peer-unit 6
set logical-systems ls-accounting-dept interfaces lt-0/0/0 unit 7 family inet address 10.0.1.4/24
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

1. Configure the lt-0/0/0 interface for the first user logical system:

```
[edit logical-systems]
user@host# set ls-product-design interfaces lt-0/0/0 unit 3 encapsulation ethernet
user@host# set ls-product-design interfaces lt-0/0/0 unit 3 peer-unit 2
user@host# set ls-product-design interfaces lt-0/0/0 unit 3 family inet address 10.0.1.2/24
```

2. Configure the lt-0/0/0 interface for the second user logical system.

```
[edit logical-systems]
user@host# set ls-marketing-dept interfaces lt-0/0/0 unit 5 encapsulation ethernet
user@host# set ls-marketing-dept interfaces lt-0/0/0 unit 5 peer-unit 4
user@host# set ls-marketing-dept interfaces lt-0/0/0 unit 5 family inet address 10.0.1.3/24 face
```

3. Configure the lt-0/0/0 interface for the third user logical system.

```
[edit logical-systems]
user@host# set ls-accounting-dept interfaces lt-0/0/0 unit 7 encapsulation ethernet
user@host# set ls-accounting-dept interfaces lt-0/0/0 unit 7 peer-unit 6
user@host# set ls-accounting-dept interfaces lt-0/0/0 unit 7 family inet address 10.0.1.4/24
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems ls-product-design interfaces lt-0/0/0**, **show logical-systems ls-marketing-dept interfaces lt-0/0/0** , and **show logical-systems ls-accounting-dept interfaces lt-0/0/0** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host#  show logical-systems ls-product-design interfaces lt-0/0/0
```

```
lt-0/0/0 {
    unit 3 {
        encapsulation ethernet;
        peer-unit 2;
        family inet {
            address 10.0.1.2/24;
        }
    }
```

```
}
user@host# show logical-systems ls-marketing-dept interfaces lt-0/0/0
   lt-0/0/0 {
      unit 5 {
         encapsulation ethernet;
         peer-unit 4;
         family inet {
            address 10.0.1.3/24;
         }
      }
   }
}
user@host# show logical-systems ls-accounting-dept interfaces lt-0/0/0
lt-0/0/0 {
   unit 7 {
      encapsulation ethernet;
      peer-unit 6;
      family inet {
         address 10.0.1.4/24;
      }
   }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying That the Static Routes Configured for the Master Administrator Are Correct | **136**

To confirm that the configuration is working properly, perform these tasks:

Verifying That the Static Routes Configured for the Master Administrator Are Correct

Purpose

Verify if you can send data from the master logical system to the other logical systems.

Action

From operational mode, use the **ping** command.

SEE ALSO

Understanding the Master Logical Systems and the Master Administrator Role | 45

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Understanding the Interconnect Logical System and Logical Tunnel Interfaces | 35

Example: Configuring OSPF Routing Protocol for the Master Logical Systems

IN THIS SECTION

- Requirements | 137
- Overview | 137
- Configuration | 138
- Verification | 140

This example shows how to configure OSPF for the master logical system.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See "Example: Configuring Root Password for Logical Systems" on page 74.
- Configure logical interfaces ge-0/0/4.0 and lt-0/0/0.1 for the master logical system and assign them to the vr1-root routing instance. See "Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only)" on page 127.

Overview

In this example, you configure OSPF for the master logical system, called root-logical-system, shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example enables OSPF routing on the ge-0/0/4.0 and lt-0/0/0.1 interfaces in the master logical system. You configure the following routing policies to export routes from the Junos OS routing table into OSPF in the vr1-root routing instance:

- ospf-redist-direct—Routes learned from directly connected interfaces.
- ospf-redist-static—Static routes.
- ospf-to-ospf—Routes learned from OSPF.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the [edit] hierarchy level, and then enter **commit** from configuration mode.

```
set policy-options policy-statement ospf-redist-direct from protocol direct
set policy-options policy-statement ospf-redist-direct then accept
set policy-options policy-statement ospf-redist-static from protocol static
set policy-options policy-statement ospf-redist-static then accept
set policy-options policy-statement ospf-to-ospf from protocol ospf
set policy-options policy-statement ospf-to-ospf then accept
set routing-instances vr1-root protocols ospf export ospf-redist-direct
set routing-instances vr1-root protocols ospf export ospf-redist-static
set routing-instances vr1-root protocols ospf export ospf-to-ospf
set routing-instances vr1-root protocols ospf area 0.0.0.1 interface ge-0/0/4.0
set routing-instances vr1-root protocols ospf area 0.0.0.1 interface lt-0/0/0.1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure OSPF for the master logical system:

1. Log in to the master logical system as the master administrator and enter configuration mode.

   ```
   admin@host> configure
   admin@host#
   ```

2. Create routing policies that accept routes.

   ```
   [edit policy-options]
   ```

```
admin@host# set policy-statement ospf-redist-direct from protocol direct
admin@host# set policy-statement ospf-redist-direct then accept
admin@host# set policy-statement ospf-redist-static from protocol static
admin@host# set policy-statement ospf-redist-static then accept
admin@host# set policy-statement ospf-to-ospf from protocol ospf
admin@host# set policy-statement ospf-to-ospf then accept
```

3. Apply the routing policies to routes exported from the Junos OS routing table into OSPF.

```
[edit routing-instances]
admin@host# set vr1-root protocols ospf export ospf-redist-direct
admin@host# set vr1-root protocols ospf export ospf-redist-static
admin@host# set vr1-root protocols ospf export ospf-to-ospf
```

4. Enable OSPF on the logical interfaces.

```
[edit routing-instances]
admin@host# set vr1-root protocols ospf area 0.0.0.1 interface ge-0/0/4.0
admin@host# set vr1-root protocols ospf area 0.0.0.1 interface lt-0/0/0.1
```

Results

From configuration mode, confirm your configuration by entering the **show policy-options** and **show routing-instances** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
   admin@host# show policy-options
   policy-statement ospf-redist-direct {
      from protocol direct;
      then accept;
   }
   policy-statement ospf-redist-static {
      from protocol static;
      then accept;
   }
   policy-statement ospf-to-ospf {
      from protocol ospf;
      then accept;
```

```
    }
    [edit]
admin@host# show routing-instances
    vr1-root {
        ...
        protocols {
            ospf {
                export [ ospf-redist-direct ospf-to-ospf ospf-redist-static ];
                area 0.0.0.1 {
                    interface lt-0/0/0.1;
                    interface ge-0/0/4.0;
                }
            }
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying OSPF Interfaces | **140**
- Verifying OSPF Neighbors | **141**
- Verifying OSPF Routes | **141**

Confirm that the configuration is working properly.

Verifying OSPF Interfaces

Purpose

Verify OSPF-enabled interfaces.

Action

From the CLI, enter the **show ospf interface instance vr1-root** command.

```
admin@host> show ospf interface instance vr1-root
```

```
Interface           State   Area            DR ID           BDR ID          Nbrs
lt-0/0/0.1          DR      0.0.0.0         10.0.1.1        0.0.0.0            0
ge-0/0/4.0          DR      0.0.0.1         10.0.1.1        0.0.0.0            0
```

Verifying OSPF Neighbors

Purpose

Verify OSPF neighbors.

Action

From the CLI, enter the **show ospf neighbor instance vr1-root** command.

```
admin@host> show ospf neighbor instance vr1-root
```

```
Address   Interface  State   ID     Pri Dead
10.0.1.2  plt0.3    Full   0.0.0.0    128   39
```

Verifying OSPF Routes

Purpose

Verify OSPF routes.

Action

From the CLI, enter the **show ospf route instance vr1-root** command.

```
admin@host> show ospf route instance vr1-root
```

```
Topology default Route Table:

Prefix             Path  Route      NH       Metric NextHop       Nexthop
                   Type  Type       Type            Interface     Address/LSP
10.0.1.0/24        Intra Network    IP            1 lt-0/0/0.1
12.12.1.0/24       Intra Network    IP            1 ge-0/0/4.0
```

SEE ALSO

Understanding Logical Systems Interfaces and Routing Instances | 125

Example: Configuring OSPF Routing Protocol for a User Logical Systems | 151

OSPF User Guide

Routing, Interfaces, and NAT for User Logical Systems

IN THIS SECTION

- Understanding Logical Systems Network Address Translation | 142
- Example: Configuring Network Address Translation for a User Logical Systems | 143
- Example: Configuring Interfaces and Routing Instances for a User Logical Systems | 147
- Example: Configuring OSPF Routing Protocol for a User Logical Systems | 151

The user logical system enables you to configure routing protocols, interfaces and NAT. Routing protocols handles all routing messages. NAT is a mechanism to translate the IP address of a computer or group of computers into a single public address when the packets are sent out to the internet. For more information, see the following topics:

Understanding Logical Systems Network Address Translation

Network Address Translation (NAT) is a method for modifying or translating network address information in packet headers. Either or both source and destination addresses in a packet may be translated. NAT can include the translation of port numbers as well as IP addresses.

Any combination of static, destination, or source NAT can be configured in the root or user logical systems. Configuring NAT in a logical system is the same as configuring NAT in a root system. The master administrator can configure and monitor NAT in the master logical system as well as any user logical system.

Starting in Junos OS Release 18.2R1, the NAT functionality is supported for logical systems on SRX4100, and SRX4200 devices in addition to existing support on SRX1500, SRX5400, SRX5600, and SRX5800 devices.

For each user logical system, the master administrator can configure the maximum and reserved numbers for the following NAT resources:

- Source NAT pools and destination NAT pools
- IP addresses in source NAT pools with and without port address translation
- Rules for source, destination, and static NAT

- Persistent NAT bindings
- IP addresses that support port overloading

From a user logical system, the user logical system administrator can use the operational command **show system security-profile** with a NAT option to view the number of NAT resources allocated to the user logical system.

> **NOTE:** The master administrator can configure a security profile for the master logical system that specifies the maximum and reserved numbers of NAT resources applied to the master logical system. The number of resources configured in the master logical system count toward the maximum number of NAT resources available on the device.

From a user logical system, the user logical system administrator can use the **show security nat** command to view the information about NAT for the user logical system. From the master logical system, the master administrator can use the same command to view information for the master logical system, a specific user logical system, or all logical systems.

SEE ALSO

Example: Configuring Network Address Translation for a User Logical Systems | **143**

User Logical Systems Configuration Overview | **71**

Understanding Logical Systems Security Profiles (Master Administrators Only) | **88**

Introduction to NAT

Example: Configuring Network Address Translation for a User Logical Systems

IN THIS SECTION

- Requirements | **144**
- Overview | **144**
- Configuration | **144**
- Verification | **146**

This example shows how to configure static NAT for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Use the **show system security-profile nat-static-rule** command to see the static NAT resources allocated to the logical system.
- Configure security policies. See "Example: Configuring Security Policies in a User Logical Systems" on page 212.

Overview

This example configures the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

Devices in the ls-product-design-untrust zone access a specific host in the ls-product-design-trust zone by way of the address 12.1.1.200/32. For packets that enter the ls-product-design logical system from the ls-product-design-untrust zone with the destination IP address 12.1.1.200/32, the destination IP address is translated to the 12.1.1.100/32. This example configures the static NAT described in Table 11 on page 144.

Table 11: User Logical System Static NAT Configuration

Feature	Name	Configuration Parameters
Static NAT rule set	rs1	• Rule r1 to match packets from the ls-product-design-untrust zone with destination address 12.1.1.200/32. • Destination IP address in matching packets is translated to 12.1.1.100/32.
Proxy ARP		Address 12.1.1.200 on interface lt-0/0/0.3.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security nat static rule-set rs1 from zone ls-product-design-untrust
set security nat static rule-set rs1 rule r1 match destination-address 12.1.1.200/32
set security nat static rule-set rs1 rule r1 then static-nat prefix 12.1.1.100/32
set security nat proxy-arp interface lt-0/0/0.3 address 12.1.1.200/32
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure NAT in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a static NAT rule set.

```
[edit security nat static]
lsdesignadmin1@host:ls-product-design# set rule-set rs1 from zone ls-product-design-untrust
```

3. Configure a rule that matches packets and translates the destination address in the packets.

```
[edit security nat static]
lsdesignadmin1@host:ls-product-design# set rule-set rs1 rule r1 match destination-address 12.1.1.200/32
lsdesignadmin1@host:ls-product-design# set rule-set rs1 rule r1 then static-nat prefix 12.1.1.100/32
```

4. Configure proxy ARP.

```
[edit security nat]
lsdesignadmin1@host:ls-product-design# set proxy-arp interface lt-0/0/0.3 address 12.1.1.200/32
```

Results

From configuration mode, confirm your configuration by entering the **show security nat** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security nat
static {
```

```
    rule-set rs1 {
        from zone ls-product-design-untrust;
        rule r1 {
            match {
                destination-address 12.1.1.200/32;
            }
            then {
                static-nat prefix 12.1.1.100/32;
            }
        }
    }
}
    proxy-arp {
        interface lt-0/0/0.3 {
            address {
                12.1.1.200/32;
            }
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Static NAT Configuration | **146**
- Verifying NAT Application to Traffic | **147**

To confirm that the configuration is working properly, perform these tasks:

Verifying Static NAT Configuration

Purpose

Verify that there is traffic matching the static NAT rule set.

Action

From operational mode, enter the **show security nat static rule** command. View the Translation hits field to check for traffic that matches the rule.

Verifying NAT Application to Traffic

Purpose

Verify that NAT is being applied to the specified traffic.

Action

From operational mode, enter the **show security flow session** command.

SEE ALSO

- User Logical Systems Configuration Overview | 71
- Understanding Logical Systems Network Address Translation | 142
- *Static NAT Configuration Overview*

Example: Configuring Interfaces and Routing Instances for a User Logical Systems

IN THIS SECTION

- Requirements | 147
- Overview | 148
- Configuration | 148

This example shows how to configure interfaces and routing instances for a tenant system.

Requirements

Before you begin:

- Log in to the user logical system as the user logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Determine which logical interfaces and, optionally, which logical tunnel interfaces are allocated to your user logical system by the master administrator. The master administrator configures the logical tunnel interfaces. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

Overview

This example configures the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example configures the interfaces and routing instances described in Table 12 on page 148.

Table 12: User Logical System Interface and Routing Instance Configuration

Feature	Name	Configuration Parameters
Interface	ge-0/0/5.1	• IP address 12.1.1.1/24 • VLAN ID 700

Routing instance	pd-vr1	• Instance type: virtual router
		• Includes interfaces ge-0/0/5.1 and lt-0/0/0.3
		• Static routes:
		  ◦ 13.1.1.0/24 next-hop 10.0.1.3
		  ◦ 14.1.1.0/24 next-hop 10.0.1.4
		  ◦ 12.12.1.0/24 next-hop 10.0.1.1

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces ge-0/0/5 unit 1 family inet address 12.1.1.1/24
set interfaces ge-0/0/5 unit 1 vlan-id 700
set routing-instances pd-vr1 instance-type virtual-router
set routing-instances pd-vr1 interface ge-0/0/5.1
set routing-instances pd-vr1 interface lt-0/0/0.3
set routing-instances pd-vr1 routing-options static route 13.1.1.0/24 next-hop 10.0.1.3
set routing-instances pd-vr1 routing-options static route 14.1.1.0/24 next-hop 10.0.1.4
set routing-instances pd-vr1 routing-options static route 12.12.1.0/24 next-hop 10.0.1.1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure an interface and a routing instance in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure the logical interface for a user logical system.

```
[edit interfaces]
lsdesignadmin1@host:ls-product-design# set ge-0/0/5 unit 1 family inet address 12.1.1.1/24
lsdesignadmin1@host:ls-product-design# set ge-0/0/5 unit 1 vlan-id 700
```

3. Configure the routing instance and assign interfaces.

```
[edit routing-instances]
lsdesignadmin1@host:ls-product-design# set pd-vr1 instance-type virtual-router
lsdesignadmin1@host:ls-product-design# set pd-vr1 interface ge-0/0/5.1
lsdesignadmin1@host:ls-product-design# set pd-vr1 interface lt-0/0/0.3
```

4. Configure static routes.

```
[edit routing-instances]
lsdesignadmin1@host:ls-product-design# set pd-vr1 routing-options static route 13.1.1.0/24 next-hop
   10.0.1.3
lsdesignadmin1@host:ls-product-design# set pd-vr1 routing-options static route 14.1.1.0/24 next-hop
   10.0.1.4
lsdesignadmin1@host:ls-product-design# set pd-vr1 routing-options static route 12.12.1.0/24 next-hop
   10.0.1.1
```

Results

From configuration mode, confirm your configuration by entering the **show interfaces** and **show routing-instances** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

NOTE: The master administrator configures the lt-0/0/0.3 interface. Thus, the lt-0/0/0.3 configuration appears in the **show interfaces** output even though you did not configure this item.

```
lsdesignadmin1@host:ls-product-design# show interfaces
```

```
ge-0/0/5 {
    unit 1 {
        vlan-id 700;
        family inet {
            address 12.1.1.1/24;
        }
    }
}
    lt-0/0/0 {
        unit 3 {
            encapsulation ethernet;
            peer-unit 2;
            family inet {
                address 10.0.1.2/24;
            }
        }
    }
lsdesignadmin1@host:ls-product-design# show routing-instances
pd-vr1 {
    instance-type virtual-router;
    interface ge-0/0/5.1;
    interface lt-0/0/0.3;
    routing-options {
        static {
            route 13.1.1.0/24 next-hop 10.0.1.3;
            route 14.1.1.0/24 next-hop 10.0.1.4;
            route 12.12.1.0/24 next-hop 10.0.1.1;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

SEE ALSO

User Logical Systems Configuration Overview | **71**

Understanding Logical Systems Interfaces and Routing Instances | **125**

Example: Configuring OSPF Routing Protocol for a User Logical Systems

IN THIS SECTION

- Requirements | 151
- Overview | 151
- Configuration | 151
- Verification | 154

This example shows how to configure OSPF for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the user logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Configure logical interface ge-0/0/5.1. Assign ge-0/0/5.1 and lt-0/0/0.3 to the pd-vr1 routing instance. See "Example: Configuring Interfaces and Routing Instances for a User Logical Systems" on page 147.

Overview

In this example, you configure OSPF for the ls-product-design user logical system, shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example enables OSPF routing on the ge-0/0/5.1 and lt-0/0/0.3 interfaces in the ls-product-design user logical system. You configure the following routing policies to export routes from the Junos OS routing table into OSPF in the pd-vr1 routing instance:

- ospf-redist-direct—Routes learned from directly connected interfaces.
- ospf-redist-static—Static routes.
- ospf-to-ospf—Routes learned from OSPF.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set policy-options policy-statement ospf-redist-direct from protocol direct
set policy-options policy-statement ospf-redist-direct then accept
set policy-options policy-statement ospf-redist-static from protocol static
set policy-options policy-statement ospf-redist-static then accept
set policy-options policy-statement ospf-to-ospf from protocol ospf
set policy-options policy-statement ospf-to-ospf then accept
set routing-instances pd-vr1 protocols ospf export ospf-redist-direct
set routing-instances pd-vr1 protocols ospf export ospf-redist-static
set routing-instances pd-vr1 protocols ospf export ospf-to-ospf
set routing-instances pd-vr1 protocols ospf area 0.0.0.1 interface ge-0/0/5.1
set routing-instances pd-vr1 protocols ospf area 0.0.0.1 interface lt-0/0/0.3
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure OSPF for the user logical system:

1. Log in to the user logical system as the user logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Create routing policies that accept routes.

```
[edit policy-options]
lsdesignadmin1@host:ls-product-design# set policy-statement ospf-redist-direct from protocol direct
lsdesignadmin1@host:ls-product-design# set policy-statement ospf-redist-direct then accept
lsdesignadmin1@host:ls-product-design# set policy-statement ospf-redist-static from protocol static
lsdesignadmin1@host:ls-product-design# set policy-statement ospf-redist-static then accept
lsdesignadmin1@host:ls-product-design# set policy-statement ospf-to-ospf from protocol ospf
lsdesignadmin1@host:ls-product-design# set policy-statement ospf-to-ospf then accept
```

3. Apply the routing policies to routes exported from the Junos OS routing table into OSPF.

```
[edit routing-instances]
lsdesignadmin1@host:ls-product-design# set pd-vr1 protocols ospf export ospf-redist-direct
lsdesignadmin1@host:ls-product-design# set pd-vr1 protocols ospf export ospf-redist-static
```

```
lsdesignadmin1@host:ls-product-design# set pd-vr1 protocols ospf export ospf-to-ospf
```

4. Enable OSPF on the logical interfaces.

```
[edit routing-instances]
lsdesignadmin1@host:ls-product-design# set pd-vr1 protocols ospf area 0.0.0.1 interface ge-0/0/5.1
lsdesignadmin1@host:ls-product-design# set pd-vr1 protocols ospf area 0.0.0.1 interface lt-0/0/0.3
```

Results

From configuration mode, confirm your configuration by entering the **show policy-options** and **show routing-instances** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
lsdesignadmin1@host:ls-product-design# show policy-options
    policy-statement ospf-redist-direct {
        from protocol direct;
        then accept;
    }
    policy-statement ospf-redist-static {
        from protocol static;
        then accept;
    }
    policy-statement ospf-to-ospf {
        from protocol ospf;
        then accept;
    }
[edit]
lsdesignadmin1@host:ls-product-design# show routing-instances
    pd-vr1 {
        ...
        protocols {
            ospf {
                export [ ospf-redist-direct ospf-to-ospf ospf-redist-static ];
                area 0.0.0.1 {
                    interface lt-0/0/0.3;
                    interface ge-0/0/5.1;
                }
            }
```

```
    }
  }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying OSPF Interfaces | **154**
- Verifying OSPF Neighbors | **154**
- Verifying OSPF Routes | **155**

Confirm that the configuration is working properly.

Verifying OSPF Interfaces

Purpose

Verify OSPF-enabled interfaces.

Action

From the CLI, enter the **show ospf interface instance pd-vr1** command.

```
lsdesignadmin1@host:ls-product-design> show ospf interface instance pd-vr1
```

```
Interface           State   Area            DR ID           BDR ID          Nbrs
lt-0/0/0.3          DR      0.0.0.0         10.0.1.2        0.0.0.0            0
ge-0/0/5.1          DR      0.0.0.1         10.0.1.2        0.0.0.0            0
```

Verifying OSPF Neighbors

Purpose

Verify OSPF neighbors.

Action

From the CLI, enter the **show ospf neighbor instance pd-vr1** command.

```
lsdesignadmin1@host:ls-product-design> show ospf neighbor instance pd-vr1
```

```
Address   Interface  State   ID     Pri Dead
10.0.1.1  plt0.1    Full   0.0.0.0    128   39
```

Verifying OSPF Routes

Purpose

Verify OSPF routes.

Action

From the CLI, enter the **show ospf route instance pd-vr1** command.

```
lsdesignadmin1@host:ls-product-design> show ospf route instance pd-vr1
```

```
Topology default Route Table:

Prefix             Path  Route      NH       Metric NextHop       Nexthop
                  Type  Type       Type            Interface     Address/LSP
10.0.1.0/24         Intra Network    IP              1 lt-0/0/0.3
12.12.1.0/24        Intra Network    IP              1 ge-0/0/5.1
```

SEE ALSO

Understanding Logical Systems Interfaces and Routing Instances | 125

Example: Configuring OSPF Routing Protocol for the Master Logical Systems | 137

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RELATED DOCUMENTATION

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Security Zones in Logical Systems

IN THIS SECTION

- Understanding Logical Systems Zones | 156
- Example: Configuring User Logical Systems | 157
- Example: Configuring Security Zones for a User Logical Systems | 171

Security zones are the building blocks for policies. Security zones are logical entities to which one or more interfaces are bound and provides a means of distinguishing groups of hosts (user logical systems and other hosts, such as servers), resources from one another in order to apply different security measures. For more information, see the following topics:

Understanding Logical Systems Zones

Security zones are logical entities to which one or more interfaces are bound. Security zones can be configured on the master logical system by the master administrator or on user logical systems by the user logical system administrator. On a logical system, the administrator can configure multiple security zones, dividing the network into network segments to which various security options can be applied.

The master administrator configures the maximum and reserved numbers of security zones for each user logical system. The user logical system administrator can then create security zones in the user logical system and assign interfaces to each security zone. From a user logical system, the user logical system administrator can use the **show system security-profile zones** command to view the number of security zones allocated to the user logical system and the **show interfaces** command to view the interfaces allocated to the user logical system.

> **NOTE:** The master administrator can configure a security profile for the master logical system that specifies the maximum and reserved numbers of security zones applied to the master logical system. The number of zones configured in the master logical system count toward the maximum number of zones available on the device.

The master and user administrator can configure the following properties of a security zone in a logical system:

- Interfaces that are part of a security zone.
- Screen options—For every security zone, you can enable a set of predefined screen options that detect and block various kinds of traffic that the device determines as potentially harmful.
- TCP-Reset—When this feature is enabled, the system sends a TCP segment with the RESET flag set when traffic arrives that does not match an existing session and does not have the synchronize flag set.
- Host inbound traffic—This feature specifies the kinds of traffic that can reach the device from systems that are directly connected to its interfaces. You can configure these parameters at the zone level, in which case they affect all interfaces of the zone, or at the interface level. (Interface configuration overrides that of the zone.)

There are no preconfigured security zones in the master logical system or user logical system.

The management functional zone (MGT) can only be configured for the master logical system. There is only one management interface per device and that interface is allocated to the master logical system.

The **all** interface can only be assigned to a zone in the master logical system by the master administrator.

The user logical system administrator can configure and view all attributes for a security zone in a user logical system. All attributes of a security zone in a user logical system are also visible to the master administrator.

SEE ALSO

Example: Configuring Security Zones for a User Logical Systems | **171**

User Logical Systems Configuration Overview | **71**

Understanding Logical Systems Security Profiles (Master Administrators Only) | **88**

Understanding Logical Systems Interfaces and Routing Instances | **125**

Security Zones Overview

Example: Configuring User Logical Systems

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This example shows the configuration of interfaces, routing instances, zones, and security policies for user logical systems.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Be sure you know which logical interfaces and optionally, which logical tunnel interface (and its IP address) are allocated to your user logical system by the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

Overview

This example configures the ls-marketing-dept and ls-accounting-dept user logical systems shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example configures the parameters described in Table 13 on page 158 and Table 14 on page 159.

Table 13: ls-marketing-dept Logical System Configuration

Feature	Name	Configuration Parameters
Interface	ge-0/0/6.1	• IP address 13.1.1.1/24 • VLAN ID 800

Routing instance	mk-vr1	• Instance type: virtual router
		• Includes interfaces ge-0/0/6.1 and lt-0/0/0.5
		• Static routes:
		  ◦ 12.1.1.0/24 next-hop 10.0.1.2
		  ◦ 14.1.1.0/24 next-hop 10.0.1.4
		  ◦ 12.12.1.0/24 next-hop 10.0.1.1

Zones	ls-marketing-trust	Bind to interface ge-0/0/6.1.

Table 13: ls-marketing-dept Logical System Configuration *(continued)*

Feature	Name	Configuration Parameters
	ls-marketing-untrust	Bind to interface lt-0/0/0.5
Address books	marketing-internal	• Address marketers: 13.1.1.0/24 • Attach to zone ls-marketing-trust
	marketing-external	• Address design: 12.1.1.0/24 • Address accounting: 14.1.1.0/24 • Address others: 12.12.1.0/24 • Address set otherlsys: design, accounting • Attach to zone ls-marketing-untrust
Policies	permit-all-to-otherlsys	Permit the following traffic: • From zone: ls-marketing-trust • To zone: ls-marketing-untrust • Source address: marketers • Destination address: otherlsys • Application: any
	permit-all-from-otherlsys	Permit the following traffic: • From zone: ls-marketing-untrust • To zone: ls-marketing-trust • Source address: otherlsys • Destination address: marketers • Application: any

Table 14: ls-accounting-dept Logical System Configuration

Feature	Name	Configuration Parameters
Interface	ge-0/0/7.1	• IP address 14.1.1.1/24 • VLAN ID 900

Routing instance	acct-vr1	• Instance type: virtual router
		• Includes interfaces ge-0/0/7.1 and lt-0/0/0.7
		• Static routes:
		  ◦ 12.1.1.0/24 next-hop 10.0.1.2
		  ◦ 13.1.1.0/24 next-hop 10.0.1.3
		  ◦ 12.12.1.0/24 next-hop 10.0.1.1

Table 14: ls-accounting-dept Logical System Configuration *(continued)*

Feature	Name	Configuration Parameters
Zones	ls-accounting-trust	Bind to interface ge-0/0/7.1.
	ls-accounting-untrust	Bind to interface lt-0/0/0.7
Address books	accounting-internal	• Address accounting: 14.1.1.0/24 • Attach to zone ls-accounting-trust
	accounting-external	• Address design: 12.1.1.0/24 • Address marketing: 13.1.1.0/24 • Address others: 12.12.1.0/24 • Address set otherlsys: design, marketing • Attach to zone ls-accounting-untrust
Policies	permit-all-to-otherlsys	Permit the following traffic: • From zone: ls-accounting-trust • To zone: ls-accounting-untrust • Source address: accounting • Destination address: otherlsys • Application: any
	permit-all-from-otherlsys	Permit the following traffic: • From zone: ls-accounting-untrust • To zone: ls-accounting-trust • Source address: otherlsys • Destination address: accounting • Application: any

Configuration

IN THIS SECTION

- Configuring the ls-marketing-dept User Logical System | **161**
- Configuring the ls-accounting-dept User Logical System | **165**

Configuring the ls-marketing-dept User Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces ge-0/0/6 unit 1 family inet address 13.1.1.1/24
set interfaces ge-0/0/6 unit 1 vlan-id 800
set routing-instances mk-vr1 instance-type virtual-router
set routing-instances mk-vr1 interface ge-0/0/6.1
set routing-instances mk-vr1 interface lt-0/0/0.5
set routing-instances mk-vr1 routing-options static route 12.1.1.0/24 next-hop 10.0.1.2
set routing-instances mk-vr1 routing-options static route 14.1.1.0/24 next-hop 10.0.1.4
set routing-instances mk-vr1 routing-options static route 12.12.1.0/24 next-hop 10.0.1.1
set security zones security-zone ls-marketing-trust interfaces ge-0/0/6.1
set security zones security-zone ls-marketing-untrust interfaces lt-0/0/0.5
set security address-book marketing-external address design 12.1.1.0/24
set security address-book marketing-external address accounting 14.1.1.0/24
set security address-book marketing-external address others 12.12.1.0/24
set security address-book marketing-external address-set otherlsys address design
set security address-book marketing-external address-set otherlsys address accounting
set security address-book marketing-external attach zone ls-marketing-untrust
set security address-book marketing-internal address marketers 13.1.1.0/24
set security address-book marketing-internal attach zone ls-marketing-trust
set security policies from-zone ls-marketing-trust to-zone ls-marketing-untrust policy permit-all-to-otherlsys
    match source-address marketers
set security policies from-zone ls-marketing-trust to-zone ls-marketing-untrust policy permit-all-to-otherlsys
    match destination-address otherlsys
set security policies from-zone ls-marketing-trust to-zone ls-marketing-untrust policy permit-all-to-otherlsys
    match application any
set security policies from-zone ls-marketing-trust to-zone ls-marketing-untrust policy permit-all-to-otherlsys
    then permit
set security policies from-zone ls-marketing-untrust to-zone ls-marketing-trust policy permit-all-from-otherlsys
    match source-address otherlsys
set security policies from-zone ls-marketing-untrust to-zone ls-marketing-trust policy permit-all-from-otherlsys
    match destination-address marketers
set security policies from-zone ls-marketing-untrust to-zone ls-marketing-trust policy permit-all-from-otherlsys
    match application any
set security policies from-zone ls-marketing-untrust to-zone ls-marketing-trust policy permit-all-from-otherlsys
    then permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsmarketingadmin1@host:ls-marketing-dept> configure
lsmarketingadmin1@host:ls-marketing-dept#
```

2. Configure the logical interface for a user logical system.

```
[edit interfaces]
lsmarketingadmin1@host:ls-marketing-dept# set ge-0/0/6 unit 1 family inet address 13.1.1.1/24
lsmarketingadmin1@host:ls-marketing-dept# set ge-0/0/6 unit 1 vlan-id 800
```

3. Configure the routing instance and assign interfaces.

```
[edit routing-instances]
lsmarketingadmin1@host:ls-marketing-dept# set mk-vr1 instance-type virtual-router
lsmarketingadmin1@host:ls-marketing-dept# set mk-vr1 interface ge-0/0/6.1
lsmarketingadmin1@host:ls-marketing-dept# set mk-vr1 interface lt-0/0/0.5
```

4. Configure static routes.

```
[edit routing-instances]
lsmarketingadmin1@host:ls-marketing-dept# set mk-vr1 routing-options static route 12.12.1.0/24 next-hop
   10.0.1.2
lsmarketingadmin1@host:ls-marketing-dept# set mk-vr1 routing-options static route 14.1.1.0/24 next-hop
   10.0.1.4
lsmarketingadmin1@host:ls-marketing-dept# set mk-vr1 routing-options static route 12.12.1.0/24 next-hop
   10.0.1.1
```

5. Configure security zones and assign interfaces to each zone.

```
[edit security zones]
lsmarketingadmin1@host:ls-marketing-dept# set security-zone ls-marketing-trust interfaces ge-0/0/6.1
lsmarketingadmin1@host:ls-marketing-dept# set security-zone ls-marketing-untrust interfaces lt-0/0/0.5
```

6. Create address book entries.

```
[edit security]
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-internal address marketers
    13.1.1.0/24
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-external address design 12.1.1.0/24
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-external address accounting
    14.1.1.0/24
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-external address others 12.12.1.0/24
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-external address-set otherlsys
    address design
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-external address-set otherlsys
    address accounting
```

7. Attach address books to zones.

```
[edit security]
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-internal attach zone
    ls-marketing-trust
lsmarketingadmin1@host:ls-marketing-dept# set address-book marketing-external attach zone
    ls-marketing-untrust
```

8. Configure a security policy that permits traffic from the ls-marketing-trust zone to the ls-marketing-untrust zone.

```
[edit security policies from-zone ls-marketing-trust to-zone ls-marketing-untrust]
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-to-otherlsys match source-address marketers
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-to-otherlsys match destination-address
    otherlsys
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-to-otherlsys match application any
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-to-otherlsys then permit
```

9. Configure a security policy that permits traffic from the ls-marketing-untrust zone to the ls-marketing-trust zone.

```
[edit security policies from-zone ls-marketing-untrust to-zone ls-marketing-trust]
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-from-otherlsys match source-address
    otherlsys
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-from-otherlsys match destination-address
    marketers
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-from-otherlsys match application any
lsmarketingadmin1@host:ls-marketing-dept# set policy permit-all-from-otherlsys then permit
```

Results

From configuration mode, confirm your configuration by entering the **show routing-instances** and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsmarketingadmin1@host:ls-marketing-dept# show routing instances
    mk-vr1 {
        instance-type virtual-router;
        interface ge-0/0/6.1;
        interface lt-0/0/0.5;
        routing-options {
            static {
                route 12.1.1.0/24 next-hop 10.0.1.2;
                route 14.1.1.0/24 next-hop 10.0.1.4;
                route 12.12.1.0/24 next-hop 10.0.1.1;
            }
        }
    }
lsmarketingadmin1@host:ls-marketing-dept# show security
    address-book {
        marketing-external {
            address product-designers 12.1.1.0/24;
            address accounting 14.1.1.0/24;
            address others 12.12.1.0/24;
            address-set otherlsys {
                address product-designers;
                address accounting;
            }
            attach {
                zone ls-marketing-untrust;
            }
        }
        marketing-internal {
            address marketers 13.1.1.0/24;
            attach {
                zone ls-marketing-trust;
            }
        }
    }
        policies {
            from-zone ls-marketing-trust to-zone ls-marketing-untrust {
                policy permit-all-to-otherlsys {
                    match {
                        source-address marketers;
```

```
            destination-address otherlsys;
            application any;
        }
        then {
            permit;
        }
    }
  }
  from-zone ls-marketing-untrust to-zone ls-marketing-trust {
    policy permit-all-from-otherlsys {
      match {
        source-address otherlsys;
        destination-address marketers;
        application any;
      }
      then {
        permit;
      }
    }
  }
}
zones {
  security-zone ls-marketing-trust {
    interfaces {
      ge-0/0/6.1;
    }
  }
  security-zone ls-marketing-untrust {
    interfaces {
      lt-0/0/0.5;
    }
  }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring the ls-accounting-dept User Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces ge-0/0/7 unit 1 family inet address 14.1.1.1/24
```

```
set interfaces ge-0/0/7 unit 1 vlan-id 900
set routing-instances acct-vr1 instance-type virtual-router
set routing-instances acct-vr1 interface ge-0/0/7.1
set routing-instances acct-vr1 interface lt-0/0/0.7
set routing-instances acct-vr1 routing-options static route 12.12.1.0/24 next-hop 10.0.1.1
set routing-instances acct-vr1 routing-options static route 12.1.1.0/24 next-hop 10.0.1.2
set routing-instances acct-vr1 routing-options static route 13.1.1.0/24 next-hop 10.0.1.3
set security address-book accounting-internal address accounting 14.1.1.0/24
set security address-book accounting-internal attach zone ls-accounting-trust
set security address-book accounting-external address design 12.1.1.0/24
set security address-book accounting-external address marketing 13.1.1.0/24
set security address-book accounting-external address others 12.12.1.0/24
set security address-book accounting-external address-set otherlsys address design
set security address-book accounting-external address-set otherlsys address marketing
set security address-book accounting-external attach zone ls-accounting-untrust
set security policies from-zone ls-accounting-trust to-zone ls-accounting-untrust policy permit-all-to-otherlsys
    match source-address accounting
set security policies from-zone ls-accounting-trust to-zone ls-accounting-untrust policy permit-all-to-otherlsys
    match destination-address otherlsys
set security policies from-zone ls-accounting-trust to-zone ls-accounting-untrust policy permit-all-to-otherlsys
    match application any
set security policies from-zone ls-accounting-trust to-zone ls-accounting-untrust policy permit-all-to-otherlsys
    then permit
set security policies from-zone ls-accounting-untrust to-zone ls-accounting-trust policy permit-all-from-otherlsys
    match source-address otherlsys
set security policies from-zone ls-accounting-untrust to-zone ls-accounting-trust policy permit-all-from-otherlsys
    match destination-address accounting
set security policies from-zone ls-accounting-untrust to-zone ls-accounting-trust policy permit-all-from-otherlsys
    match application any
set security policies from-zone ls-accounting-untrust to-zone ls-accounting-trust policy permit-all-from-otherlsys
    then permit
set security zones security-zone ls-accounting-trust interfaces ge-0/0/7.1
set security zones security-zone ls-accounting-untrust interfaces lt-0/0/0.7
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsaccountingadmin1@host:ls-accounting-dept> configure
lsaccountingadmin1@host:ls-accounting-dept#
```

2. Configure the logical interface for a user logical system.

```
[edit interfaces]
lsaccountingadmin1@host:ls-accounting-dept# set ge-0/0/7 unit 1 family inet address 14.1.1.1/24
lsaccountingadmin1@host:ls-accounting-dept# set ge-0/0/7 unit 1 vlan-id 900
```

3. Configure the routing instance and assign interfaces.

```
[edit routing-instances]
lsaccountingadmin1@host:ls-accounting-dept# set acct-vr1 instance-type virtual-router
lsaccountingadmin1@host:ls-accounting-dept# set acct-vr1 interface ge-0/0/7.1
lsaccountingadmin1@host:ls-accounting-dept# set acct-vr1 interface lt-0/0/0.7
```

4. Configure static routes.

```
[edit routing-instances]
lsaccountingadmin1@host:ls-accounting-dept# set acct-vr1 routing-options static route 12.1.1.0/24 next-hop
   10.0.1.2
lsaccountingadmin1@host:ls-accounting-deptt# set acct-vr1 routing-options static route 13.1.1.0/24 next-hop
   10.0.1.3
lsaccountingadmin1@host:ls-accounting-dept# set acct-vr1 routing-options static route 12.12.1.0/24 next-hop
   10.0.1.1
```

5. Configure security zones and assign interfaces to each zone.

```
[edit security zones]
lsaccountingadmin1@host:ls-accounting-dept# set security-zone ls-accounting-trust interfaces ge-0/0/7.1
lsaccountingadmin1@host:ls-accounting-dept# set security-zone ls-accounting-untrust interfaces lt-0/0/0.7
```

6. Create address book entries.

```
[edit security]
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-internal address accounting
   14.1.1.0/24
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-external address design
   12.1.1.0/24
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-external address marketing
   13.1.1.0/24
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-external address others
   12.12.1.0/24
```

```
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-external address-set otherlsys
    address design
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-external address-set otherlsys
    address marketing
```

7. Attach address books to zones.

```
[edit security]
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-internal attach zone
    ls-accounting-trust
lsaccountingadmin1@host:ls-accounting-dept# set address-book accounting-external attach zone
    ls-accounting-untrust
```

8. Configure a security policy that permits traffic from the ls-accounting-trust zone to the ls-accounting-untrust zone.

```
[edit security policies from-zone ls-accounting-trust to-zone ls-accounting-untrust]
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-to-otherlsys match source-address
    accounting
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-to-otherlsys match destination-address
    otherlsys
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-to-otherlsys match application any
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-to-otherlsys then permit
```

9. Configure a security policy that permits traffic from the ls-accounting-untrust zone to the ls-accounting-trust zone.

```
[edit security policies from-zone ls-accounting-untrust to-zone ls-accounting-trust]
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-from-otherlsys match source-address
    otherlsys
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-from-otherlsys match destination-address
    accounting
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-from-otherlsys match application any
lsaccountingadmin1@host:ls-accounting-dept# set policy permit-all-from-otherlsys then permit
```

Results

From configuration mode, confirm your configuration by entering the **show routing-instances** and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsaccountingadmin1@host:ls-accounting-dept# show routing-instances
acct-vr1 {
    instance-type virtual-router;
    interface ge-0/0/7.1;
    interface lt-0/0/0.7;
    routing-options {
        static {
            route 12.12.1.0/24 next-hop 10.0.1.1;
            route 12.1.1.0/24 next-hop 10.0.1.2;
            route 13.1.1.0/24 next-hop 10.0.1.3;
        }
    }
}
lsaccountingadmin1@host:ls-accounting-dept# show security
address-book {
    accounting-internal {
        address accounting 14.1.1.0/24;
        attach {
            zone ls-accounting-trust;
        }
    }
    accounting-external {
        address design 12.1.1.0/24;
        address marketing 13.1.1.0/24;
        address others 12.12.1.0/24;
        address-set otherlsys {
            address design;
            address marketing;
        }
        attach {
            zone ls-accounting-untrust;
        }
    }
}
    policies {
        from-zone ls-accounting-trust to-zone ls-accounting-untrust {
            policy permit-all-to-otherlsys {
                match {
                    source-address accounting;
                    destination-address otherlsys;
                    application any;
                }
                then {
                    permit;
```

```
            }
        }
    }
    from-zone ls-accounting-untrust to-zone ls-accounting-trust {
        policy permit-all-from-otherlsys {
            match {
                source-address otherlsys;
                destination-address accounting;
                application any;
            }
            then {
                permit;
            }
        }
    }
}
zones {
    security-zone ls-accounting-trust {
        interfaces {
            ge-0/0/7.1;
        }
    }
    security-zone ls-accounting-untrust {
        interfaces {
            lt-0/0/0.7;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Policy Configuration | **171**

To confirm that the configuration is working properly, perform these tasks:

Verifying Policy Configuration

Purpose

Verify information about policies and rules.

Action

From operational mode, enter the **show security policies detail** command to display a summary of all policies configured on the logical system.

SEE ALSO

User Logical Systems Configuration Overview | 71

Understanding Logical Systems Interfaces and Routing Instances | 125

Understanding Logical Systems Zones | 156

Understanding Logical Systems Security Policies | 210

Example: Configuring Security Zones for a User Logical Systems

IN THIS SECTION

- Requirements | 171
- Overview | 172
- Configuration | 172

This example shows how to configure zones for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the user logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Use the **show system security-profile zones** command to see the zone resources allocated to the logical system.

- Logical interfaces for the user logical system must be configured. See "Example: Configuring Interfaces and Routing Instances for a User Logical Systems" on page 147.

Overview

This example configures the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example creates the zones and address books described in Table 15 on page 172.

Table 15: User Logical System Zone and Address Book Configuration

Feature	Name	Configuration Parameters
Zones	ls-product-design-trust	• Bind to interface ge-0/0/5.1. • TCP reset enabled.
	ls-product-design-untrust	• Bind to interface lt-0/0/0.3.
Address books	product-design-internal	• Address product-designers: 12.1.1.0/24 • Attach to zone ls-product-design-trust
	product-design-external	• Address marketing: 13.1.1.0/24 • Address accounting: 14.1.1.0/24 • Address others: 12.12.1.0/24 • Address set otherlsys: marketing, accounting • Attach to zone ls-product-design-untrust

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security address-book product-design-internal address product-designers 12.1.1.0/24
set security address-book product-design-internal attach zone ls-product-design-trust
set security address-book product-design-external address marketing 13.1.1.0/24
set security address-book product-design-external address accounting 14.1.1.0/24
set security address-book product-design-external address others 12.12.1.0/24
set security address-book product-design-external address-set otherlsys address marketing
set security address-book product-design-external address-set otherlsys address accounting
set security address-book product-design-external attach zone ls-product-design-untrust
```

```
set security zones security-zone ls-product-design-trust tcp-rst
set security zones security-zone ls-product-design-trust interfaces ge-0/0/5.1
set security zones security-zone ls-product-design-untrust interfaces lt-0/0/0.3
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure zones in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a security zone and assign it to an interface.

```
[edit security zones]
lsdesignadmin1@host:ls-product-design# set security-zone ls-product-design-trust interfaces ge-0/0/5.1
```

3. Configure the TCP-Reset parameter for the zone.

```
[edit security zones security-zone ls-product-design-trust]
lsdesignadmin1@host:ls-product-design# set tcp-rst
```

4. Configure a security zone and assign it to an interface.

```
[edit security zones]
lsdesignadmin1@host:ls-product-design# set security-zone ls-product-design-untrust interfaces lt-0/0/0.3
```

5. Create global address book entries.

```
[edit security]
lsdesignadmin1@host:ls-product-design# set address-book product-design-internal address product-designers
  12.1.1.0/24
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address marketing
  13.1.1.0/24
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address accounting
  14.1.1.0/24
```

```
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address others
  12.12.1.0/24
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address-set otherlsys
  address marketing
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address-set otherlsys
  address accounting
```

6. Attach address books to zones.

```
[edit security]
lsdesignadmin1@host:ls-product-design# set address-book product-design-internal attach zone
  ls-product-design-trust
lsdesignadmin1@host:ls-product-design# set address-book product-design-external attach zone
  ls-product-design-untrust
```

Results

From configuration mode, confirm your configuration by entering the **show security** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security
  address-book {
    product-design-internal {
      address product-designers 12.1.1.0/24;
      attach {
        zone ls-product-design-trust;
      }
    }
    product-design-external {
      address marketing 13.1.1.0/24;
      address accounting 14.1.1.0/24;
      address others 12.12.1.0/24;
      address-set otherlsys {
        address marketing;
        address accounting;
      }
      attach {
        zone ls-product-design-untrust;
      }
    }
  }
    zones {
```

```
        security-zone ls-product-design-trust {
            tcp-rst;
            interfaces {
                ge-0/0/5.1;
            }
        }
        security-zone ls-product-design-untrust {
            interfaces {
                lt-0/0/0.3;
            }
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

SEE ALSO

- Understanding Logical Systems Zones | **156**
- User Logical Systems Configuration Overview | **71**

RELATED DOCUMENTATION

- Example: Configuring Security Policies in a User Logical Systems | **212**

User Authentication for Logical Systems

IN THIS SECTION

- Example: Configuring Access Profiles (Master Administrators Only) | **176**
- Example: Configuring Security Features for the Master Logical Systems | **179**
- Understanding Logical System Firewall Authentication | **186**
- Example: Configuring Firewall Authentication for a User Logical System | **187**
- Understanding Integrated User Firewall support in a Logical System | **192**
- Example: Configuring Integrated User Firewall Identification Management for a User Logical System | **194**
- Example: Configure Integrated User Firewall in Customized Model for Logical System | **203**

User authentication for logical systems enables to define firewall users and create policies that require the users to authenticate themselves through one of two authentication schemes: pass-through authentication or web authentication. For more information, see the following topics:

Example: Configuring Access Profiles (Master Administrators Only)

IN THIS SECTION

- Requirements | 176
- Overview | 176
- Configuration | 177

The master administrator is responsible for configuring access profiles in the master logical system. This example shows how to configure access profiles.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.
- Read *Firewall User Authentication Overview*.

Overview

This example configures an access profile for LDAP authentication for logical system users. This example creates the access profile described in Table 16 on page 177.

NOTE: The master administrator creates the access profile.

Table 16: Access Profile Configuration

Name	Configuration Parameters

ldap1	• LDAP is used as the first (and only) authentication method.
	• Base distinguished name:
	  ◦ Organizational unit name (OU): people
	  ◦ Domain components (DC): example, com
	• A user's LDAP distinguished name is assembled through the use of a common name identifier, username, and base distinguished name. The common name identifier is user ID (UID).
	• The LDAP server address is 10.155.26.104 and is reached through port 389.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

> **NOTE:** You must be logged in as the master administrator.

```
set access profile ldap1 authentication-order ldap
set access profile ldap1 ldap-options base-distinguished-name ou=people,dc=example,dc=com
set access profile ldap1 ldap-options assemble common-name uid
set access profile ldap1 ldap-server 10.155.26.104 port 389
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure an access profile in the master logical system:

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
admin@host> configure
admin@host#
```

2. Configure an access profile and set the authentication order.

```
[edit access profile ldap1]
admin@host# set authentication-order ldap
```

3. Configure LDAP options.

```
[edit access profile ldap1]
admin@host# set ldap-options base-distinguished-name ou=people,dc=example,dc=com
admin@host# set ldap-options assemble common-name uid
```

4. Configure the LDAP server.

```
[edit access profile ldap1]
admin@host# set ldap-server 10.155.26.104 port 389
```

Results

From configuration mode, confirm your configuration by entering the **show access profile *profile-name*** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
admin@host# show access profile ldap1
authentication-order ldap;
ldap-options {
    base-distinguished-name ou=people,dc=example,dc=com;
    assemble {
        common-name uid;
    }
}
    ldap-server {
        10.155.26.104 port 389;
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

SEE ALSO

User Logical Systems Configuration Overview | 71

Example: Configuring Security Features for the Master Logical Systems

IN THIS SECTION

- Requirements | 179
- Overview | 179
- Configuration | 180
- Verification | 185

This example shows how to configure security features, such as zones, policies, and firewall authentication, for the master logical system.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See "Example: Configuring Root Password for Logical Systems" on page 74.
- Use the **show system security-profile** command to see the resources allocated to the master logical system.
- Configure logical interfaces for the master logical system. See "Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only)" on page 127.
- Configure the access profile ldap1 in the master logical system. The ldap1 access profile is used for Web authentication of firewall users.

Overview

In this example, you configure security features for the master logical system, called root-logical-system, shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76. This example configures the security features described in Table 17 on page 179.

Table 17: root-logical-system Security Feature Configuration

Feature	Name	Configuration Parameter
Zones	ls-root-trust	Bind to interface ge-0/0/4.0.

Table 17: root-logical-system Security Feature Configuration *(continued)*

Feature	Name	Configuration Parameter
	ls-root-untrust	Bind to interface lt-0/0/0.1
Address books	root-internal	• Address masters: 12.12.1.0/24 • Attach to zone ls-root-trust
	root-external	• Address design: 12.1.1.0/24 • Address accounting: 14.1.1.0/24 • Address marketing: 13.1.1.0/24 • Address set userlsys: design, accounting, marketing • Attach to zone ls-root-untrust
Security policies	permit-to-userlsys	Permit the following traffic: • From zone: ls-root-trust • To zone: ls-root-untrust • Source address: masters • Destination address: userlsys • Application: any
	permit-authorized-users	Permit the following traffic: • From zone: ls-root-untrust • To zone: ls-root-trust • Source address: userlsys • Destination address: masters • Application: junos-http, junos-https
Firewall authentication		• Web authentication • Authentication success banner “WEB AUTH LOGIN SUCCESS” • Default access profile ldap1
HTTP daemon		Activate on interface ge-0/0/4.0

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security address-book root-internal address masters 12.12.1.0/24
set security address-book root-internal attach zone ls-root-trust
set security address-book root-external address design 12.1.1.0/24
set security address-book root-external address accounting 14.1.1.0/24
set security address-book root-external address marketing 13.1.1.0/24
set security address-book root-external address-set userlsys address design
set security address-book root-external address-set userlsys address accounting
set security address-book root-external address-set userlsys address marketing
set security address-book root-external attach zone ls-root-untrust
set security policies from-zone ls-root-trust to-zone ls-root-untrust policy permit-to-userlsys match
    source-address masters
set security policies from-zone ls-root-trust to-zone ls-root-untrust policy permit-to-userlsys match
    destination-address userlsys
set security policies from-zone ls-root-trust to-zone ls-root-untrust policy permit-to-userlsys match application
    any
set security policies from-zone ls-root-trust to-zone ls-root-untrust policy permit-to-userlsys then permit
set security policies from-zone ls-root-untrust to-zone ls-root-trust policy permit-authorized-users match
    source-address userlsys
set security policies from-zone ls-root-untrust to-zone ls-root-trust policy permit-authorized-users match
    destination-address masters
set security policies from-zone ls-root-untrust to-zone ls-root-trust policy permit-authorized-users match
    application junos-http
set security policies from-zone ls-root-untrust to-zone ls-root-trust policy permit-authorized-users match
    application junos-https
set security policies from-zone ls-root-untrust to-zone ls-root-trust policy permit-authorized-users then permit
    firewall-authentication web-authentication
set security zones security-zone ls-root-trust interfaces ge-0/0/4.0
set security zones security-zone ls-root-untrust interfaces lt-0/0/0.1
set system services web-management http interface ge-0/0/4.0
set access firewall-authentication web-authentication default-profile ldap1
set access firewall-authentication web-authentication banner success "WEB AUTH LOGIN SUCCESS"
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure zones and policies for the master logical system:

1. Log in to the master logical system as the master administrator and enter configuration mode.

   ```
   admin@host> configure
   admin@host#
   ```

2. Create security zones and assign interfaces to each zone.

```
[edit security zones]
admin@host# set security-zone ls-root-trust interfaces ge-0/0/4.0
admin@host# set security-zone ls-root-untrust interfaces lt-0/0/0.1
```

3. Create address book entries.

```
[edit security]
admin@host# set address-book root-internal address masters 12.12.1.0/24
admin@host# set address-book root-external address design 12.1.1.0/24
admin@host# set address-book root-external address accounting 14.1.1.0/24
admin@host# set address-book root-external address marketing 13.1.1.0/24
admin@host# set address-book root-external address-set userlsys address design
admin@host# set address-book root-external address-set userlsys address accounting
admin@host# set address-book root-external address-set userlsys address marketing
```

4. Attach address books to zones.

```
[edit security]
admin@host# set address-book root-internal attach zone ls-root-trust
admin@host# set address-book root-external attach zone ls-root-untrust
```

5. Configure a security policy that permits traffic from the ls-root-trust zone to the ls-root-untrust zone.

```
[edit security policies from-zone ls-root-trust to-zone ls-root-untrust]
admin@host# set policy permit-to-userlsys match source-address masters
admin@host# set policy permit-to-userlsys match destination-address userlsys
admin@host# set policy permit-to-userlsys match application any
admin@host# set policy permit-to-userlsys then permit
```

6. Configure a security policy that authenticates traffic from the ls-root-untrust zone to the ls-root-trust zone.

```
[edit security policies from-zone ls-root-untrust to-zone ls-root-trust]
admin@host# set policy permit-authorized-users match source-address userlsys
admin@host# set policy permit-authorized-users match destination-address masters
admin@host# set policy permit-authorized-users match application junos-http
admin@host# set policy permit-authorized-users match application junos-https
admin@host# set policy permit-authorized-users then permit firewall-authentication web-authentication
```

7. Configure the Web authentication access profile and define a success banner.

```
[edit access]
admin@host# set firewall-authentication web-authentication default-profile ldap1
admin@host# set firewall-authentication web-authentication banner success “WEB AUTH LOGIN SUCCESS”
```

8. Activate the HTTP daemon on the device.

```
[edit system]
admin@host# set services web-management http interface ge-0/0/4.0
```

Results

From configuration mode, confirm your configuration by entering the **show security**, **show access**, and **show system services** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
admin@host# show security
...
address-book {
    root-internal {
        address masters 12.12.1.0/24;
        attach {
            zone ls-root-trust;
        }
    }
    root-external {
        address design 12.1.1.0/24;
        address accounting 14.1.1.0/24;
        address marketing 13.1.1.0/24;
        address-set userlsys {
            address design;
            address accounting;
            address marketing;
        }
        attach {
            zone ls-root-untrust;
        }
    }
```

```
}
    policies {
        from-zone ls-root-trust to-zone ls-root-untrust {
            policy permit-to-userlsys {
                match {
                    source-address masters;
                    destination-address userlsys;
                    application any;
                }
                then {
                    permit;
                }
            }
        }
        from-zone ls-root-untrust to-zone ls-root-trust {
            policy permit-authorized-users {
                match {
                    source-address userlsys;
                    destination-address masters;
                    application [ junos-http junos-https ];
                }
                then {
                    permit {
                        firewall-authentication {
                            web-authentication;
                        }
                    }
                }
            }
        }
    }
    zones {
        security-zone ls-root-trust {
            interfaces {
                ge-0/0/4.0;
            }
        }
        security-zone ls-root-untrust {
            interfaces {
                lt-0/0/0.1;
            }
        }
    }
[edit]
```

```
admin@host# show access
...
firewall-authentication {
    web-authentication {
        default-profile ldap1;
        banner {
            success "WEB AUTH LOGIN SUCCESS";
        }
    }
}
[edit]
admin@host# show system services
web-management {
    http {
        interface ge-0/0/4.0;
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Policy Configuration | **185**

To confirm that the configuration is working properly, perform these tasks:

Verifying Policy Configuration

Purpose

Verify information about policies and rules.

Action

From operational mode, enter the **show security policies detail** command to display a summary of all policies configured on the logical system.

SEE ALSO

Understanding Logical Systems Zones | 156
Understanding Logical Systems Security Policies | 210

Understanding Logical System Firewall Authentication

A firewall user is a network user who must provide a username and password for authentication when initiating a connection across the firewall. Junos OS enables administrators to restrict and permit firewall users to access protected resources (different zones) behind a firewall based on their source IP address and other credentials.

The master administrator is responsible for configuring access profiles in the master logical system. Access profiles store usernames and passwords of users or point to external authentication servers where such information is stored. Access profiles configured at the master logical system are available to all user logical systems.

The master administrator configures the maximum and reserved numbers of firewall authentications for each user logical system. The user logical system administrator can then create firewall authentications in the user logical system. From a user logical system, the user logical system administrator can use the **show system security-profile auth-entry** command to view the number of authentication resources allocated to the user logical system.

To configure the access profile, the master administrator uses the **profile** configuration statement at the [**edit access**] hierarchy level in the master logical system. The access profile can also include the order of authentication methods, LDAP or RADIUS server options, and session options.

The user logical system administrator can then associate the access profile with a security policy in the user logical system. The user logical system administrator also specifies the type of authentication:

- With pass-through authentication, a host or a user from one zone tries to access resources on another zone using an FTP, a telnet, or an HTTP client. The device uses FTP, Telnet, or HTTP to collect username and password information, and subsequent traffic from the user or host is allowed or denied based on the result of this authentication.
- With Web authentication, users use HTTP to connect to an IP address on the device that is enabled for Web authentication and are prompted for the username and password. Subsequent traffic from the user or host to the protected resource is allowed or denied based on the result of this authentication.

The user logical system administrator configures the following properties for firewall authentication in the user logical system:

- Security policy that specifies firewall authentication for matching traffic. Firewall authentication is specified with the **firewall-authentication** configuration statement at the [**edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name* then permit**] hierarchy level.

Users or user groups in an access profile who are allowed access by the policy can optionally be specified with the client-match configuration statement. (If no users or user groups are specified, any user who is successfully authenticated is allowed access.)

For pass-through authentication, the access profile can optionally be specified and Web redirect (redirecting the client system to a webpage for authentication) can be enabled.

- Type of authentication (pass-through or Web authentication), default access profile, and success banner for the FTP, Telnet, or HTTP session. These properties are configured with the **firewall-authentication** configuration statement at the [**edit access**] hierarchy level.
- Host inbound traffic. Protocols, services, or both are allowed to access the logical system. The types of traffic are configured with the **host-inbound-traffic** configuration statement at the [**edit security zones security-zone *zone-name***] or [**edit security zones security-zone *zone-name* interfaces *interface-name***] hierarchy levels.

From a user logical system, the user logical system administrator can use the **show security firewall-authentication users** or **show security firewall-authentication history** commands to view the information about firewall users and history for the user logical system. From the master logical system, the master administrator can use the same commands to view information for the master logical system, a specific user logical system, or all logical systems.

SEE ALSO

User Logical Systems Configuration Overview | 71

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Firewall User Authentication Overview

Example: Configuring Firewall Authentication for a User Logical System

IN THIS SECTION

- Requirements | 188
- Overview | 188
- Configuration | 189
- Verification | 191

This example shows how to configure firewall authentication for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Use the **show system security-profiles auth-entry** command to see the firewall authentication entries allocated to the logical system.
- Access profiles must be configured in the master logical system by the master administrator.

Overview

This example configures the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

In this example, users in the ls-marketing-dept and ls-accounting-dept logical systems are required to authenticate when initiating certain connections to the product designers subnet. This example configures the firewall authentication described in Table 6 on page 106.

> **NOTE:** This example uses the access profile configured and address book entries configured in "Example: Configuring Security Zones for a User Logical Systems" on page 171.

Table 18: User Logical System Firewall Authentication Configuration

Feature	Name	Configuration Parameters
Security policy	permit-authorized-users **NOTE:** Policy lookup is performed in the order that the policies are configured. The first policy that matches the traffic is used. If you have previously configured a policy that permits traffic for the same from-zone, to-zone, source address, and destination address but with application **any**, the policy configured in this example would never be matched. (See "Example: Configuring Security Policies in a User Logical Systems" on page 212.) Therefore, this policy should be reordered so that it is checked first.	Permit firewall authentication for the following traffic: • From zone: ls-product-design-untrust • To zone: ls-product-design-trust • Source address: otherlsys • Destination address: product-engineers • Application: junos-h323 The ldap1 access profile is used for pass-through authentication.

Table 18: User Logical System Firewall Authentication Configuration *(continued)*

Feature	Name	Configuration Parameters
Firewall authentication		• Pass-through authentication • HTTP login prompt “welcome” • Default access profile ldap1

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-authorized-users match source-address otherlsys
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-authorized-users match destination-address product-designers
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-authorized-users match application junos-h323
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-authorized-users then permit firewall-authentication pass-through access-profile ldap1
set access firewall-authentication pass-through default-profile ldap1
set access firewall-authentication pass-through http banner login “welcome”
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure firewall authentication in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

   ```
   lsdesignadmin1@host:ls-product-design> configure
   lsdesignadmin1@host:ls-product-design#
   ```

2. Configure a security policy that permits firewall authentication.

   ```
   [edit security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust]
   lsdesignadmin1@host:ls-product-design# set policy permit-authorized-users match source-address otherlsys
   ```

```
lsdesignadmin1@host:ls-product-design# set policy permit-authorized-users match destination -address
  product-designers
lsdesignadmin1@host:ls-product-design# set policy permit-authorized-users match application junos-h323
lsdesignadmin1@host:ls-product-design# set policy permit-authorized-users then permit
  firewall-authentication pass-through access-profile ldap1
```

3. Reorder the security policies.

```
[edit]
lsdesignadmin1@host:ls-product-design# insert security policies from-zone ls-product-design-untrust to-zone
  ls-product-design-trust policy permit-authorized-users before policy permit-all-from-otherlsys
```

4. Configure firewall authentication.

```
[edit access firewall-authentication]
lsdesignadmin1@host:ls-product-design# set pass-through http banner login "welcome"
lsdesignadmin1@host:ls-product-design# set pass-through default-profile ldap1
```

Results

From configuration mode, confirm your configuration by entering the **show security policies** and **show access firewall-authentication** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security policies
from-zone ls-product-design-trust to-zone ls-product-design-untrust {
    policy permit-all-to-otherlsys {
        match {
            source-address product-designers;
            destination-address otherlsys;
            application any;
        }
        then {
            permit;
        }
    }
}
    from-zone ls-product-design-untrust to-zone ls-product-design-trust {
        policy permit-authorized-users {
            match {
                source-address otherlsys;
```

```
            destination-address product-designers;
            application junos-h323;
        }
        then {
            permit {
                firewall-authentication {
                    pass-through {
                        access-profile ldap1;
                    }
                }
            }
        }
    }
    policy permit-all-from-otherlsys {
        match {
            source-address otherlsys;
            destination-address product-designers;
            application any;
        }
        then {
            permit;
        }
    }
}
lsdesignadmin1@host:ls-product-design# show access firewall-authentication
pass-through {
    default-profile ldap1;
    http {
        banner {
            login welcome;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Firewall User Authentication and Monitoring Users and IP Addresses | **192**

To confirm that the configuration is working properly, perform these tasks:

Verifying Firewall User Authentication and Monitoring Users and IP Addresses

Purpose

Display firewall authentication user history and verify the number of firewall users who successfully authenticated and firewall users who failed to log in.

Action

From operational mode, enter these **show** commands.

```
lsdesignadmin1@host:ls-product-design> show security firewall-authentication history
lsdesignadmin1@host:ls-product-design> show security firewall-authentication history identifier id
lsdesignadmin1@host:ls-product-design> show security firewall-authentication users
lsdesignadmin1@host:ls-product-design> show security firewall-authentication users identifier id
```

SEE ALSO

User Logical Systems Configuration Overview | 71

Example: Configuring Pass-Through Authentication

Understanding Integrated User Firewall support in a Logical System

Starting in Junos OS Release 18.3R1, the support for authentication sources is extended to include Local authentication, Active Directory (AD) authentication, and firewall authentication in addition to the existing support for authentication sources Juniper Identity Management Service (JIMS) and ClearPass authentication.

Starting in Junos OS Release 18.2R1, the support for user firewall authentication is enhanced using a shared model. In this model, user logical systems share user firewall configuration and authentication entries with the master logical system and the integrated user firewall authentication is supported in a user logical system.

In the shared model, user firewall related configuration is configured under master logical system, such as authentication source, authentication source priority, authentication entries timeout, and IP query or Individual query and so on. The user firewall provides user information service for an application in the SRX Series device, such as policy and logging. Traffic from a user logical system queries authentication tables from the master logical system.

The authentication tables are managed by a master logical system. The user logical systems share the authentication tables. Traffic from the master logical system and the user logical systems query the same authentication table. User logical systems enable the use of the source-identity in security policy.

For example, if the master logical system is configured with **employee** and the user logical system is configured with the source-identity **manager**, then the reference group of this authentication entry includes **employee** and **manager**. This reference group contains the same authentication entries from master logical system and user logical system.

Starting in Junos OS Release 19.3R1, support for user firewall authentication is enhanced by using a customized model through integrated JIMS with active mode. In this model, the logical system extracts the authentication entries from the root level. The master logical system is configured to the JIMS server based on the logical system and tenant system name. In active mode the SRX series device actively queries the authenticaton entries received from the JIMS server through HTTPs protocol. To reduce the data exchange, firewall filters are applied.

The user firewall uses the logical system name as a diffrentiator and is consistent between the JIMS server and SRX series device. The JIMS server sends the diffrentiator which is included in the authentication entry. The authentication entries are distributed into the root logical system, when the diffrentiator is set as default for master logical system.

The user firewall support In-service software upgrade (ISSU) for logical systems, as user firewall changes the internal database table format from Junos OS Release 19.2R1 onwards. Prior to Junos OS Release 19.2R1, the ISSU is not supported for logical systems.

Limitation of Using User Firewall Authentication

Using user firewall authentication on tenant systems has the following limitation:

- The authentication entries are collected by the JIMS server based on the IP address from the customer network. If the IP addresses overlap, then the authentication entry changes when users login under different user logical systems.

Limitation of Using User Firewall Authentication in Customized Model on Logical Systems

Using user firewall authentication in customized model on logical systems has the following limitation:

- The JIMS server configurations to be configured under the root logical systems.
- The logical system name should be consistent and unique between the JIMS server and the SRX series device.

SEE ALSO

show services user-identification authentication-table | 1118

Example: Configuring Integrated User Firewall Identification Management for a User Logical System

IN THIS SECTION

- Requirements | 194
- Overview | 195
- Configuration | 195
- Verification | 200

This example shows how to configure the SRX Series device's advanced query feature for obtaining user identity information from the Juniper Identity Management Service (JIMS) and the security policy to match the source identity for a user logical system. In the root logical system, user firewall is configured with JIMS, and then the root logical system manages all of authentication entries coming from JIMS. In this example, all of user logical systems share their authentication entries with the root logical system.

Requirements

This example uses the following hardware and software components:

- SRX1500 devices operating in chassis clustering
- JIMS server
- Junos OS Release 18.2 R1

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71
- Configure user logical systems lsys1 and lsys2. See "Example: Configuring User Logical Systems" on page 157
- Configure security profile on master logical system and assign it to user logical systems lsys1 and lsys2. See "Example: Configuring Logical Systems Security Profiles (Master Administrators Only)" on page 94

- Configure interfaces and routing options on logical systems root logical system, user logical systems lsys1, and lsys2. See "Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only)" on page 127 and "Example: Configuring Interfaces and Routing Instances for a User Logical Systems" on page 147
- Configure security policies for a user logical systems. See "Example: Configuring Security Policies in a User Logical Systems" on page 212
- Configure zones for a user logical system. See "Example: Configuring Security Zones for a User Logical Systems" on page 171
- Configure logical systems in a basic active/passive chassis cluster. See "Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (Master Administrators Only)" on page 383

Overview

In this example, you can configure JIMS with HTTPs connection on port 443 and primary server with IPv4 address on master logical system, policy p1 with source-identity "group1" of dc0 domain on logical system lsys1, policy p1 with source-identity "group1" of dc0 domain on logical system lsys2, and send traffic from and through logical system lsys1 to logical system lsys2. You can view the authentication entries on master logical system and user logical systems (lsys1 and lsys2) even after rebooting the primary node.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match
    source-address any
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match
    destination-address any
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match
    application any
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 then
    permit
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match
    source-identity "example.com\group1"
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 then
    permit
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2
    match source-address any
```

```
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2
    match destination-address any
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2
    match application any
set logical-systems lsys1 security policies from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2 then
    permit
set logical-systems lsys1 security policies from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3
    match source-address any
set logical-systems lsys1 security policies from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3
    match destination-address any
set logical-systems lsys1 security policies from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3
    match application any
set logical-systems lsys1 security policies from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3 then
    permit
set logical-systems lsys1 security policies policy-rematch
set logical-systems lsys2 security policies from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1
    match source-address any
set logical-systems lsys2 security policies from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1
    match destination-address any
set logical-systems lsys2 security policies from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1
    match application any
set logical-systems lsys2 security policies from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1
    match source-identity "example.com\group2"
set logical-systems lsys2 security policies from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1
    then permit
set logical-systems lsys2 security policies policy-rematch
set services user-identification identity-management connection connect-method https
set services user-identification identity-management connection port 443
set services user-identification identity-management connection primary address 192.0.2.5
set services user-identification identity-management connection primary client-id otest
set services user-identification identity-management connection primary client-secret "$ABC123"
set security policies from-zone root_trust to-zone root_trust policy root_policy1 match source-address any
set security policies from-zone root_trust to-zone root_trust policy root_policy1 match destination-address any
set security policies from-zone root_trust to-zone root_trust policy root_policy1 match application any
set security policies from-zone root_trust to-zone root_trust policy root_policy1 then permit
set security policies policy-rematch
set security zones security-zone root_trust interfaces reth1.0 host-inbound-traffic system-services all
set security zones security-zone root_trust interfaces reth1.0 host-inbound-traffic protocols all
set security zones security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic system-services all
set security zones security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic protocols all
set firewall family inet filter impair-ldap term allow_all then accept
```

Configuring user firewall identification management

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure user firewall identification management:

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
user@host> configure
user@host#
```

2. Create logical systems.

```
[edit logical-systems]
user@host#set LSYS0
user@host#set LSYS1
user@host#set LSYS2
```

3. Configure a security policy lsys1_policy1 with source-identity group1 on logical system lsys1 that permits traffic from lsys1_trust to lsys1_trust.

```
[edit security policies]
user@host#set from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match source-address any
user@host#set from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match destination-address
   any
user@host#set from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match application any
user@host#set from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 match source-identity
   "example.com\group1"
user@host#set from-zone lsys1_trust to-zone lsys1_trust policy lsys1_policy1 then permit
```

4. Configure a security policy lsys1_policy2 that permits traffic from lsys1_trust to lsys1_untrust.

```
[edit security policies]
user@host#set from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2 match source-address any
user@host#set from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2 match destination-address
   any
user@host#set from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2 match application any
user@host#set from-zone lsys1_trust to-zone lsys1_untrust policy lsys1_policy2 then permit
```

5. Configure a security policy lsys1_policy3 that permits traffic from lsys1_untrust to lsys1_trust.

```
[edit security policies]
```

```
user@host#set from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3 match source-address any
user@host#set from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3 match destination-address
    any
user@host#set from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3 match application any
user@host#set from-zone lsys1_untrust to-zone lsys1_trust policy lsys1_policy3 then permit
user@host#set policy-rematch
```

6. Configure security zone and assign interfaces to each zone.

```
[edit security zones]
user@host#set security-zone lsys1_trust interfaces reth2.0 host-inbound-traffic system-services all
user@host#set security-zone lsys1_trust interfaces reth2.0 host-inbound-traffic protocols all
user@host#set security-zone lsys1_trust interfaces lt-0/0/0.11 host-inbound-traffic system-services all
user@host#set security-zone lsys1_trust interfaces lt-0/0/0.11 host-inbound-traffic protocols all
user@host#set security-zone lsys1_untrust interfaces reth3.0 host-inbound-traffic system-services all
user@host#set security-zone lsys1_untrust interfaces reth3.0 host-inbound-traffic protocols all
```

7. Configure a security policy lsys2_policy1 with source-identity group1 that permits traffic from lsys2_untrust to lsys2_untrust on lsys2.

```
[edit security policies]
user@host#set from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1 match source-address
    any
user@host#set from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1 match destination-address
    any
user@host#set from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1 match application any
user@host#set from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1 match source-identity
    "example.com\group2"
user@host#set from-zone lsys2_untrust to-zone lsys2_untrust policy lsys2_policy1 then permit
user@host#set policy-rematch
```

8. Configure security zones and assign interfaces to each zone on lsys2.

```
[edit security zones]
user@host#set security-zone lsys2_untrust interfaces reth4.0 host-inbound-traffic system-services all
user@host#set security-zone lsys2_untrust interfaces reth4.0 host-inbound-traffic protocols all
user@host#set security-zone lsys2_untrust interfaces lt-0/0/0.21 host-inbound-traffic system-services all
user@host#set security-zone lsys2_untrust interfaces lt-0/0/0.21 host-inbound-traffic protocols all
```

9. Configure JIMS as the authentication source for advanced query requests with the primary address. The SRX Series device requires this information to contact the server.

```
[edit services user-identification identity-management]
user@host#set connection port 443
user@host#set connection connect-method https
user@host#set connection primary address 192.0.2.5
user@host#set connection primary client-id otest
user@host#set connection primary client-secret test
user@host#set authentication-entry-timeout 0
```

10. Configure security policies and zones on master logical system.

```
[edit security policies]
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 match source-address any
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 match destination-address any
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 match application any
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 then permit
user@host#set policy-rematch
```

11. Configure security zones and assign interfaces to each zone on master logical system.

```
[edit security zones]
user@host#set security-zone root_trust interfaces reth1.0 host-inbound-traffic system-services all
user@host#set security-zone root_trust interfaces reth1.0 host-inbound-traffic protocols all
user@host#set security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic system-services all
user@host#set security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic protocols all
user@host#set firewall family inet filter impair-ldap term allow_all then accept
```

Results

From configuration mode, confirm your configuration by entering the **show services user-identification identity-management show chassis cluster** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show services user-identification identity-management
connection {
    connect-method https;
    port 443;
    primary {
        address 192.0.2.5;
        client-id otest;
        client-secret "$ABC123"; ## SECRET-DATA
    }
```

```
}
```

```
user@host# show chassis cluster
reth-count 5;
   control-ports {
   fpc 3 port 0;
   fpc 9 port 0;
}
redundancy-group 0 {
   node 0 priority 200;
   node 1 priority 1;
}
redundancy-group 1 {
   node 0 priority 100;
   node 1 priority 1;
}
redundancy-group 2 {
   node 0 priority 100;
   node 1 priority 1;
}
redundancy-group 3 {
   node 0 priority 100;
   node 1 priority 1;
}
redundancy-group 4 {
   node 0 priority 100;
   node 1 priority 1;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying chassis cluster status and authentication entries | **201**
- Verifying chassis cluster status | **201**

To confirm that the configuration is working properly, perform the below tasks:

Verifying chassis cluster status and authentication entries

Purpose

To verify authentication entries in a logical system.

Action

To verify the configuration is working properly, enter the **show services user-identification authentication-table authentication-source identity-management logical-system all** command.

user@host> show services user-identification authentication-table authentication-source identity-management logical-system all

```
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system
Domain: ad2012.jims.com
Total entries: 3
Source IP       Username       groups(Ref by policy)          state
2001:db8:aaaa:  N/A                                           Valid
2001:db8:aaaa:  administrator                                 Valid
203.0.113.50    administrator                                 Valid
node1:
--------------------------------------------------------------------------
Logical System: root-logical-system
Domain: ad2012.jims.com
Total entries: 3
Source IP       Username       groups(Ref by policy)          state
2001:db8:aaaa:  N/A                                           Valid
2001:db8:aaaa:  administrator                                 Valid
203.0.113.50    administrator                                 Valid
```

Meaning

The output displays the authentication entries that are shared from user logical system to root logical system.

Verifying chassis cluster status

Purpose

Verify chassis cluster status after rebooting the primary node.

Action

To verify the configuration is working properly, enter the **show chassis cluster status** command.

user@host> show chassis cluster status

```
Monitor Failure codes:
CS  Cold Sync monitoring        FL  Fabric Connection monitoring
GR  GRES monitoring             HW  Hardware monitoring
IF  Interface monitoring        IP  IP monitoring
LB  Loopback monitoring         MB  Mbuf monitoring
NH  Nexthop monitoring          NP  NPC monitoring
SP  SPU monitoring              SM  Schedule monitoring
CF  Config Sync monitoring      RE  Relinquish monitoring
Cluster ID: 6
Node   Priority Status               Preempt Manual   Monitor-failures
Redundancy group: 0 , Failover count: 0
node0  200      hold                 no      no       None
node1  1        secondary            no      no       None
Redundancy group: 1 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
Redundancy group: 2 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
Redundancy group: 3 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
Redundancy group: 4 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
```

Meaning

The output displays user identification management session existing on lsys1 and lsys2 after rebooting the primary node.

SEE ALSO

show services user-identification authentication-table | **1118**

Example: Configure Integrated User Firewall in Customized Model for Logical System

IN THIS SECTION

- Requirements | 203
- Overview | 204
- Configuration | 204
- Verification | 207

This example shows how to configure the integrated user firewall by using a customized model through the Juniper Identity Management Service (JIMS) server with active mode for a logical system. The master logical systems does not share the authentication entries with the logical system. The SRX series device queries the authentication entries received from the JIMS server through HTTPs protocol in active mode.

In this example following configurations are performed:

- Active JIMS Server Configuration
- Logical System IP Query Configuration
- Logical System Authentication Entry Configuration
- Logical System Security Policy Configuration

Requirements

This example uses the following hardware and software components:

- JIMS server version 2.0
- Junos OS Release 19.3R1

Before you begin, be sure you have following information:

- The IP address of the JIMS server.
- The port number on the JIMS server for receiving HTTPs requests.
- The client ID from the JIMS server for active query server.
- The client secret from the JIMS server for active query server.

Overview

In this example, you can configure JIMS with HTTPs connection on port 443 and primary server with IPv4 address on the master logical system, policy p2 with source-identity **group1** on logical system **LSYS1**.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the [edit] hierarchy level, and then enter commit from configuration mode.

```
set services user-identification logical-domain-identity-management active query-server jims1 connection
    connect-method https
set services user-identification logical-domain-identity-management active query-server jims1 connection port
    443
set services user-identification logical-domain-identity-management active query-server jims1 connection
    primary address 192.0.2.5
set services user-identification logical-domain-identity-management active query-server jims1 connection
    primary client-id otest
set services user-identification logical-domain-identity-management active query-server jims1 connection
    primary client-secret "$ABC123"
set logical-systems LSYS1 services user-identification logical-domain-identity-management active ip-query
    query-delay-time 30
set logical-systems LSYS1 services user-identification logical-domain-identity-management active
    invalid-authentication-entry-timeout 1
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match source-address any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match destination-address
    any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match application any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match source-identity
    "example.com\group1"
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 then permit
```

Configuring Integrated User Firewall in Customized Model:

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configuring Integrated User Firewall in Customized Model:

1. Configure JIMS as the authentication source for advanced query requests with the primary address. The SRX Series device requires this information to contact the server.

```
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection connect-method https
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection port 443
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection primary address 192.0.2.5
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection primary client-id otest
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection primary client-secret "$ABC123"
```

2. Configure the IP query delay time for LSYS1.

```
user@host# set logical-systems LSYS1 services user-identification logical-domain-identity-management
    active ip-query query-delay-time 30
```

3. Configure the authentication entry attributes for LSYS1.

```
user@host# set logical-systems LSYS1 services user-identification logical-domain-identity-management
    active invalid-authentication-entry-timeout 1
```

4. Configure the security policy p2 that permits traffic from-zone untrust to-zone trust for LSYS1.

```
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match
    source-address any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match
    destination-address any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match
    application any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 match
    source-identity "example.com\group1"
user@host#set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy p2 then permit
```

Results

From configuration mode, confirm your configuration by entering the **show services user-identification logical-domain-identity-management** and **show logical-systems LSYS1** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show services user-identification logical-domain-identity-management
```

```
active {
    query-server jims1 {
        connection {
            connect-method https;
            port 443;
            primary {
                address 1.1.1.1;
                client-id otest;
                client-secret "$ABC123"; ## SECRET-DATA
            }
        }
    }
}
```

```
user@host# show logical-systems LSYS1
security {
    policies {
        from-zone untrust to-zone trust {
            policy p2 {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                    source-identity "example.com\group1";
                }
                then {
                    permit;
                }
            }
        }
    }
}
services {
    user-identification {
        logical-domain-identity-management {
            active {
                invalid-authentication-entry-timeout 1;
                ip-query {
                    query-delay-time 30;
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying the User Identification Identity Management status

Purpose

Verify the user identification status for identity-management as the authentication source.

Action

To verify the configuration is working properly, enter the **show services user-identification logical-domain-identity-management status** command.

```
user@host>show services user-identification logical-domain-identity-management status
```

```
node0:
--------------------------------------------------------------------------
      Query server name                :jims1
      Primary server :
     Address                      : 1.1.1.1
     Port                         : 443
     Connection method            : HTTPS
     Connection status            : Online
     Last received status message : OK (200)
     Access token                 : isdHIbl8BXwxFftMRubGVsELRukYXtW3rtKmHiL
     Token expire time            : 2017-11-27 23:45:22
     Secondary server :
     Address                      : Not configured
```

Meaning

The output displays the statistical data about the advanced user query function batch queries and IP queries, or show status on the Juniper Identity Management Service servers.

Verifying the User Identification Identity Management status counters

Purpose

Verify the user identification counters for identity-management as the authentication source.

Action

To verify the configuration is working properly, enter the **show services user-identification logical-domain-identity-management counters** command.

```
user@host>show services user-identification logical-domain-identity-management counters
```

```
node0:
      --------------------------------------------------------------------------
   Query server name                      :jims1
    Primary server :
     Address                           : 10.208.137.208
     Batch query sent number           : 65381
     Batch query total response number : 64930
     Batch query error response number : 38
     Batch query last response time    : 2018-08-14 15:10:52
     IP query sent number              : 10
     IP query total response number    : 10
     IP query error response number    : 0
     IP query last response time       : 2018-08-13 12:41:56
  Secondary server :
 Address                           : Not configured
```

Meaning

The output displays the statistical data about the advanced user query function batch queries and IP queries, or show counters on the Juniper Identity Management Service servers.

Verifying the User Identification Authentication Table

Purpose

Verify the user identity information authentication table entries for the specified authentication source.

Action

To verify the configuration is working properly, enter the **show services user-identification authentication-table authentication-source all logical-system LSYS1** command.

`user@host>`**show services user-identification authentication-table authentication-source all logical-system LSYS1**

```
node0:
      --------------------------------------------------------------------------
   Logical System: LSYS1
Domain: ad03.net
Total entries: 4
Source IP       Username       groups(Ref by policy)         state
12.0.0.2        administrator  posture-healthy               Valid
12.0.0.15       administrator  posture-healthy               Valid
3000::5         N/A            posture-healthy               Valid
fe80::342c:302b N/A            posture-healthy               Valid
```

Meaning

The output displays the entire content of the specified authentication source's authentication table, or a specific domain, group, or user based on the user name. Display the identity information for a user based on the IP address of the user's device.

Release History Table

Release	Description
19.3R1	Starting in Junos OS Release 19.3R1, support for user firewall authentication is enhanced by using a customized model through integrated JIMS with active mode.
18.3R1	Starting in Junos OS Release 18.3R1, the support for authentication sources is extended to include Local authentication, Active Directory (AD) authentication, and firewall authentication in addition to the existing support for authentication sources Juniper Identity Management Service (JIMS) and ClearPass authentication.
18.2R1	Starting in Junos OS Release 18.2R1, the support for user firewall authentication is enhanced using a shared model. In this model, user logical systems share user firewall configuration and authentication entries with the master logical system and the integrated user firewall authentication is supported in a user logical system.

RELATED DOCUMENTATION

Example: Configuring Security log stream for Logical Systems | 110

Security Policies for Logical Systems

IN THIS SECTION

- Understanding Logical Systems Security Policies | 210
- Example: Configuring Security Policies in a User Logical Systems | 212
- Configuring Dynamic Address for Logical Systems | 216

Security policies are used to secure business and control access to LAN resources. Secure access is required both within the company across the LAN and in its interactions with external networks such as the Internet. Junos OS provides powerful network security features through its stateful firewall, application firewall, and user identity firewall. All three types of firewall enforcement are implemented through security policies. For more information, see the following topics:

Understanding Logical Systems Security Policies

IN THIS SECTION

- Security Policies in Logical Systems | **210**
- Application Timeouts | **211**
- Security Policy Allocation | **211**

Security Policies in Logical Systems

Security policies enforce rules for what traffic can pass through the firewall and actions that need to take place on the traffic as it passes through the firewall. From the perspective of security policies, traffic enters one security zone and exits another security zone.

By default, a logical system denies all traffic in all directions, including intra-zone and inter-zone directions. Through the creation of security policies, the logical system administrator can control the traffic flow from zone to zone by defining the kinds of traffic permitted to pass from specified sources to specified destinations.

Security policies can be configured in the master logical system and in user logical systems. Configuring a security policy in a logical system is the same as configuring a security policy on a device that is not configured for logical systems. Any security policies, policy rules, address books, applications and application sets, and schedulers created within a logical system are only applicable to that logical system. Only predefined applications and application sets, such as **junos-ftp**, can be shared between logical systems.

> **NOTE:** In a logical system, you cannot specify **global** as either the from-zone or the to-zone in a security policy.

The user logical system administrator can configure and view all attributes for security policies in a user logical system. All attributes of a security policy in a user logical system are also visible to the master administrator.

Starting in Junos OS Release 18.4R1, the user can create dynamic address within a logical system. A dynamic address entry contains IP addresses and prefixes extracted from external sources. The security policies use the dynamic address in the source-address field or destination-address field.

A dynamic address entry (DAE) is a group of IP addresses that can be entered manually or imported from external sources within logical systems. The DAE feature allows feed-based IP objects to be used in security policies to either deny or allow traffic based on either source or destination IP criteria.

> **NOTE:** The maximum number of DAE depends on the dynamic-addresses assigned to the logical systems. Starting in Junos 18.4R1, the **set security dynamic-address feed-server** command can be configured under the logical systems.

Application Timeouts

The application timeout value set for an application determines the session timeout. Application timeout behavior is the same in a logical system as at the root level. However, user logical system administrators can use predefined applications in security policies but cannot modify the timeout value of predefined applications. This is because the predefined applications are shared by the master logical system and all user logical systems, so the user logical system administrator is not allowed to change its behavior. Application timeout values are stored in the application entry database and in the corresponding logical system TCP and UDP port-based timeout tables.

If the application that is matched for the traffic has a timeout value, that timeout value is used. Otherwise, the lookup proceeds in the following order until an application timeout value is found:

1. The logical system TCP and UDP port-based timeout table is searched for a timeout value.
2. The root TCP and UDP port-based timeout table is searched for a timeout value.
3. The protocol-based default timeout table is searched for a timeout value.

Security Policy Allocation

The master administrator configures the maximum and reserved numbers of security policies for each user logical system. The user logical system administrator can then create security policies in the user logical system. From a user logical system, the user logical system administrator can use the **show system**

security-profile policy command to view the number of security policies allocated to the user logical system.

> **NOTE:** The master administrator can configure a security profile for the master logical system that specifies the maximum and reserved numbers of security policies applied to the master logical system. The number of policies configured in the master logical system count toward the maximum number of policies available on the device.

SEE ALSO

- Example: Configuring Security Policies in a User Logical Systems | **212**
- Understanding Logical Systems Security Profiles (Master Administrators Only) | **88**
- User Logical Systems Configuration Overview | **71**
- *Security Policies Overview*
- *Understanding Policy Application Timeout Configuration and Lookup*

Example: Configuring Security Policies in a User Logical Systems

IN THIS SECTION

- Requirements | **213**
- Overview | **213**
- Configuration | **213**
- Verification | **216**

This example shows how to configure security policies for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Use the **show system security-profiles policy** command to see the security policy resources allocated to the logical system.
- Configure zones and address books. See "Example: Configuring Security Zones for a User Logical Systems" on page 171.

Overview

This example configures the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example configures the security policies described in Table 19 on page 213.

Table 19: User Logical System Security Policies Configuration

Name	Configuration Parameters
permit-all-to-otherlsys	Permit the following traffic: • From zone: ls-product-design-trust • To zone: ls-product-design-untrust • Source address: product-designers • Destination address: otherlsys • Application: any
permit-all-from-otherlsys	Permit the following traffic: • From zone: ls-product-design-untrust • To zone: ls-product-design-trust • Source address: otherlsys • Destination address: product-designers • Application: any

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy
    permit-all-to-otherlsys match source-address product-designers
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy
    permit-all-to-otherlsys match destination-address otherlsys
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy
    permit-all-to-otherlsys match application any
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy
    permit-all-to-otherlsys then permit
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-all-from-otherlsys match source-address otherlsys
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-all-from-otherlsys match destination-address product-designers
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-all-from-otherlsys match application any
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy
    permit-all-from-otherlsys then permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure security policies in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a security policy that permits traffic from the ls-product-design-trust zone to the ls-product-design-untrust zone.

```
[edit security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust]
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys match source-address
    product-designers
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys match destination-address
    otherlsys
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys match application any
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys then permit
```

3. Configure a security policy that permits traffic from the ls-product-design-untrust zone to the ls-product-design-trust zone.

```
[edit security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust]
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys match source-address otherlsys
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys match destination-address
  product-designers
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys match application any
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys then permit
```

Results

From configuration mode, confirm your configuration by entering the **show security policies** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security policies
from-zone ls-product-design-trust to-zone ls-product-design-untrust {
    policy permit-all-to-otherlsys {
        match {
            source-address product-designers;
            destination-address otherlsys;
            application any;
        }
        then {
            permit;
        }
    }
}
    from-zone ls-product-design-untrust to-zone ls-product-design-trust {
        policy permit-all-from-otherlsys {
            match {
                source-address otherlsys;
                destination-address product-designers;
                application any;
            }
            then {
                permit;
            }
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Policy Configuration | 216

To confirm that the configuration is working properly, perform these tasks:

Verifying Policy Configuration

Purpose

Verify information about policies and rules.

Action

From operational mode, enter the **show security policies detail** command to display a summary of all policies configured on the logical system.

SEE ALSO

Understanding Logical Systems Security Policies | 210

User Logical Systems Configuration Overview | 71

Troubleshooting Security Policies

Configuring Dynamic Address for Logical Systems

A dynamic address entry in logical systems provides dynamic IP address information to security policies. To use dynamic address, you must specify basic information of dynamic address including their names, feeds and properties for a logical system.

- Read the "Example: Configuring Security Policies in a User Logical Systems" on page 212 to understand how and where this procedure fits to configure the security policy.

To configure dynamic address in IPv4 networks within a logical system:

1. Define the logical system name as LSYS1.

```
[edit]
```

```
user@host# set logical-systems LSYS1
```

2. Create dynamic address within a logical system.

```
[edit logical-systems LSYS1]
user@host# set security dynamic-address address-name Ipv4 profile category IPFilter feed fd1
```

3. Confirm your configuration by entering the **show logical-systems LSYS1 security dynamic-address** command.

```
[edit]
user@host# show logical-systems LSYS1 security dynamic-address
address-name Ipv4 {
   profile {
      category GeoIP;
      category IPFilter {
         feed fd1;
         }
      }
   }
}
```

- To configure the security policies in the logical system:

  1. Define the logical system name as LSYS1.

     ```
     [edit]
     user@host# set logical-systems LSYS1
     ```

  2. Create a security policy as p1 that permits traffic from zone trust to zone untrust and configure the match condition.

     ```
     [edit logical-systems LSYS1 security policies from-zone trust to-zone untrust]
     user@host# set policy p1 match source-address any
     user@host# set policy p1 match destination-address any
     user@host# set policy p1 match application any
     user@host# set policy p1 then permit
     ```

  3. Confirm your configuration by entering the **show logical-systems LSYS1 security policies** command.

     ```
     [edit]
     user@host# show logical-systems LSYS1 security policies
     from-zone trust to-zone untrust {
        policy p1 {
           match {
              source-address any;
              destination-address any;
              application any;
           }
           then {
              permit;
           }
        }
     }
     ```

Screen Options for User Logical Systems

IN THIS SECTION

- Understanding Logical Systems Screen Options | 219
- Example: Configuring Screen Options for a User Logical Systems | 219

Screen options on SRX Series devices prevent attacks, such as IP address sweeps, port scans, denial of service (DOS) attacks, ICMP, UDP, and SYN floods. For more information, see the following topics:

Understanding Logical Systems Screen Options

Junos OS screen options secure a zone by inspecting, then allowing or denying, all connection attempts that require crossing an interface bound to that zone. Junos OS then applies firewall policies, which can contain content filtering and IDP components, to the traffic that passes the screen filters.

All screen options available on the device are available in each logical system. Each user logical system administrator can configure screen options for their user logical system. The master administrator can configure screen options for the master logical system as well as all user logical systems.

The user logical system administrator can configure and view all screen options in a user logical system. All screen options in a user logical system are visible to the master administrator.

SEE ALSO

Example: Configuring Screen Options for a User Logical Systems | 219

User Logical Systems Configuration Overview | 71

Attack Detection and Prevention Overview

Example: Configuring Screen Options for a User Logical Systems

IN THIS SECTION

- Requirements | 220
- Overview | 220
- Configuration | 220

This example shows how to configure screen options for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the user logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Configure zones for the user logical system. See "Example: Configuring Security Zones for a User Logical Systems" on page 171.

Overview

This example configures the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

You can limit the number of concurrent sessions to the same destination IP address in a user logical system. Setting a destination-based session limit can ensure that Junos OS allows only an acceptable number of concurrent connection requests—no matter what the source—to reach any one host. When the number of concurrent connection requests to an IP address surpasses the limit, Junos OS blocks further connection attempts to that IP address. This example creates the screen options described in Table 20 on page 220.

Table 20: User Logical System Screen Options Configuration

Name	Configuration Parameters
limit-destination-sessions	• Limits concurrent connection requests to destination IPs to 80. • Applied to ls-product-design-untrust zone.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security screen ids-option limit-destination-sessions limit-session destination-ip-based 80
set security zones security-zone ls-product-design-untrust screen limit-destination-sessions
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure destination-based session limits in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a screen option for a destination-based session limit.

```
[edit security]
lsdesignadmin1@host:ls-product-design# set screen ids-option limit-destination-sessions limit-session
    destination-ip-based 80
```

3. Set the security zone for the screen option.

```
[edit security]
lsdesignadmin1@host:ls-product-design# set zones security-zone ls-product-design-untrust screen
    limit-destination-sessions
```

Results

From configuration mode, confirm your configuration by entering the **show security screen** and **show security zone** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
lsdesignadmin1@host:ls-product-design# show security screen
ids-option limit-destination-sessions {
    limit-session {
        destination-ip-based 80;
    }
}
lsdesignadmin1@host:ls-product-design# show security zones
security-zone ls-product-design-trust {
    ...
}
    security-zone ls-product-design-untrust {
        screen limit-destination-sessions;
```

```
    ...
}
```

If you are done configuring the device, enter **commit** from configuration mode.

SEE ALSO

- User Logical Systems Configuration Overview | **71**
- Understanding Logical Systems Screen Options | **219**

RELATED DOCUMENTATION

- IDP for Logical Systems | **263**

Secure Wire for Logical Systems

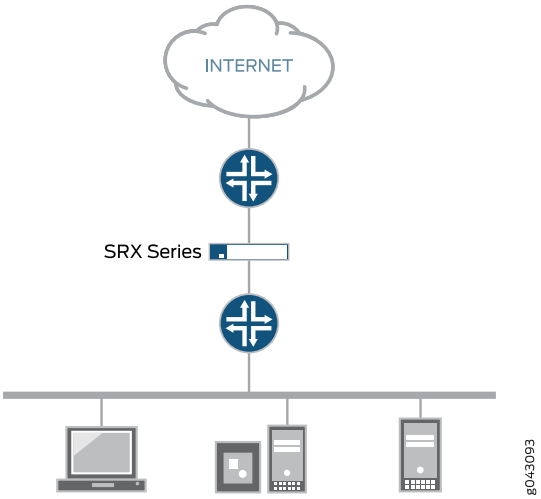
IN THIS SECTION

- Secure Wire for Logical Systems Overview | **222**
- Example: Configure Secure Wire for User Logical Systems | **224**

Secure Wire for Logical Systems Overview

You can forward the traffic that arrives on a specific interface without any change through another interface on logical systems. This mapping of interfaces on logical systems is called secure wire. Secure wire allows an SRX Series device to deploy in the path of network traffic without changing the routing tables or a reconfiguration of neighboring devices. Figure 7 on page 223 shows a typical in-path deployment of an SRX Series device with secure wire.

Figure 7: SRX Series Device In-Path Deployment with Secure Wire



Secure wire maps two peer interfaces. It differs from transparent and route modes, and there is no switching or routing lookup to forward traffic. When security policy permits the traffic, secure wire forwards a packet arriving on one peer interface immediately to the other peer interface without change. There is no routing or switching decision made on the packet. Secure wire also forwards the return traffic unchanged. The secure wire feature is supported for both IPv4 and IPv6 traffic on Ethernet logical interfaces only.

Secure wire is a special case of Layer 2 transparent mode on SRX Series devices that provide point-to-point connections. This means that the two interfaces of a secure wire must directly connect to Layer 3 entities, such as routers or hosts. You can connect secure wire interfaces to switches. However, note that when security policy permits traffic, a secure wire interface forwards all arriving traffic to the peer interface.

Secure wire can coexist with Layer 3 mode. While you configure Layer 2 and Layer 3 interfaces at the same time, traffic forwarding occurs independently on Layer 2 and Layer 3 interfaces.

Secure wire can coexist with Layer 2 transparent mode. If both features exist on the same SRX Series device, you need to configure them in different VLANs.

Secure wire support for root logical system extends to user logical systems. You can forward traffic immediately that arrives on a specific interface to another interface without modifying any received frames on the user logical systems.

Limitations

Secure wire doesn't support:

- IRB interface
- Z-mode

- MPLS label encapsulation
- Tenant system
- Interconnect logical system

Example: Configure Secure Wire for User Logical Systems

IN THIS SECTION

- Requirements | 224
- Overview | 224
- Configuration | 224
- Verification | 226

In this example, you can configure secure wire for a user logical system and forward traffic from one interface to another interface without changing any frame.

Requirements

Before you begin:

- Configure security profile for a user logical system, see "Example: Configuring User Logical Systems Security Profiles" on page 104.

Overview

In this example, you can configure 10-Gigabit Ethernet interfaces xe-1/0/1 and xe-1/0/2 under a user logical system, called LSYS1. You can configure secure wire resource allocation per logical system. When traffic passes to xe-1/0/1 interface, without changing any frame, secure wire forwards the traffic to xe-1/0/2 interface based on the defined security policy.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

```
user@host#set logical-systems LSYS1 security forwarding-options secure-wire myLSYS1sw01 interface xe-1/0/1.0
user@host#set logical-systems LSYS1 security forwarding-options secure-wire myLSYS1sw01 interface xe-1/0/2.0
user@host#set system security-profile prof1 secure-wire maximum 100
user@host#set system security-profile prof1 secure-wire reserved 1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

1. Configure secure wire under a user logical system.

```
[edit]
user@host#set logical-systems LSYS1 security forwarding-options secure-wire myLSYS1sw01 interface
   xe-1/0/1.0
user@host#set logical-systems LSYS1 security forwarding-options secure-wire myLSYS1sw01 interface
   xe-1/0/2.0
```

2. Create the security profile, and specify the number of maximum and reserved quota.

```
[edit]
user@host#set system security-profile prof1 secure-wire maximum 100
user@host#set system security-profile prof1 secure-wire reserved 1
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1 security forwarding-options secure-wire myLSYS1sw01**, and **show system security-profile prof1** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@host#show logical-systems LSYS1 security forwarding-options secure-wire myLSYS1sw01
interface [ xe-1/0/1.0 xe-1/0/2.0 ];
```

```
user@host#show system security-profile prof1
   secure-wire {
      maximum 100;
      reserved 1;
```

```
    }
    logical-system LSYS1;
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verify Secure Wire Mapping | **226**
- Verify Resource Allocation | **226**

Confirm that the configuration is working properly.

Verify Secure Wire Mapping

Purpose

Verify the secure wire mapping.

Action

From operational mode, enter the **show security forward-options secure-wire logical-system LSYS1** command.

```
Logical System       Secure wire                    Interface       Link
Interface       Link

LSYS1                myLSYS1sw01                    xe-1/0/1.0      up
xe-1/0/2.0      up
Total secure wires: 1
```

Verify Resource Allocation

Purpose

Verify the resource allocation for a user logical system.

Action

From operational mode, enter the **show system security-profile secure-wire logical-system LSYS1** command.

```
logical-system tenant name   security profile name       usage    reserved
maximum

LSYS1                        prof1                           1          1
    100
```

RELATED DOCUMENTATION

- security-profile | **805**
- *secure-wire*
- *show security forward-options secure-wire*
- show system security-profile secure-wire | **1151**

VPNs in Logical Systems

IN THIS SECTION

- Understanding Route-Based VPN Tunnels in Logical Systems | **228**
- Example: Configuring IKE and IPsec SAs for a VPN Tunnel (Master Administrators Only) | **229**
- Example: Configuring a Route-Based VPN Tunnel in a User Logical Systems | **238**

A VPN is an encrypted connection over the Internet from a device to a network. The encrypted connection helps ensure that sensitive data is safely transmitted. VPN prevents unauthorized access eavesdropping on the traffic, and allows the user to conduct work remotely. For more information, see the following topics:

Understanding Route-Based VPN Tunnels in Logical Systems

A VPN connection can secure traffic that passes between a logical system and a remote site across a WAN. With route-based VPNs, you configure one or more security policies in a logical system to regulate the traffic flowing through a single IP Security (IPsec) tunnel. For each IPsec tunnel, there is one set of IKE and IPsec security associations (SAs) that must be configured at the root level by the master administrator.

NOTE: The external interface configured under the gateway configuration can only be a part of the root logical system.

NOTE: Only route-based VPNs are supported in logical systems. Policy-based VPNs are not supported.

In addition to configuring IKE and IPsec SAs for each VPN, the master administrator must also assign a secure tunnel (st0) interface to a user logical system. An st0 interface can only be assigned to a single user logical system. However, multiple user logical systems can each be assigned their own st0 interface.

NOTE: The st0 unit 0 interface should not be assigned to a logical system, as an SA cannot be set up for this interface.

The user logical system administrator can configure the IP address and other attributes of the st0 interface assigned to the user logical system. The user logical system administrator cannot delete an st0 interface assigned to their user logical system.

For route-based VPNs, a security policy refers to a destination address and not a specific VPN tunnel. For cleartext traffic in a user logical system to be sent to the VPN tunnel for encapsulation, the user logical system administrator must make the following configurations:

- Security policy that permits traffic to a specified destination.
- Static route to the destination with the st0 interface as the next hop.

When Junos OS looks up routes in the user logical system to find the interface to use to send traffic to the destination address, it finds a static route through the st0 interface. Traffic is routed to the VPN tunnel as long as the security policy action is permit.

NOTE: Traffic selectors are not supported in logical systems.

The master logical system and a user logical system can share a route-based VPN tunnel. An st0 interface assigned to a user logical system can also be used by the master logical system. For the master logical system, the master administrator configures a security policy that permits traffic to the remote destination and a static route to the remote destination with the st0 interface as the next hop.

VPN monitoring is configured by the master administrator in the master logical system. For the VPN monitor source interface, the master administrator must specify the st0 interface; a physical interface for a user logical system cannot be specified.

SEE ALSO

Understanding Route-Based IPsec VPNs

User Logical Systems Configuration Overview | 71

Example: Configuring IKE and IPsec SAs for a VPN Tunnel (Master Administrators Only) | 229

Example: Configuring a Route-Based VPN Tunnel in a User Logical Systems | 238

Example: Configuring IKE and IPsec SAs for a VPN Tunnel (Master Administrators Only)

IN THIS SECTION

- Requirements | 230
- Overview | 230
- Configuration | 231
- Verification | 235

The master administrator is responsible for assigning an st0 interface to a user logical system and configuring IKE and IPsec SAs at the root level for each VPN tunnel. This example shows how to assign an st0 interface to a user logical system and configure IKE and IPsec SA parameters.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See “Understanding the Master Logical Systems and the Master Administrator Role” on page 45.
- Read *Understanding Route-Based IPsec VPNs*.

Overview

In this example you configure a VPN tunnel for the ls-product-design user logical system. This example configures the VPN tunnel parameters described in Table 21 on page 230.

Table 21: Logical System VPN Tunnel Configuration

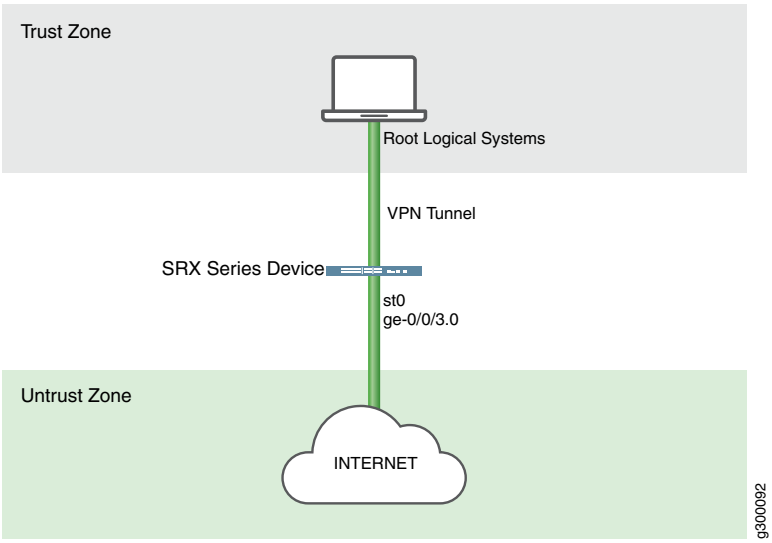
Feature	Name	Configuration Parameters
Tunnel interface	st0 unit 1	Assigned to ls-product-design logical system
IKE proposal	ike-phase1-proposal	• Preshared keys authentication • Diffie-Hellman group 2 • sha1 authentication algorithm • aes-128-cbc encryption algorithm
IKE policy		• Main mode • References IKE proposal ike-phase1-proposal • ASCII preshared key 395psksecr3t
IKE gateway	ike-gw	• External interface ge-0/0/3.0 • References IKE policy ike-phase1-policy • Address 2.2.2.2
IPsec proposal	ipsec-phase2-proposal	• ESP protocol • hmac-sha1-96 authentication algorithm • aes-128-cbc encryption algorithm
IPsec policy	vpn-policy1	• References ipsec-phase2-proposal • perfect-forward-secrecy keys group2
VPN	ike-vpn	• bind-interface st0.1 • References ike-gw gateway • References vpn-policy1 policy

Table 21: Logical System VPN Tunnel Configuration *(continued)*

Feature	Name	Configuration Parameters
VPN monitoring		For ike-vpn VPN: • source-interface st0.1 • destination-ip 4.0.0.1

Figure 8 on page 231 shows the topology for logical systems VPN tunnel.

Figure 8: Logical systems VPN tunnel



Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems ls-product-design interfaces st0 unit 1
set security ike proposal ike-phase1-proposal authentication-method pre-shared-keys
set security ike proposal ike-phase1-proposal dh-group group2
set security ike proposal ike-phase1-proposal authentication-algorithm sha1
set security ike proposal ike-phase1-proposal encryption-algorithm aes-128-cbc
set security ike policy ike-phase1-policy mode main
set security ike policy ike-phase1-policy proposals ike-phase1-proposal
```

```
set security ike policy ike-phase1-policy pre-shared-key ascii-text "$ABC123"
set security ike gateway ike-gw ike-policy ike-phase1-policy
set security ike gateway ike-gw address 2.2.2.2
set security ike gateway ike-gw external-interface ge-0/0/3.0
set security ipsec proposal ipsec-phase2-proposal protocol esp
set security ipsec proposal ipsec-phase2-proposal authentication-algorithm hmac-sha1-96
set security ipsec proposal ipsec-phase2-proposal encryption-algorithm aes-128-cbc
set security ipsec policy vpn-policy1 perfect-forward-secrecy keys group2
set security ipsec policy vpn-policy1 proposals ipsec-phase2-proposal
set security ipsec vpn ike-vpn bind-interface st0.1
set security ipsec vpn ike-vpn vpn-monitor source-interface st0.1
set security ipsec vpn ike-vpn vpn-monitor destination-ip 4.0.0.1
set security ipsec vpn ike-vpn ike gateway ike-gw
set security ipsec vpn ike-vpn ike ipsec-policy vpn-policy1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To assign a VPN tunnel interface to a user logical system and configure IKE and IPsec SAs:

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
[edit]
admin@host> configure
admin@host#
```

2. Assign a VPN tunnel interface.

```
[edit logical-systems ls-product-design]
admin@host# set interfaces st0 unit 1
```

3. Configure an IKE proposal.

```
[edit security ike]
admin@host# set proposal ike-phase1-proposal authentication-method pre-shared-keys
admin@host# set proposal ike-phase1-proposal dh-group group2
admin@host# set proposal ike-phase1-proposal authentication-algorithm sha1
admin@host# set proposal ike-phase1-proposal encryption-algorithm aes-128-cbc
```

4. Configure an IKE policy.

```
[edit security ike]
admin@host# set policy ike-phase1-policy mode main
admin@host# set policy ike-phase1-policy proposals ike-phase1-proposal
admin@host# set policy ike-phase1-policy pre-shared-key ascii-text 395psksecr3t
```

5. Configure an IKE gateway.

```
[edit security ike]
admin@host# set gateway ike-gw external-interface ge-0/0/3.0
admin@host# set gateway ike-gw ike-policy ike-phase1-policy
admin@host# set gateway ike-gw address 2.2.2.2
```

6. Configure an IPsec proposal.

```
[edit security ipsec]
admin@host# set proposal ipsec-phase2-proposal protocol esp
admin@host# set proposal ipsec-phase2-proposal authentication-algorithm hmac-sha1-96
admin@host# set proposal ipsec-phase2-proposal encryption-algorithm aes-128-cbc
```

7. Configure an IPsec policy.

```
[edit security ipsec]
admin@host# set policy vpn-policy1 proposals ipsec-phase2-proposal
admin@host# set policy vpn-policy1 perfect-forward-secrecy keys group2
```

8. Configure the VPN.

```
[edit security ipsec]
admin@host# set vpn ike-vpn bind-interface st0.1
admin@host# set vpn ike-vpn ike gateway ike-gw
admin@host# set vpn ike-vpn ike ipsec-policy vpn-policy1
```

9. Configure VPN monitoring.

```
[edit security ipsec]
admin@host# set vpn ike-vpn vpn-monitor source-interface st0.1
admin@host# set vpn ike-vpn vpn-monitor destination-ip 4.0.0.1
```

Results

From configuration mode, confirm your configuration by entering the **show interfaces**, **show security ike**, and **show security ipsec** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
[edit]
admin@host# show interfaces
   st0 {
      unit 1;
   }
[edit]
admin@host# show security ike
   proposal ike-phase1-proposal {
      authentication-method pre-shared-keys;
      dh-group group2;
      authentication-algorithm sha1;
      encryption-algorithm aes-128-cbc;
   }
      policy ike-phase1-policy {
         mode main;
         proposals ike-phase1-proposal;
         pre-shared-key ascii-text "$ABC123"; ## SECRET-DATA
      }
      gateway ike-gw {
         ike-policy ike-phase1-policy;
         address 2.2.2.2;
         external-interface ge-0/0/3.0;
      }
[edit]
admin@host# show security ipsec
   proposal ipsec-phase2-proposal {
      protocol esp;
      authentication-algorithm hmac-sha1-96;
      encryption-algorithm aes-128-cbc;
   }
      policy vpn-policy1 {
         perfect-forward-secrecy {
            keys group2;
         }
         proposals ipsec-phase2-proposal;
      }
      vpn ike-vpn {
         bind-interface st0.1;
         vpn-monitor {
```

```
            source-interface st0.1;
            destination-ip 4.0.0.1;
        }
        ike {
            gateway ike-gw;
            ipsec-policy vpn-policy1;
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the IKE on Logical System | **235**
- Verifying the IPsec on Logical System | **236**

To confirm that the configuration is working properly, perform these tasks:

Verifying the IKE on Logical System

Purpose

Verify that the IKE support on Logical Systems.

Action

From operational mode, enter the **show security ike sa detail** command.

```
user@host> show security ike sa detail
```

```
IKE peer 2.2.2.2, Index 7796166, Gateway Name: GW1
  Role: Initiator, State: UP
  Initiator cookie: a1a6b1516bc43d54, Responder cookie: f0846e4239c817f8
  Exchange type: Aggressive, Authentication method: Pre-shared-keys
  Local: 3.3.3.2:500, Remote: 2.2.2.2:500
  Lifetime: Expires in 3585 seconds
  Reauth Lifetime: Disabled
  IKE Fragmentation: Disabled, Size: 0
  Remote Access Client Info: Unknown Client
```

```
  Peer ike-id: 2.2.2.2
  AAA assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : hmac-sha256-128
   Encryption            : aes256-cbc
   Pseudo random function: hmac-sha256
   Diffie-Hellman group  : DH-group-14
  Traffic statistics:
   Input  bytes  :                1056
   Output bytes  :                1311
   Input  packets:                   2
   Output packets:                   4
   Input  fragmentated packets:      0
   Output fragmentated packets:      0
  IPSec security associations: 1 created, 0 deleted
  Phase 2 negotiations in progress: 1

    Negotiation type: Quick mode, Role: Initiator, Message ID: 0
    Local: 3.3.3.2:500, Remote: 2.2.2.2:500
    Local identity: r0r2_store1@juniper.net
    Remote identity: 2.2.2.2
    Flags: IKE SA is created
```

Meaning

The output displays summary information about ike details.

Verifying the IPsec on Logical System

Purpose

Verify that the IPsec SA support on Logical Systems.

Action

From operational mode, enter the **show security ipsec sa detail** command.

```
user@host> show security ipsec sa detail
```

```
ID: 67109793 Virtual-system: root, VPN Name: VPN1
  Local Gateway: 3.3.3.2, Remote Gateway: 2.2.2.2
  Traffic Selector Name: VPN1_TS1
  Local Identity: ipv4(51.0.1.0-51.0.1.255)
  Remote Identity: ipv4(41.0.1.0-41.0.1.255)
  Version: IKEv1
  DF-bit: clear, Copy-Outer-DSCP Disabled, Bind-interface: st0.1
```

```
  Port: 500, Nego#: 0, Fail#: 0, Def-Del#: 0 Flag: 0x2c608b29
  Tunnel events:
    Wed Aug 16 2017 23:50:07 -0700: IPSec SA negotiation successfully completed
(1 times)
    Wed Aug 16 2017 23:50:07 -0700: IKE SA negotiation successfully completed (1
times)
    Wed Aug 16 2017 23:49:46 -0700: Negotiation failed with error code
AUTHENTICATION_FAILED received from peer (2 times)
    Wed Aug 16 2017 23:49:30 -0700: Tunnel is ready. Waiting for trigger event or
 peer to trigger negotiation (1 times)
  Direction: inbound, SPI: e651d79e, AUX-SPI: 0, VPN Monitoring: -
    Hard lifetime: Expires in 2552 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1988 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
   Protocol: ESP, Authentication: hmac-sha256-128, Encryption: aes-cbc (256 bits)

    Anti-replay service: counter-based enabled, Replay window size: 64
  Direction: outbound, SPI: 8ac9ce8, AUX-SPI: 0, VPN Monitoring: -
    Hard lifetime: Expires in 2552 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1988 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
   Protocol: ESP, Authentication: hmac-sha256-128, Encryption: aes-cbc (256 bits)

    Anti-replay service: counter-based enabled, Replay window size: 64
```

Meaning

The output displays summary information about ipsec details.

SEE ALSO

- Example: Configuring a Route-Based VPN Tunnel in a User Logical Systems | **238**
- Understanding Route-Based VPN Tunnels in Logical Systems | **228**
- User Logical Systems Configuration Overview | **71**

Example: Configuring a Route-Based VPN Tunnel in a User Logical Systems

IN THIS SECTION

- Requirements | 238
- Overview | 238
- Configuration | 239
- Verification | 241

This example shows how to configure a route-based VPN tunnel in a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Ensure that an st0 interface is assigned to the user logical system and IKE and IPsec SAs are configured at the root level by the master administrator. See "Example: Configuring IKE and IPsec SAs for a VPN Tunnel (Master Administrators Only)" on page 229.

Overview

In this example, you configure the ls-product-design user logical system as shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

You configure the route-based VPN parameters described in Table 22 on page 238.

Table 22: User Logical System Route-Based VPN Configuration

Feature	Name	Configuration Parameters
Tunnel interface	st0 unit 1	• IPv4 protocol family (inet) • IP address 10.11.11.150/24
Static route		• Destination 192.168.168.0/24 • Next hop st0.1

Table 22: User Logical System Route-Based VPN Configuration *(continued)*

Feature	Name	Configuration Parameters
Security policy	through-vpn	Permit the following traffic: • From zone: ls-product-design-trust • To zone: ls-product-design-untrust • Source address: any • Destination address: 192.168.168.0/24 • Application: any

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces st0 unit 1 family inet address 10.11.11.150/24
set routing-options static route 192.168.168.0/24 next-hop st0.1
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy through-vpn
    match source-address any
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy through-vpn
    match destination-address 192.168.168.0/24
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy through-vpn
    match application any
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy through-vpn
    then permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a route-based VPN tunnel in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
[edit]
lsdesignadmin1@host:ls-product-design>configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure the VPN tunnel interface.

```
[edit interfaces]
lsdesignadmin1@host:ls-product-design# set st0 unit 1 family inet address 10.11.11.150/24
```

3. Create a static route to the remote destination.

```
[edit routing-options]
lsdesignadmin1@host:ls-product-design# set static route 192.168.168.0/24 next-hop st0.1
```

4. Configure a security policy to permit traffic to the remote destination.

```
[edit security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust]
lsdesignadmin1@host:ls-product-design# set policy through-vpn match source-address any
lsdesignadmin1@host:ls-product-design# set policy through-vpn match destination-address 192.168.168.0/24
lsdesignadmin1@host:ls-product-design# set policy through-vpn match application any
lsdesignadmin1@host:ls-product-design# set policy through-vpn then permit
```

Results

From configuration mode, confirm your configuration by entering the **show interfaces st0**, **show routing-options**, and **show security policies** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
[edit]
lsdesignadmin1@host:ls-product-design# show interfaces st0
    unit 1 {
        family inet {
            address 10.11.11.150/24;
        }
    }
    lsdesignadmin1@host:ls-product-design# show routing-options
        static {
            route 192.168.168.0/24 next-hop st0.1;
        }
    [edit]
    lsdesignadmin1@host:ls-product-design# show security policies
        from-zone ls-product-design-trust to-zone ls-product-design-untrust {
            policy through-vpn {
                match {
                    source-address any;
                    destination-address 192.168.168.0/24;
                    application any;
```

```
            }
            then {
                permit;
            }
        }
        ...
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the IKE Phase 1 Status | **241**
- Verifying the IPsec Phase 2 Status | **242**

Confirm that the configuration is working properly.

> **NOTE:** Before starting the verification process, you need to send traffic from a host in the user logical system to a host in the 192.168.168.0/24 network. For example, initiate a ping from a host in the 12.1.1.0/24 subnet in the ls-product-design user logical system to the host 192.168.168.10.

Verifying the IKE Phase 1 Status

Purpose

Verify the IKE Phase 1 status.

Action

From operational mode, enter the **show security ike security-associations** command. After obtaining an index number from the command, use the **show security ike security-associations index *index_number* detail** command.

For sample outputs and meanings, see the “Verification” section of *Example: Configuring a Route-Based VPN*.

Verifying the IPsec Phase 2 Status

Purpose

Verify the IPsec Phase 2 status.

Action

From operational mode, enter the **show security ipsec security-associations** command. After obtaining an index number from the command, use the **show security ipsec security-associations index *index_number* detail** command.

For sample outputs and meanings, see the "Verification" section of *Example: Configuring a Route-Based VPN*.

SEE ALSO

Example: Configuring a Route-Based VPN.

Understanding Route-Based VPN Tunnels in Logical Systems | **228**

User Logical Systems Configuration Overview | **71**

RELATED DOCUMENTATION

IPv6 Addresses in Logical Systems Overview | **339**

UTM for Logical Systems

IN THIS SECTION

- Understanding UTM Features in Logical Systems | **243**
- Example: Configuring UTM for the Master Logical System | **244**
- Example: Configuring UTM for a User Logical System | **253**

Unified threat management (UTM) provides multiple security features and services for SRX Series devices on the network, protecting users from security threats in a simplified way. UTM secures the logical systems

from viruses, malware, or malicious attachments by scanning the incoming data using Deep Packet Inspection and prevents access to unwanted websites by installing Enhanced Web Filtering (EWF).

Understanding UTM Features in Logical Systems

Unified Threat Management (UTM) in logical systems provides several security features such as antispam, antivirus, content filtering, and Web filtering to secure users from multiple Internet-borne threats. The advantage of UTM is streamlined installation and management of these multiple security capabilities. In logical systems the master administrator configures the UTM features for the master logical system. Configuring UTM features for logical systems is similar to configuring UTM features on a device that is not configured for logical systems.

The security features provided as part of the UTM solution are:

- *Antispam Filtering*—E-mail spam consists of unwanted e-mail messages, usually sent by commercial, malicious, or fraudulent entities. The antispam feature examines transmitted e-mail messages to identify e-mail spam. The default antispam feature is configured at the master logical system and it is applicable for all the user logical systems.
- *Content Filtering*—Content filtering blocks or permits certain types of traffic based on the MIME type, file extension, protocol command, and embedded object type. The default content filtering feature is configured at the master logical system and it is applicable for all the user logical systems.
- *Web Filtering*—Web filtering lets you manage Internet usage by preventing access to inappropriate Web content. The default Web filtering feature is configured at the master logical system, and the user logical systems inherit these default Web filtering configuration.
- *Sophos Antivirus*—Sophos Antivirus scanning is offered as a less CPU-intensive alternative to the full file-based antivirus feature. Sophos Antivirus is as an in-the-cloud antivirus solution. The default antivirus feature is configured at the master logical system, and the user logical systems inherit these default antivirus configuration.

You must configure the custom objects for the Web filtering, anti-spam, and content filtering features before configuring the UTM features. You can configure custom objects for each user logical system.

The predefined UTM default policy parameters for Web filtering, content filtering, antivirus, and antispam profiles are configured at the master logical system. The user logical systems inherit the same antivirus and Web filtering features configured for the master logical system. The options such as **mime-whitelist** and **url-whitelist** in antivirus profile, and **address-blacklist** and **address-whitelist** in antispam profile can be configured at the following hierarchy levels, respectively:

- **[edit security utm feature-profile anti-virus sophos-engine profile]**
- **[edit security utm feature-profile anti-spam sbl profile]**

The options **url-whitelist** and **url-blacklist** are not supported in the Web fiterling profile, you can use the custom category option to achieve the function.

Example: Configuring UTM for the Master Logical System

IN THIS SECTION

- Requirements | 244
- Overview | 244
- Configuration | 245
- Verification | 250

This example shows how to configure the UTM features antivirus, antispam, content filtering, and Web filtering in the master logical system. The master administrator is responsible for assigning the UTM features to the user logical systems.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with the logical systems.
- Junos OS Release 18.3R1 and later releases.

Before you begin:

- Understand how to log in to the master logical system as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.
- Configure the interfaces, routing instances, and static routes for the master logical system. See "Example: Configuring Interfaces, Routing Instances, and Static Routes for the Master and Interconnect Logical Systems and Logical Tunnel Interfaces for the User Logical Systems (Master Administrators Only)" on page 127.

Overview

By default, all system resources are assigned to the master logical system, and the master administrator allocates them to the user logical systems. The master administrator manages the device and the logical systems.

This example shows how to configure the UTM features described in Table 23 on page 245 for the master logical system.

Table 23: UTM Configuration Type, Steps, and Parameters

Configuration Type	Configuration Description	Configuration Parameter
Custom objects	Configure the MIME (Multipurpose Internet Mail Extension) types (**my_blockmime01**) to decide which traffic is allowed to bypass various types of scanning	***[multipart/ application/]***
	Define a set of file extensions (**my_fileextlist01**) that are used in file extension scan mode (scan-by-extension)	***[txt pl com zip]***
	Configure a URL pattern list (**black_list**) of URLs or addresses that you want to block.	***www.example.com***
	Configure a custom URL category (**cust_black**) of URLs or addresses that you want to block.	***black_list***
Antispam	Configure the antispam type server-based spam block list (SBL).	***sbl***
Antivirus	Configure the antivirus type Sophos Antivirus (**sophos-engine**) profile (**mysav**) scan option to scan specific types of traffic.	***uri-check***
Web filtering	Specify an action for Enhanced Web Filtering (EWF) (**juniper-enhanced**) profile (**myewf**), for requests that experience internal errors in the Web filtering module.	***log-and-permit***

In this procedure, you define custom objects, configure feature profiles for UTM features (antispam, antivirus, content filtering, and Web filtering), configure a UTM policy and attach feature profiles, and apply the UTM policy to the security policy as an application service. For more information, see the *Unified Threat Management User Guide*.

Configuration

CLI Quick Configuration

To quickly configure this example, log in to the master logical system as the master administrator, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security utm custom-objects mime-pattern my_blockmime01 value [ multipart/ application/ ]
```

```
set security utm custom-objects filename-extension my_fileextlist01 value [ txt pl com zip ]
set security utm custom-objects url-pattern black_list value www.example.com
set security utm custom-objects custom-url-category cust_black value black_list
set security utm default-configuration anti-virus type sophos-engine
set security utm default-configuration web-filtering type juniper-enhanced
set security utm default-configuration web-filtering juniper-enhanced cache timeout 1800
set security utm default-configuration web-filtering juniper-enhanced cache size 0
set security utm default-configuration anti-spam type sbl
set security utm feature-profile anti-virus sophos-engine profile mysav scan-options uri-check
set security utm feature-profile web-filtering juniper-enhanced profile myewf default log-and-permit
set security utm utm-policy utm-p1 anti-virus http-profile mysav
set security utm utm-policy utm-p1 content-filtering http-profile junos-cf-defaults
set security utm utm-policy utm-p1 web-filtering http-profile myewf
set security utm utm-policy utm-p1 anti-spam smtp-profile junos-as-defaults
set security policies from-zone trust to-zone untrust policy p1 match source-address any
set security policies from-zone trust to-zone untrust policy p1 match destination-address any
set security policies from-zone trust to-zone untrust policy p1 match application junos-http
set security policies from-zone trust to-zone untrust policy p1 then permit application-services utm-policy
  utm-p1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
admin@host> configure
admin@host#
```

2. Configure the custom objects for the master logical system.

```
[edit security utm custom-objects]
admin@host# set mime-pattern my_blockmime01 value [ multipart/ application/ ]
admin@host# set filename-extension my_fileextlist01 value [ txt pl com zip ]
admin@host# set url-pattern black_list value www.example.com
admin@host# set custom-url-category cust_black value black_list
```

3. Define the UTM default configuration for the master logical system.

```
[edit security utm default-configuration]
admin@host# set anti-virus type sophos-engine
```

```
admin@host# set web-filtering type juniper-enhanced
admin@host# set web-filtering juniper-enhanced cache timeout 1800
admin@host# set web-filtering juniper-enhanced cache size 0
admin@host# set anti-spam type sbl
```

4. Configure the feature profile for the master logical system.

```
[edit security utm feature-profile]
admin@host# set anti-virus sophos-engine profile mysav scan-options uri-check
admin@host# set web-filtering juniper-enhanced profile myewf default log-and-permit
```

5. Configure the UTM policy for the master logical system.

```
[edit security utm utm-policy]
admin@host# set utm-p1 anti-virus http-profile mysav
admin@host# set utm-p1 content-filtering http-profile junos-cf-defaults
admin@host# set utm-p1 web-filtering http-profile myewf
admin@host# set utm-p1 anti-spam smtp-profile junos-as-defaults
```

6. Configure the security policies for the master logical system.

```
[edit security policies]
admin@host# set from-zone trust to-zone untrust policy p1 match source-address any
admin@host# set from-zone trust to-zone untrust policy p1 match destination-address any
admin@host# set from-zone trust to-zone untrust policy p1 match application junos-http
admin@host# set from-zone trust to-zone untrust policy p1 permit application-services utm-policy utm-p1
```

Results

From configuration mode, confirm your configuration by entering the **show security** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
admin@host# show security
utm {
    custom-objects {
        mime-pattern {
            my_blockmime01 {
                value [ multipart/ application/ ];
            }
```

```
    }
    filename-extension {
        my_fileextlist01 {
            value [ txt pl com zip ];
        }
    }
    url-pattern {
        black_list {
            value www.example.com;
        }
    }
    custom-url-category {
        cust_black {
            value black_list;
        }
    }
}
default-configuration {
    anti-virus {
        type sophos-engine;
    }
    web-filtering {
        type juniper-enhanced;
        juniper-enhanced {
            cache {
                timeout 1800;
                size 0;
            }
        }
    }
    anti-spam {
        type sbl;
    }
}
feature-profile {
    anti-virus {
        sophos-engine {
            profile mysav {
                scan-options {
                    uri-check;
                }
            }
        }
    }
```

```
        web-filtering {
            juniper-enhanced {
                profile myewf {
                    default log-and-permit;
                }
            }
        }
    }
    utm-policy utm-p1 {
        anti-virus {
            http-profile mysav;
        }
        content-filtering {
            http-profile junos-cf-defaults;
        }
        web-filtering {
            http-profile myewf;
        }
        anti-spam {
            smtp-profile junos-as-defaults;
        }
    }
}
policies {
    from-zone trust to-zone untrust {
        policy p1 {
            match {
                source-address any;
                destination-address any;
                application junos-http;
            }
            then {
                permit {
                    application-services {
                        utm-policy utm-p1;
                    }
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Antivirus Configuration | 250
- Verifying Antispam Configuration | 251
- Verifying Content Filtering Configuration | 251
- Verifying Web Filtering Configuration | 252

To confirm that the configuration is working properly, perform these tasks:

Verifying Antivirus Configuration

Purpose

Verify that the antivirus feature is configured for the master logical system.

Action

From operational mode, enter the **show security utm anti-virus statistics** command to view the details of the antivirus feature configured for the master logical system.

```
admin@host> show security utm anti-virus statistics
```

```
 UTM Anti Virus statistics:
 MIME-whitelist passed:               0
URL-whitelist passed:                0
Session abort:                       0
Scan Request:

  Total           Clean         Threat-found    Fallback
      9               7              1               1

Fallback:
                       Log-and-Permit    Block       Permit
Engine not ready:          0                0          0
 Out of resources:         0                0          0
Timeout:                   0                0          0
Maximum content size:      1                0          0
Too many requests:         0                0          0
Others:                    0                0          0
```

Meaning

The output displays the antisvirus statistics for the master logical system.

Verifying Antispam Configuration

Purpose

Verify that the antispam feature is configured for the master logical system.

Action

From operational mode, enter the **show security utm anti-spam statistics** command to view the details of the antispam feature configured for the master logical system.

```
admin@host> show security utm anti-spam statistics
```

```
 UTM Anti Spam statistics:

Total connections:     1
Denied connections:    1
Total greetings:       0
Denied greetings:      0
Total e-mail scanned:  0
White list hit:        0
Black list hit:        0
Spam total:            0
Spam tagged:           0
Spam dropped:          0
DNS errors:            0
Timeout errors:        0
Return errors:         0
Invalid parameter errors: 0
```

Meaning

The output displays the antispam statistics for the master logical system.

Verifying Content Filtering Configuration

Purpose

Verify that the content filtering feature is configured for the master logical system.

Action

From operational mode, enter the **show security utm content-filtering statistics** command to view the details of the content filtering feature configured for the master logical system.

```
admin@host> show security content-filtering statistics
```

```
Content-filtering-statistic:         Blocked
    Base on command list:                    0
    Base on mime list:                       1
    Base on extension list:                  0
    ActiveX plugin:                          0
    Java applet:                             0
    EXE files:                               0
    ZIP files:                               0
    HTTP cookie:                             0
```

Meaning

The output displays the content filtering statistics for the master logical system.

Verifying Web Filtering Configuration

Purpose

Verify that the Web filtering feature is configured for the master logical system.

Action

From operational mode, enter the **show security utm web-filtering statistics** command to view the details of the Web filtering feature configured for the master logical system.

```
admin@host> show security web-filtering statistics
```

```
UTM web-filtering statistics:
   Total requests:                    4
   white list hit:                    1
   Black list hit:                    1
   Custom category permit:            1
   Custom category block:             1
   Custom category quarantine:        0
   Custom category qurantine block:   0
   Custom category quarantine permit: 0
   Web-filtering sessions in total:   64000
   Web-filtering sessions in use:     0
   Fallback:                  log-and-permit     block
         Default                             0         0
         Timeout                             0         0
    Connectivity                             0         0
Too-many-requests                            0         0
```

Meaning

The output displays the Web filtering statistics for the master logical system.

Example: Configuring UTM for a User Logical System

IN THIS SECTION

- Requirements | 253
- Overview | 254
- Configuration | 255
- Verification | 260

This example shows how to configure the UTM features antivirus, antispam, content filtering, and Web filtering for a user logical system. The master administrator creates a user logical system and assigns an administrator for managing the user logical system. A user logical system can have multiple user logical system administrators.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with the logical systems.
- Junos OS Release 18.3R1 and later releases.

Before you begin:

- Understand the user logical system administrator role and functions. See "Understanding User Logical Systems and the User Logical System Administrator Role" on page 73.
- Understand how to log in to the user logical system as an administrator. See "User Logical Systems Configuration Overview" on page 71.
- This example shows how to configure the UTM features for the ls-product-design user logical system. To understand how to create the ls-product-design user logical system, see "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

Overview

The master administrator assigns the UTM features antivirus, antispam, content filtering, and Web filtering to the user logical system. The user logical system administrator can configure and manage the UTM features for the user logical systems. The antispam, antivirus and Web filtering features are configured in the master logical system are described in Table 24 on page 254. All the user logical systems can use the same antispam, antivirus and Web filtering features with the same profile.

Table 24: UTM Configuration Type, Steps, and Parameters

Configuration Type	Configuration Description	Configuration Parameter
Custom objects	Configure a URL pattern (**url1**) of URL patterns that bypass scanning.	*www.abc.com*
	Configure a custom URL category (**cust1**) of URLs or addresses list that bypass scanning.	*url1*
	Configure a custom message type (**redirect-url**) to redirect traffic destined for protected sources.	***http://www.example1.com.cn***
Antispam	Configure antispam profile (**as1**) spam action.	***block***
Antivirus	Configure antivirus profile (**sav1**) fallback option.	*log-and-permit*
	Configure antivirus profile (**sav1**) scan option.	***uri-check***

Table 24: UTM Configuration Type, Steps, and Parameters *(continued)*

Configuration Type	Configuration Description	Configuration Parameter
Web filtering	Configure Web filtering profile (**ewf1**) category (**cust1**) action.	***block***
	Configure Web filtering profile (**ewf1**) category (**cust1**) custom message.	***custmsg1***
	Configure Web filtering profile (**ewf1**) category (**Enhanced_Search_Engines_and_Portals**) action.	***block***
	Specify an action for Enhanced Web Filtering (EWF) (**juniper-enhanced**) profile (**ewf1**), for requests that experience internal errors in the Web filtering module.	***log-and-permit***

Configuration

CLI Quick Configuration

To quickly configure this example, log in to the ls-product-design user logical system as the administrator, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security utm custom-objects url-pattern url1 value www.abc.com
set security utm custom-objects custom-url-category cust1 value url1
set security utm custom-objects custom-message cust-msg1 type redirect-url content
    http://www.example1.com.cn
set security utm feature-profile anti-virus sophos-engine profile sav1 fallback-options default log-and-permit
set security utm feature-profile anti-virus sophos-engine profile sav1 scan-options uri-check
set security utm feature-profile web-filtering juniper-enhanced profile ewf1 category cust1 action block
set security utm feature-profile web-filtering juniper-enhanced profile ewf1 category cust1 custom-message
    custmsg1
set security utm feature-profile web-filtering juniper-enhanced profile ewf1 category
    Enhanced_Search_Engines_and_Portals action block
set security utm feature-profile web-filtering juniper-enhanced profile ewf1 default log-and-permit
set security utm feature-profile web-filtering juniper-enhanced profile ewf2 default log-and-permit
set security utm feature-profile anti-spam sbl profile as1 spam-action block
set security utm utm-policy utm-p1 anti-virus http-profile sav1
```

```
set security utm utm-policy utm-p1 web-filtering http-profile juniper-enhanced
set security utm utm-policy utm-p1 anti-spam smtp-profile as1
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy sec_policy
    match source-address any
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy sec_policy
    match destination-address any
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy sec_policy
    match application any
set security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust policy sec_policy then
    permit application-services utm-policy utm-p1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Log in to the ls-product-design user logical system as the administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure the custom objects for the ls-product-design user logical system.

```
[edit security utm custom-objects]
lsdesignadmin1@host:ls-product-design# set url-pattern url1 value www.abc.com
lsdesignadmin1@host:ls-product-design# set custom-url-category cust1 value url1
lsdesignadmin1@host:ls-product-design# set custom-message cust-msg1 type redirect-url content
    http://www.example1.com.cn
```

3. Configure the feature profiles for the ls-product-design user logical system.

```
[edit security utm feature-profile]
lsdesignadmin1@host:ls-product-design# set anti-virus sophos-engine profile sav1 fallback-options default
    log-and-permit
lsdesignadmin1@host:ls-product-design# set anti-virus sophos-engine profile sav1 scan-options uri-check
lsdesignadmin1@host:ls-product-design# set web-filtering juniper-enhanced profile ewf1 category cust1
    action block
lsdesignadmin1@host:ls-product-design# set web-filtering juniper-enhanced profile ewf1 category cust1
    custom-message custmsg1
lsdesignadmin1@host:ls-product-design# set web-filtering juniper-enhanced profile ewf1 category
    Enhanced_Search_Engines_and_Portals action block
```

```
lsdesignadmin1@host:ls-product-design# set web-filtering juniper-enhanced profile ewf1 default
    log-and-permit
lsdesignadmin1@host:ls-product-design# set web-filtering juniper-enhanced profile ewf2 default
    log-and-permit
lsdesignadmin1@host:ls-product-design# set anti-spam sbl profile as1 spam-action block
```

4. Configure the UTM policy for the ls-product-design user logical system.

```
[edit security utm utm-policy]
lsdesignadmin1@host:ls-product-design# set utm-p1 anti-virus http-profile sav1
lsdesignadmin1@host:ls-product-design# set utm-p1 web-filtering http-profile juniper-enhanced
lsdesignadmin1@host:ls-product-design# set utm-p1 anti-spam smtp-profile as1
```

5. Configure the security policies for the ls-product-design user logical system.

```
[edit security policies]
lsdesignadmin1@host:ls-product-design# set from-zone lsys1-trust to-zone lsys1-untrust policy sec_policy
    match source-address any
lsdesignadmin1@host:ls-product-design# set from-zone lsys1-trust to-zone lsys1-untrust policy sec_policy
    match destination-address any
lsdesignadmin1@host:ls-product-design# set from-zone lsys1-trust to-zone lsys1-untrust policy sec_policy
    match application any
lsdesignadmin1@host:ls-product-design# set from-zone lsys1-trust to-zone lsys1-untrust policy sec_policy
    then permit application-services utm-policy utm-p1
```

Results

From configuration mode, confirm your configuration by entering the **show security** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security
utm {
    custom-objects {
        url-pattern {
            url1 {
                value www.abc.com;
            }
        }
        custom-url-category {
            cust1 {
```

```
            value url1;
        }
    }
    custom-message {
        cust-msg1 {
            type redirect-url;
            content http://www.example1.com.cn;
        }
    }
}
feature-profile {
    anti-virus {
        sophos-engine {
            profile sav1 {
                fallback-options {
                    default log-and-permit;
                }
                scan-options {
                    uri-check;
                }
            }
        }
    }
    web-filtering {
        juniper-enhanced {
            profile ewf1 {
                category {
                    cust1 {
                        action block;
                        custom-message custmsg1;
                    }
                    Enhanced_Search_Engines_and_Portals {
                        action block;
                    }
                }
                default log-and-permit;
            }
            profile ewf2 {
                default log-and-permit;
            }
        }
    }
    anti-spam {
        sbl {
```

```
            profile as1 {
                spam-action block;
            }
        }
    }
    utm-policy utm-p1 {
        anti-virus {
            http-profile sav1;
        }
        web-filtering {
            http-profile juniper-enhanced;
        }
        anti-spam {
            smtp-profile as1;
        }
    }
}
policies {
    from-zone ls-product-design-trust to-zone ls-product-design-untrust {
        policy sec_policy {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit {
                    application-services {
                        utm-policy utm-p1;
                    }
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Antivirus Configuration | 260
- Verifying Antispam Configuration | 261
- Verifying Content Filtering Configuration | 261
- Verifying Web Filtering Configuration | 262

To confirm that the configuration is working properly, perform these tasks:

Verifying Antivirus Configuration

Purpose

Verify that the antivirus feature is configured for the ls-product-design user logical system.

Action

From operational mode, enter the **show security utm anti-virus statistics** command to view the antivirus statistics information for the ls-product-design user logical system.

```
lsdesignadmin1@host:ls-product-design> show security utm anti-virus statistics
```

```
 UTM Anti Virus statistics:
 MIME-whitelist passed:               0
URL-whitelist passed:                0
Session abort:                       0
Scan Request:

  Total           Clean         Threat-found    Fallback
    9               7              1               1

Fallback:
                       Log-and-Permit    Block       Permit
Engine not ready:          0                0           0
 Out of resources:         0                0           0
Timeout:                   0                0           0
Maximum content size:      1                0           0
Too many requests:         0                0           0
Others:
```

Meaning

The output displays the antisvirus statistics information for the ls-product-design user logical system.

Verifying Antispam Configuration

Purpose

Verify that the antispam feature is configured for the ls-product-design user logical system.

Action

From operational mode, enter the **show security utm anti-spam statistics** command to view the antispam statistics information for the ls-product-design user logical system.

```
lsdesignadmin1@host:ls-product-design> show security utm anti-spam statistics
```

```
 UTM Anti Spam statistics:

Total connections:     1
Denied connections:    1
Total greetings:       0
Denied greetings:      0
Total e-mail scanned:  0
White list hit:        0
Black list hit:        0
Spam total:            0
Spam tagged:           0
Spam dropped:          0
DNS errors:            0
Timeout errors:        0
Return errors:         0
Invalid parameter errors: 0
```

Meaning

The output displays the antispam statistics information for the ls-product-design user logical system.

Verifying Content Filtering Configuration

Purpose

Verify that the content filtering feature is configured for the ls-product-design user logical system.

Action

From operational mode, enter the **show security utm content-filtering statistics** command to view the content filtering statistics information for the ls-product-design user logical system.

```
lsdesignadmin1@host:ls-product-design> show security content-filtering
statistics
```

```
Content-filtering-statistic:         Blocked
    Base on command list:                    0
    Base on mime list:                       1
    Base on extension list:                  0
    ActiveX plugin:                          0
    Java applet:                             0
    EXE files:                               0
    ZIP files:                               0
    HTTP cookie:                             0
```

Meaning

The output displays the content filtering statistics information for the ls-product-design user logical system.

Verifying Web Filtering Configuration

Purpose

Verify that the Web filtering feature is configured for the ls-product-design user logical system.

Action

From operational mode, enter the **show security utm web-filtering statistics** command to view the Web filtering statistics information for the ls-product-design user logical system.

```
lsdesignadmin1@host:ls-product-design> show security web-filtering statistics
```

```
UTM web-filtering statistics:
   Total requests:                    4
   white list hit:                    1
   Black list hit:                    1
   Custom category permit:            1
   Custom category block:             1
   Custom category quarantine:        0
   Custom category qurantine block:   0
   Custom category quarantine permit: 0
   Web-filtering sessions in total:   64000
   Web-filtering sessions in use:     0
   Fallback:         log-and-permit          block
         Default                  0              0
         Timeout                  0              0
    Connectivity                  0              0
Too-many-requests                 0              0
```

Meaning

The output displays the Web filtering statistics information for the ls-product-design user logical system.

IDP for Logical Systems

IN THIS SECTION

- IDP in Logical Systems Overview | **263**
- Understanding IDP Features in Logical Systems | **266**
- Example: Configuring an IDP Policy for the Master Logical Systems | **269**
- Example: Configuring and Assigning a Predefined IDP Policy for a User Logical System | **277**
- Example: Enabling IDP in a User Logical System Security Policy | **280**
- Example: Configuring an IDP Policy for a User Logical System | **283**

An Intrusion Detection and Prevention (IDP) policy in logical systems enables you to selectively enforce various attack detection and prevention techniques on the network traffic passing through your SRX Series. The SRX Series offer the same set of IDP signatures that are available on Juniper Networks IDP Series Intrusion Detection and Prevention Appliances to secure networks against attacks. For more information, see the following topics:

IDP in Logical Systems Overview

IN THIS SECTION

- IDP Policies | **264**
- Limitation | **265**
- IDP Installation and Licensing for Logical Systems | **265**

A Junos OS Intrusion Detection and Prevention (IDP) policy enables you to selectively enforce various attack detection and prevention techniques on network traffic passing through a logical system.

This topic includes the following sections:

IDP Policies

The master administrator configures IDP policies at the root level. Configuring an IDP policy for logical systems is similar to configuring an IDP policy on a device that is not configured for logical systems. This can include the configuration of custom attack objects.

IDP policy templates installed in root logical system are visible and used by all logical systems.

The master administrator then specifies an IDP policy in the security profile that is bound to a logical system. To enable IDP in a logical system, the master administrator or user logical system administrator configures a security policy that defines the traffic to be inspected and specifies the **permit application-services idp** action.

Although the master administrator can configure multiple IDP policies, a logical system can have only one active IDP policy at a time. For user logical systems, the master administrator can either bind the same IDP policy to multiple user logical systems or bind a unique IDP policy to each user logical system. To specify the active IDP policy for the master logical system, the master administrator can *either* reference the IDP policy in the security profile that is bound to the master logical system or use the **active-policy** configuration statement at the [**edit security idp**] hierarchy level.

The root administrator configures the number of maximum IDP sessions reservation for a root and user logical system. The number of IDP sessions that are allowed for a root logical system are defined using the command **set security idp max-sessions *max-sessions*** and the number of IDP sessions that are allowed for a user logical system are defined using the command **set security idp logical-system *logical-system* max-sessions *max-sessions*** .

> **NOTE:** A commit error is generated if an IDP policy is both configured in the security profile that is bound to the master logical system and specified with the **active-policy** configuration statement. Use only one method to specify the active IDP policy for the master logical system.

> **NOTE:** If you have configured more than one IDP policy in a security policy, then configuring default IDP policy configuration is mandatory.

A default IDP policy configuration is supported when multiple IDP policies are available. The default IDP policy is one of the multiple IDP policies. For more information about configuring multiple IDP policies and default IDP policy, see the *IDP Policy Selection for Unified Policies*.

The logical system administrator performs the following actions:

- Configure multiple IDP policies and attach to the firewall policies to be used by the user logical systems. If the IDP policy is not configured for a user logical system, the default IDP policy configured by the master administrator is used. The IDP policy is bound to the user logical systems through a logical systems security policy.
- Create or modify IDP policies for their user logical systems. The IDP policies are bound to user logical systems. When an IDP policy is changed, and commit succeeds, the existing sessions mapped to current active policy continue to use the old IDP combined policy. When an IDP policy is changed, and commit fails, only the logical system user that has initiated the commit change is notified about the commit failure.
- The logical system can create security zones in the user logical system and assign interfaces to each security zone. Zones that are specific to user logical systems cannot be referenced in IDP policies configured by the master administrator. The master administrator can reference zones in the master logical system in an IDP policy configured for the master logical system.
- View the attack statistics detected and IDP counters, attack table, and policy commit status by the individual logical system using the commands **show security idp counters**, **show security idp attack table**, **show security idp policies**, **show security idp policy-commit-status**, and **show security idp security-package-version**.

Limitation

- When a IDP policy is changed and compiled in a specific user logical system, this change is considered as a single global policy change and compiled for all policies of all the logical systems.

IDP Installation and Licensing for Logical Systems

An idp-sig license must be installed at the root level. Once IDP is enabled at the root level, it can be used with any logical system on the device.

A single IDP security package is installed for all logical systems on the device at the root level. The download and install options can only be executed at the root level. The same version of the IDP attack database is shared by all logical systems.

SEE ALSO

User Logical Systems Configuration Overview | **71**

Understanding Logical Systems Security Profiles (Master Administrators Only) | **88**

IDP Policies Overview

Understanding IDP Features in Logical Systems

IN THIS SECTION

- Rulebases | 266
- Protocol Decoders | 266
- SSL Inspection | 267
- Inline Tap Mode | 267
- Multi-Detectors | 267
- Logging and Monitoring | 267

This topic includes the following sections:

Rulebases

A single IDP policy can contain only one instance of any type of rulebase. The following IDP rulebases are supported for logical systems:

- The Intrusion prevention system (IPS) rulebase uses attack objects to detect known and unknown attacks. It detects attacks based on stateful signature and protocol anomalies.
- The application-level distributed denial-of-service (DDoS) rulebase defines parameters to protect servers such as DNS or HTTP. The application-level DDoS rulebase defines the source match condition for traffic that should be monitored and takes an action, such as drop the connection, drop the packet, or no action. It can also perform actions against future connections that use the same IP address.

> **NOTE:** Status monitoring for IPS and application-level DDoS is global to the device and not on a per logical system basis.

Protocol Decoders

The Junos IDP module ships with a set of preconfigured protocol decoders. These protocol decoders have default settings for various protocol-specific contextual checks that they perform. The IDP protocol decoder configuration is global and applies to all logical systems. Only the master administrator at the root level can modify the settings at the [**edit security idp sensor-configuration**] hierarchy level.

SSL Inspection

IDP SSL inspection uses the Secure Sockets Layer (SSL) protocol suite to enable inspection of HTTP traffic encrypted in SSL.

SSL inspection configuration is global and applies to all logical systems on a device. SSL inspection can only be configured by the master administrator at the root level with the **ssl-inspection** configuration statement at the [**edit security idp sensor-configuration**] hierarchy level.

Inline Tap Mode

The inline tap mode feature provides passive, inline detection of Application Layer threats for traffic matching security policies that have the IDP application service enabled. When a device is in inline tap mode, packets pass through firewall inspection and are also copied to the independent IDP module. This allows the packets to get to the next service module without waiting for IDP processing results.

Inline tap mode is enabled or disabled for all logical systems at the root level by the master administrator. To enable inline tap mode, use the **inline-tap** configuration statement at the [**edit security forwarding-process application-services maximize-idp-sessions**] hierarchy level. Delete the inline tap mode configuration to switch the device back to regular mode.

> **NOTE:** The device must be restarted when switching to inline tap mode or back to regular mode.

Multi-Detectors

When a new IDP security package is received, it contains attack definitions and a detector. After a new policy is loaded, it is also associated with a detector. If the policy being loaded has an associated detector that matches the detector already in use by the existing policy, the new detector is not loaded and both policies use a single associated detector. But if the new detector does not match the current detector, the new detector is loaded along with the new policy. In this case, each loaded policy will then use its own associated detector for attack detection.

The version of the detector is common to all logical systems.

Logging and Monitoring

Status monitoring options are available to the master administrator only. All status monitoring options under the **show security idp** and **clear security idp** CLI operational commands present global information, but not on a per logical system basis.

NOTE: SNMP monitoring for IDP is not supported on logical systems.

IDP generates event logs when an event matches an IDP policy rule in which logging is enabled.

The logical systems identification is added to the following types of IDP traffic processing logs:

- Attack logs. The following example shows an attack log for the ls-product-design logical system:

```
Feb 22 14:06:00 aqgpo1ifw01 RT_IDP: %-IDP_ATTACK_LOG_EVENT_LS: Lsys A01: IDP: At
1329883555, ANOMALY Attack log <10.1.128.200/33699->192.168.22.84/80> for TCP
protocol and service HTTP application NONE by rule 4 of rulebase IPS in policy
Policy1. attack: repeat=3, action=NONE, threat-severity=INFO, name=HTTP:AUDIT:URL,
 NAT <0.0.0.0:0->0.0.0.0:0>, time-elapsed=0, inbytes=0, outbytes=0, inpackets=0,
outpackets=0, intf:NSS-Mgmt:reth0.55->SIEM-MGMT:reth0.60, packet-log-id: 0 and
misc-message
```

NOTE: In the IDP attack detection event log message (IDP_ATTACK_LOG_EVENT_LS), the time-elapsed, inbytes, outbytes, inpackets, and outpackets fields are not populated.

- IP action logs. The following example shows an IP action log for the ls-product-design logical system:

```
Oct 13 16:56:04 8.0.0.254 RT_IDP: IDP_ATTACK_LOG_EVENT_LS: IDP: In ls-product-design
 at 1287014163, TRAFFIC Attack log <25.0.0.1/34802->15.0.0.1/21> for TCP protocol
 and service SERVICE_NONE application NONE by rule 1 of rulebase IPS in policy
Recommended. attack: repeat=0, action=TRAFFIC_IPACTION_NOTIFY, threat-severity=INFO,
 name=_, NAT <0.0.0.0:0->0.0.0.0:0>, time-elapsed=0, inbytes=0, outbytes=0,
inpackets=0, outpackets=0,
intf:ls-product-design-trust:ge-0/0/1.0->ls-product-design-untrust:plt0.3,
packet-log-id: 0 and misc-message -
```

- Application DDoS logs. The following example shows an application DDoS log for the ls-product-design logical system:

```
Oct 11 16:29:57 8.0.0.254 RT_IDP: IDP_APPDDOS_APP_ATTACK_EVENT_LS: DDOS Attack in
 ls-product-design at 1286839797 on my-http,
<ls-product-design-untrust:ge-0/0/0.0:4.0.0.1:33738->ls-product-design-trust:ge-0/0/1.0:5.0.0.1:80>
 for TCP protocol and service HTTP by rule 1 of rulebase DDOS in policy Recommended.
 attack: repeats 0 action DROP threat-severity INFO, connection-hit-rate 0,
context-name http-url-parsed, hit-rate 6, value-hit-rate 6 time-scope PEER
```

```
time-count 2  time-period 10 secs, context value:  ascii: /abc.html hex: 2f 61 62
 63 2e 68 74 6d 6c
```

SEE ALSO

- *Understanding IDP Policy Rule Bases*
- *Understanding IDP Protocol Decoders*
- *IDP SSL Overview*
- *Understanding IDP Inline Tap Mode*
- *Understanding Multiple IDP Detector Support*
- *Understanding IDP Logging*

Example: Configuring an IDP Policy for the Master Logical Systems

IN THIS SECTION

- Requirements | 269
- Overview | 270
- Configuration | 271
- Verification | 276

This example shows how to configure an IDP policy in a master logical system.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.
- Read "IDP in Logical Systems Overview" on page 263.
- Use the **show system security-profile** command to see the resources allocated to the master logical system.

Overview

In this example you configure a custom attack that is used in an IDP policy. The IDP policy is specified in a security profile that is applied to the master logical system. IDP is then enabled in a security policy configured in the master logical system.

You configure the features described in Table 25 on page 270.

Table 25: IDP Configuration for the Master Logical System

Feature	Name	Configuration Parameters

Custom attack	http-bf	• Severity critical
		• Detect three attacks between source and destination addresses of sessions.
		• Stateful signature attack type with the following characteristics:
		  ◦ location http-url-parsed
		  ◦ pattern .*juniper.*
		  ◦ client to server traffic

IPS rulebase policy	root-idp-policy	Match: • application default • http-bf custom attacks Action: • drop-connection • notification log-attacks
Logical system security profile	master-profile (previously configured and applied to root-logical-system)	Add IDP policy root-idp-policy.
Security policy	enable-idp	Enable IDP in a security policy that matches any traffic from the lsys-root-untrust zone to the lsys-root-trust zone.

NOTE: A logical system can have only one active IDP policy at a time. To specify the active IDP policy for the master logical system, the master administrator can reference the IDP policy in the security profile that is bound to the master logical system as shown in this example. Alternatively, the master administrator can use the **active-policy** configuration statement at the [**edit security idp**] hierarchy level.

A commit error is generated if an IDP policy is both configured in the security profile that is bound to the master logical system and specified with the **active-policy** configuration statement. Use only one method to specify the active IDP policy for the master logical system.

Configuration

IN THIS SECTION

- Configuring a Custom Attack | **271**
- Configuring an IDP Policy for the Master Logical System | **273**
- Enabling IDP in a Security Policy | **274**

Configuring a Custom Attack

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp custom-attack http-bf severity critical
set security idp custom-attack http-bf time-binding count 3
set security idp custom-attack http-bf time-binding scope peer
set security idp custom-attack http-bf attack-type signature context http-url-parsed
set security idp custom-attack http-bf attack-type signature pattern .*juniper.*
set security idp custom-attack http-bf attack-type signature direction client-to-server
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a custom attack object:

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
[edit]
admin@host> configure
admin@host#
```

2. Create the custom attack object and set the severity level.

```
[edit security idp]
admin@host# set custom-attack http-bf severity critical
```

3. Configure attack detection parameters.

```
[edit security idp]
admin@host# set custom-attack http-bf time-binding count 3
admin@host# set custom-attack http-bf time-binding scope peer
```

4. Configure stateful signature parameters.

```
[edit security idp]
admin@host# set custom-attack http-bf attack-type signature context http-url-parsed
admin@host# set custom-attack http-bf attack-type signature pattern .*juniper.*
admin@host# set custom-attack http-bf attack-type signature direction client-to-server
```

Results

From configuration mode, confirm your configuration by entering the **show security idp custom-attack http-bf** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
admin@host# show security idp custom-attack http-bf
severity critical;
    time-binding {
        count 3;
        scope peer;
```

```
}
    attack-type {
        signature {
            context http-url-parsed;
            pattern .*juniper.*;
            direction client-to-server;
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring an IDP Policy for the Master Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp idp-policy root-idp-policy rulebase-ips rule 1 match application default
set security idp idp-policy root-idp-policy rulebase-ips rule 1 match attacks custom-attacks http-bf
set security idp idp-policy root-idp-policy rulebase-ips rule 1 then action drop-connection
set security idp idp-policy root-idp-policy rulebase-ips rule 1 then notification log-attacks
set system security-profile master-profile idp-policy root-idp-policy
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure an IDP policy:

1. Create the IDP policy and configure match conditions.

```
[edit security idp]
admin@host# set idp-policy root-idp-policy rulebase-ips rule 1 match application default
admin@host# set idp-policy root-idp-policy rulebase-ips rule 1 match attacks custom-attacks http-bf
```

2. Configure actions for the IDP policy.

```
[edit security idp]
admin@host# set idp-policy root-idp-policy rulebase-ips rule 1 then action drop-connection
admin@host# set idp-policy root-idp-policy rulebase-ips rule 1 then notification log-attacks
```

3. Add the IDP policy to the security profile.

```
[edit system security-profile master-profile]
admin@host# set idp-policy lsys1-idp-policy
```

Results

From configuration mode, confirm your configuration by entering the **show security idp idp-policy root-idp-policy** and **show system security-profile master-profile** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
admin@host# show security idp idp-policy root-idp-policy
   rulebase-ips {
      rule 1 {
         match {
            application default;
            attacks {
               custom-attacks http-bf;
            }
         }
         then {
            action {
               drop-connection;
            }
            notification {
               log-attacks;
            }
         }
      }
   }
admin@host# show system security-profile master-profile
...
idp-policy lsys1-idp-policy;
```

If you are done configuring the device, enter **commit** from configuration mode.

Enabling IDP in a Security Policy

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security policies from-zone lsys-root-untrust to-zone lsys-root-trust policy enable-idp match source-address
    any
set security policies from-zone lsys-root-untrust to-zone lsys-root-trust policy enable-idp match
    destination-address any
set security policies from-zone lsys-root-untrust to-zone lsys-root-trust policy enable-idp match application
    any
set security policies from-zone lsys-root-untrust to-zone lsys-root-trust policy enable-idp then permit
    application-services idp
```

Step-by-Step Procedure

To enable IDP in a security policy:

1. Create the security policy and configure match conditions.

```
[edit security policies from-zone lsys-root-untrust to-zone lsys-root-trust]
admin@host# set policy enable-idp match source-address any
admin@host# set policy enable-idp match destination-address any
admin@host# set policy enable-idp match application any
```

2. Enable IDP.

```
[edit security policies from-zone lsys-root-untrust to-zone lsys-root-trust]
admin@host# set policy enable-idp then permit application-services idp
```

Results

From configuration mode, confirm your configuration by entering the **show security policies** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
   admin@host# show security policies
   from-zone lsys-root-untrust to-zone lsys-root-trust {
      policy enable-idp {
         match {
            source-address any;
            destination-address any;
            application any;
         }
```

```
        then {
            permit {
                application-services {
                    idp;
                }
            }
        }
    }
}
...
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying Attack Matches

Purpose

Verify that attacks are being matched in network traffic.

Action

From operational mode, enter the **show security idp attack table** command.

```
admin@host> show security idp attack table
IDP attack statistics:
  Attack name                                #Hits
  http-bf                                        1
```

SEE ALSO

IDP in Logical Systems Overview | 263

SRX Series Logical Systems Master Administrator Configuration Tasks Overview | 47

Example: Configuring and Assigning a Predefined IDP Policy for a User Logical System

IN THIS SECTION

- Requirements | 277
- Overview | 278
- Configuration | 278
- Verification | 279

The master administrator can *either* download predefined IDP policies to the device or configure custom IDP policies at the root level using custom or predefined attack objects. The master administrator is responsible for assigning an IDP policy to a user logical system. This example shows how to assign a predefined IDP policy to a user logical system.

Requirements

Before you begin:

- Log in to the master logical system as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.
- Read *IDP Policies Overview*.
- Assign the ls-design-profile security policy to the ls-product-design user logical system. See "Example: Configuring Logical Systems Security Profiles (Master Administrators Only)" on page 94.
- Download predefined IDP policy templates to the device. See *Downloading and Using Predefined IDP Policy Templates (CLI Procedure)*.

> **NOTE:** Activating a predefined IDP policy with the **active-policy** configuration statement at the [**edit security idp**] hierarchy level only applies to the master logical system. For a user logical system, the master administrator specifies the active IDP policy in the security profile that is bound to the user logical system.

Overview

The predefined IDP policy named Recommended contains attack objects recommended by Juniper Networks. All rules in the policy have their actions set to take the recommended action for each attack object. You add the Recommended IDP policy to the ls-design-profile, which is bound to the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile ls-design-profile idp-policy Recommended
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To add a predefined IDP policy to a security profile for a user logical system:

1. Log in to the master logical system as the master administrator and enter configuration mode.

   ```
   [edit]
   admin@host> configure
   admin@host#
   ```

2. Add the IDP policy to the security profile.

   ```
   [edit system security-profile]
   admin@host# set ls-design-profile idp-policy Recommended
   ```

Results

From configuration mode, confirm your configuration by entering the **show security idp** and **show system security-profile ls-design-profile** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
```

```
admin@host# show security idp
  idp-policy Recommended {
    ...
  }
[edit]
admin@host# show system security-profile ls-design-profile
  policy {
    ...
  }
  idp-policy Recommended;
logical-system ls-product-design;
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying the Configuration

Purpose

Verify the IDP policy assigned to the logical system.

Action

From operational mode, enter the **show security idp logical-system policy-association** command. Ensure that the IDP policy in the security profile that is bound to the logical system is correct.

```
admin@host> show security idp logical-system policy-association
Logical system          IDP policy
ls-product-design       Recommended
```

SEE ALSO

Example: Enabling IDP in a User Logical System Security Policy | 280

IDP in Logical Systems Overview | 263

User Logical Systems Configuration Overview | 71

Example: Enabling IDP in a User Logical System Security Policy

IN THIS SECTION

- Requirements | 280
- Overview | 280
- Configuration | 281
- Verification | 282

This example shows how to enable IDP in a security policy in a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- From configuration mode, use the **show system security-profile <*profile-name*> idp-policy** command to see the security policy resources allocated to the logical system.
- Configure an IDP security policy for the user logical system as the master administrator. See "Example: Configuring and Assigning a Predefined IDP Policy for a User Logical System" on page 277.

Overview

In this example, you configure the ls-product-design user logical system as shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

You enable IDP in a security policy that matches any traffic from the ls-product-design-untrust zone to the ls-product-design-trust zone. Enabling IDP in a security policy directs matching traffic to be checked against the IDP rulebases.

NOTE: This example uses the IDP policy configured and assigned to the ls-product-design user logical system by the master administrator in "Example: Configuring and Assigning a Predefined IDP Policy for a User Logical System" on page 277.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy enable-idp
    match source-address any
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy enable-idp
    match destination-address any
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy enable-idp
    match application any
set security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust policy enable-idp
    then permit application-services idp
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a security policy to enable IDP in a user logical system:

1. Log in to the logical system as the user logical system administrator and enter configuration mode.

```
[edit]
lsdesignadmin1@host:ls-product-design>configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a security policy that matches traffic from the ls-product-design-untrust zone to the ls-product-design-trust zone.

```
[edit security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust]
lsdesignadmin1@host:ls-product-design# set policy enable-idp match source-address any
lsdesignadmin1@host:ls-product-design# set policy enable-idp match destination-address any
lsdesignadmin1@host:ls-product-design# set policy enable-idp match application any
```

3. Configure the security policy to enable IDP for matching traffic.

```
[edit security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust]
lsdesignadmin1@host:ls-product-design# set policy enable-idp then permit application-services idp
```

Results

From configuration mode, confirm your configuration by entering the **show security policies** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
lsdesignadmin1@host:ls-product-design# show security policies
    from-zone ls-product-design-untrust to-zone ls-product-design-trust {
        policy enable-idp {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit {
                    application-services {
                        idp;
                    }
                }
            }
        }
        ...
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying Attack Matches

Purpose

Verify that attacks are being matched in network traffic.

Action

From operational mode, enter the **show security idp attack table** command.

```
  admin@host> show security idp attack table
IDP attack statistics:
  Attack name                                #Hits
  FTP:USER:ROOT                              1
```

SEE ALSO

Example: Configuring and Assigning a Predefined IDP Policy for a User Logical System | 277

IDP in Logical Systems Overview | 263

User Logical Systems Configuration Overview | 71

Example: Configuring an IDP Policy for a User Logical System

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This example shows how to configure and assign an IDP policy to a user logical system. After assigning the IDP policy, the traffic is sent from client to check for the attack detection on the configured custom attack.

Requirements

This example uses the following hardware and software components:

- Junos OS Release 18.3R1 and later
- an SRX4200 device

Before you configure IDP policy on user logical system:

- Configure security zones. See "Example: Configuring Security Zones for a User Logical Systems" on page 171.

Overview

In this example, you configure a custom attack that is used in an IDP policy. The IDP policy is specified and enabled using a security policy configured in the user logical system.

Configuration

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- Configuring a user logical system | 284
- Configuring a Custom Attack | 285
- Configuring an IDP Policy for the User Logical System | 286
- Enabling IDP in a Security Policy | 288

To configure IDP in a user logical system:

Configuring a user logical system

Step-by-Step Procedure

To configure a user logical system:

1. Configure a user logical system.

```
[edit]
user@host# set logical-system LSYS1
```

2. Exit from the configuration mode and enter to the operational mode.

```
user@host# exit
```

3. Login as LSYS1 user to the user logical sytem and enter to configuration mode.

```
user@host> set cli logical-system LSYS1
user@host:LSYS1> edit
user@host:LSYS1#
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
```

```
user@host# show logical-systems
    LSYS1 {
    }
```

Configuring a Custom Attack

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp custom-attack my-http severity info
set security idp custom-attack my-http attack-type signature protocol-binding application HTTP
set security idp custom-attack my-http attack-type signature context http-get-url
set security idp custom-attack my-http attack-type signature pattern .*test.*
set security idp custom-attack my-http attack-type signature direction any
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a custom attack object:

1. Log in to the user logical system as LSYS1 and enter configuration mode.

   ```
   [edit]
   user@host:LSYS1#
   ```

2. Create the custom attack object and set the severity level.

   ```
   [edit security idp]
   user@host:LSYS1# set custom-attack my-http severity info
   ```

3. Configure stateful signature parameters.

   ```
   [edit security idp]
   user@host:LSYS1# set custom-attack my-http attack-type signature protocol-binding application HTTP
   user@host:LSYS1# set custom-attack my-http attack-type signature context http-get-url
   user@host:LSYS1# set custom-attack my-http attack-type signature pattern .*test.*
   user@host:LSYS1# set custom-attack my-http attack-type signature direction any
   ```

Results

From configuration mode, confirm your configuration by entering the **show security idp custom-attack my-http** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:LSYS1# show security idp custom-attack my-http
severity info;
   attack-type {
   signature {
      protocol-binding {
         application HTTP;
      }
      context http-get-url;
      pattern .*test.*;
      direction any;
   }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring an IDP Policy for the User Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp idp-policy idpengine rulebase-ips rule 1 match from-zone any
set security idp idp-policy idpengine rulebase-ips rule 1 match source-address any
set security idp idp-policy idpengine rulebase-ips rule 1 match to-zone any
set security idp idp-policy idpengine rulebase-ips rule 1 match destination-address any
set security idp idp-policy idpengine rulebase-ips rule 1 match application default
set security idp idp-policy idpengine rulebase-ips rule 1 match attacks custom-attacks my-http
set security idp idp-policy idpengine rulebase-ips rule 1 then action no-action
set security idp idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure an IDP policy:

1. Create the IDP policy and configure match conditions.

```
[edit security idp]
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 match from-zone any
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 match source-address any
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 match to-zone any
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 match destination-address any
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 match application default
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 match attacks custom-attacks my-http
```

2. Configure actions for the IDP policy.

```
[edit security idp]
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 then action no-action
user@host:LSYS1# set idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
```

Results

From configuration mode, confirm your configuration by entering the **show security idp idp-policy idpengine** and **show system security-profile master-profile** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:LSYS1# show security idp idp-policy idpengine
rulebase-ips {
    rule 1 {
        match {
            from-zone any;
            source-address any;
            to-zone any;
            destination-address any;
            application default;
            attacks {
                custom-attacks my-http;
            }
        }
        then {
            action {
                no-action;
            }
            notification {
                log-attacks;
            }
        }
    }
```

```
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Enabling IDP in a Security Policy

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security policies from-zone z1 to-zone z2 policy p1 match source-address any
set security policies from-zone z1 to-zone z2 policy p1 match destination-address any
set security policies from-zone z1 to-zone z2 policy p1 match application any
set security policies from-zone z1 to-zone z2 policy p1 then permit application-services idp-policy idpengine
```

Step-by-Step Procedure

To enable IDP in a security policy:

1. Create the security policy and configure match conditions.

```
[edit security policies from-zone z1 to-zone z2]
user@host:LSYS1# set policy p1 match source-address any
user@host:LSYS1# set policy p1 match destination-address any
user@host:LSYS1# set policy p1 match application any
```

2. Enable IDP.

```
[edit security policies from-zone z1 to-zone z2]
user@host:LSYS1# set policy p1 then permit application-services idp-policy idpengine
```

Results

From configuration mode, confirm your configuration by entering the **show security policies** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:LSYS1# show security policies
from-zone z1 to-zone z2 {
   policy p1{
      match {
```

```
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit {
                application-services {
                    idp-policy idpengine;
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

To send traffic and check for attack detection from user logical system:

Verifying Attack Detection

Purpose

Verify that attack detection is happening for the custom attack.

Action

From operational mode, enter the **show security idp attack table** command.

`user@host:LSYS1>` **show security idp policies**

```
 PIC : FPC 0 PIC 0:
ID    Name                  Sessions    Memory      Detector
 1     idpengine             0           188584      12.6.130180509
```

`user@host:LSYS1>` **show security idp attack table**

```
IDP attack statistics:

  Attack name                                #Hits
  my-http                                 1
```

Meaning

The output displays the attacks detected for the custom attack that is configured in the IDP policy in the user logical system LSYS1.

SEE ALSO

idp | **745**

ALG for Logical Systems

IN THIS SECTION

- Understanding Application Layer Gateway (ALG) in Logical Systems | **290**
- Enabling and Disabling ALG for Logical System | **291**
- Example: Enabling FTP ALG in a Logical System | **296**

An Application Layer Gateway (ALG) in logical systems enables the gateway to parse application layer payloads and take decisions whether to allow or deny traffic to the application server. ALGs supports the applications such as Transfer Protocol (FTP) and various IP protocols that use the application layer payload to communicate the dynamic Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) ports on which the applications open data connections. For more information, see the following topics:

Understanding Application Layer Gateway (ALG) in Logical Systems

The master administrator can configure ALGs at the root level. The configuration is inherited by all user logical systems. ALGs can also be configured discretely for user logical systems. The ALG status is not inherited by all user logical systems. For a newly created logical system, the ALG consists of a default status. The FTP protocol ALG can be enabled or disabled for a specific logical system. The ICMP ALG protocol is enabled by default and is not provisioned to disable.

NOTE: When an SRX device is upgraded to 18.2 release, the ALG status in a logical system is changed when compared with previous status. This change affects the ALG traffic in the logical system. For example, before upgrade, H.323 ALG is configured to enable by root. So H.323 ALG is also enabled in lsys1. After upgrade to 18.2, H.323 ALG status in lsys1 is disabled because the default status for H.323 is disabled for a new logical system.

NOTE: You can enable a particular ALG for only one specific logical system.

By default, the following ALGs are enabled on a root logical system:

- DNS
- FTP
- MSRPC
- PPTP
- SUNRPC
- TALK
- TFTP

Starting in Junos OS Release 18.2R1, you can either enable or disable the ALGs configuration for each logical system individually, and view the status of the ALGs for all logical systems or specific logical system. All 12 data ALGs (DNS, FTP, TFTP, MSRPC, SUNRPC, PPTP, RSH, RTSP, TALK, SQL, IKE, and TWAMP) and four VOIP ALGs (SIP, H.323, MGCP, and SCCP) are supported on the logical systems.

SEE ALSO

show security alg status logical-system | **899**

Example: Enabling FTP ALG in a Logical System | **296**

alg

Enabling and Disabling ALG for Logical System

This topic shows how to enable or disable the ALG status for each logical system.

1. By Default IKE ALG is disabled on the logical system. To enable this ALG, use the following command.

- Enable IKE and ESP ALG with NAT.

```
[edit]
user@host# set logical-systems LSYS1 security alg ike-esp-nat enable
```

2. By default, the DNS, FTP, PPTP, SIP, SUNRPC and TWAMP ALGs are enabled on the logical system. To disable these ALGs, use the following commands.

   - Disable DNS ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg dns disable
```

   - Disable FTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg ftp disable
```

   - Disable H323 ALG.

```
[edit]
user@host# logical-systems LSYS1 security alg h323 disable
```

   - Disable MGCP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg mgcp disable
```

   - Disable MSRPC ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg msrpc disable
```

   - Disable PPTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg pptp disable
```

   - Disable RSH ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg rsh disable
```

- Disable RTSP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg rtsp disable
```

- Disable SCCP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sccp disable
```

- Disable SIP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sip disable
```

- Disable SQL ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sql disable
```

- Disable SUNRPC ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sunrpc disable
```

- Disable TALK ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg talk disable
```

- Disable TFTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg tftp disable
```

3. Configuring ALG functions in logical systems.

- Configure DNS ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg dns
```

- Configure FTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg ftp
```

- Configure H323 ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg h323
```

- Configure IKE and ESP ALG with NAT.

```
[edit]
user@host# set logical-systems LSYS1 security alg ike-esp-nat
```

- Configure MGCP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg mgcp
```

- Configure MSRPC ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg msrpc
```

- Configure PPTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg pptp
```

- Configure RSH ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg rsh
```

- Configure RTSP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg rtsp
```

- Configure SCCP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sccp
```

- Configure SIP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sip
```

- Configure SQL ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sql
```

- Configure SUNRPC ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sunrpc
```

- Configure TALK ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg talk
```

- Configure TFTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg tftp
```

- Configure TWAMP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg twamp
```

- Configure extended function for FTP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg ftp allow-mismatch-ip-address
```

- Configure extended function for MSRPC ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg msrpc map-entry-timeout 10
```

- Configure extended function for SUNRPC ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sunrpc map-entry-timeout 10
```

- Configure extended function for SIP ALG.

```
[edit]
user@host# set logical-systems LSYS1 security alg sip retain-hold-resource
```

Example: Enabling FTP ALG in a Logical System

IN THIS SECTION

- Requirements | 296
- Overview | 296
- Configuration | 297
- Verification | 302

This example shows how to enable or disable an FTP ALG configuration in a logical system and send traffic based on FTP ALG configuration of the logical system individually.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.

Overview

In this example, the ALG for FTP is configured to monitor and allow FTP traffic to be exchanged between the clients and the server on a logical system.

By default, the FTP ALG is enabled on the logical system.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile p1 policy maximum 100
set system security-profile p1 policy reserved 50
set system security-profile p1 zone maximum 100
set system security-profile p1 zone reserved 50
set system security-profile p1 flow-session maximum 6291456
set system security-profile p1 flow-session reserved 50
set system security-profile p1 flow-gate maximum 524288
set system security-profile p1 flow-gate reserved 50
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 peer-unit 1
set logical-systems LSYS0 routing-instances vr0 instance-type vpls
set logical-systems LSYS0 routing-instances vr0 interface lt-0/0/0.0
set system security-profile p1 logical-system LSYS0
set system security-profile p1 logical-system LSYS1
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 encapsulation ethernet
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 peer-unit 0
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 family inet address 10.0.0.0/8
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet address 198.51.100.0/24
set logical-systems LSYS1 interfaces ge-0/0/1 unit 0 family inet address 203.0.113.0/24
set logical-systems LSYS1 security zones security-zone LSYS1_tzone host-inbound-traffic system-services all
set logical-systems LSYS1 security zones security-zone LSYS1_tzone host-inbound-traffic protocol all
set logical-systems LSYS1 security zones security-zone LSYS1_tzone interfaces ge-0/0/0
set logical-systems LSYS1 security zones security-zone LSYS1_utzone host-inbound-traffic system-services all
set logical-systems LSYS1 security zones security-zone LSYS1_utzone host-inbound-traffic protocol all
set logical-systems LSYS1 security zones security-zone LSYS1_utzone interfaces ge-0/0/1
set logical-systems LSYS1 security policies from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match
    source-address any
set logical-systems LSYS1 security policies from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match
    destination-address any
set logical-systems LSYS1 security policies from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match
    application junos-ftp
set logical-systems LSYS1 security policies from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match
    application junos-ping
set logical-systems LSYS1 security policies from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 then
    permit
set logical-systems LSYS1 security policies default-policy deny-all
```

Configuring FTP ALG in a Logical System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure an ALG in a user logical system:

1. Configure a security profile.

```
[edit system security-profile]
user@host#set p1 policy maximum 100
user@host#set p1 policy reserved 50
user@host#set p1 zone maximum 100
user@host#set p1 zone reserved 50
user@host#set p1 flow-session maximum 6291456
user@host#set p1 flow-session reserved 50
user@host#set p1 flow-gate maximum 524288
user@host#set p1 flow-gate reserved 50
```

2. Configure the master logical system.
   a. Create the master logical system

```
[edit logical-systems]
user@host#set LSYS0
user@host#set LSYS1
```

   b. Configure interfaces for a master logical system and configure logical tunnel interfaces and routing instances to the LSYS0.

```
[edit interfaces]
user@host#set lt-0/0/0 unit 0 encapsulation ethernet-vpls
user@host#set lt-0/0/0 unit 0 peer-unit 1
user@host#set routing-instances vr0 instance-type vpls
user@host#set routing-instances vr0 interface lt-0/0/0.0
```

   c. Configure a security profile p1 and assign it to the root logical system LSYS0.

```
[edit system security-profile]
```

```
user@host#set p1 logical-system LSYS0
```

3. Configure a user logical system.

   a. Create the user logical system LSYS1

```
[edit logical-systems]
user@host#set LSYS1
```

   b. Configure user logical and logical tunnel interfaces to transfer traffic within the logical system.

```
[edit interfaces]
user@host#set ge-0/0/0 unit 0 family inet address 198.51.100.0/24
user@host#set ge-0/0/1 unit 0 family inet address 203.0.113.0/24
user@host#set lt-0/0/0 unit 1 encapsulation ethernet
user@host#set lt-0/0/0 unit 1 peer-unit 0
user@host#set lt-0/0/0 unit 1 family inet address 10.0.0.0/8
```

   c. Assign a security profile p1 to LSYS1.

```
[edit system security-profile]
user@host#set p1 logical-system LSYS1
```

   d. Configure security zones and assign interfaces to each zone.

```
[edit security zones]
user@host#set security-zone LSYS1_tzone host-inbound-traffic system-services all
user@host#set security-zone LSYS1_tzone host-inbound-traffic protocol all
user@host#set security-zone LSYS1_tzone interfaces ge-0/0/0
user@host#set security-zone LSYS1_utzone host-inbound-traffic system-services all
user@host#set security-zone LSYS1_utzone host-inbound-traffic protocol all
user@host#set security-zone LSYS1_utzone interfaces ge-0/0/1
```

4. Configure a security policy that permits FTP traffic from the LSYS1_tzone to LSYS1_utzone.

```
[edit security policies]
user@host#set from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match source-address any
user@host#set from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match destination-address any
user@host#set from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match application junos-ftp
```

```
user@host#set from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 match application junos-ping
user@host#set from-zone LSYS1_tzone to-zone LSYS1_utzone policy p11 then permit
user@host#set default-policy deny-all
```

Results

From configuration mode, confirm the configuration for LSYS0 and LSYS1 by entering the **show logical-systems**. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host#show logical-systems LSYS0
interfaces {
    lt-0/0/0 {
        unit 0 {
            encapsulation ethernet-vpls;
            peer-unit 1;
        }
        unit 2 {
            encapsulation ethernet-vpls;
            peer-unit 3;
        }
    }
}
routing-instances {
    vr0 {
        instance-type vpls;
        interface lt-0/0/0.0;
        interface lt-0/0/0.2;
    }
}
```

```
user@host#show logical-systems LSYS1
interfaces {
    lt-0/0/0 {
        unit 1 {
            encapsulation ethernet;
            peer-unit 0;
            family inet {
                address 10.0.1.1/24;
            }
        }
    }
```

```
    reth0 {
        unit 0 {
            family inet {
                address 198.51.100.0/24;
            }
        }
    }
}
security {
    alg{
        ftp;
    }
    policies {
        from-zone LSYS1_tzone to-zone LSYS1_utzone {
            policy P11 {
                match {
                    source-address any;
                    destination-address any;
                    application [ junos-ping junos-ftp ];
                }
                then {
                    permit;
                }
            }
        }
        default-policy {
            deny-all;
        }
    }
    zones {
        security-zone LSYS1_tzone {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                reth0.0;
            }
        }
        security-zone LSYS1_utzone {
```

```
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.1;
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verify ALG status for user logical system | **302**
- Verify ALG status for all the logical systems | **303**
- Verifying Intra-Logical System Traffic on a Logical System | **306**

To confirm that the configuration is working properly, perform these tasks:

Verify ALG status for user logical system

Purpose

Verify alg status for FTP is enabled.

Action

To verify the configuration is working properly, enter the **show security alg status logical-system LSYS1** command.

```
user@host> show security alg status logical-system LSYS1
```

```
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Enabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
  TWAMP    : Disabled
```

Meaning

The output displays the alg status for FTP Enabled for the logical system LSYS1.

Verify ALG status for all the logical systems

Purpose

Verify the ALG status for all the logical systems on the device.

Action

To verify the configuration is working properly, enter the **show security alg status logical-system all** command.

user@host> show security alg status logical-system all

```
Logical system: root-logical-system
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
```

```
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
  TWAMP    : Disabled

Logical system: LSYS3
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Enabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
  TWAMP    : Disabled

Logical system: LSYS1
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Enabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
```

```
  TWAMP    : Disabled

Logical system: LSYS2
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Enabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
  TWAMP    : Disabled

Logical system: LSYS0
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
  TWAMP    : Disabled
```

Meaning

The output displays the ALG status for all the logical systems on the device.

Verifying Intra-Logical System Traffic on a Logical System

Purpose

Verify the information about active resources, clients, groups, and sessions created through the resource manager.

Action

From operational mode, enter the **show security resource-manager summary** command.

user@host> show security resource-manager summary

```
Active resource-manager clients   : 16
Active resource-manager groups    : 3
Active resource-manager resources : 26
Active resource-manager sessions  : 4
```

Meaning

The output displays summary information about active resources, clients, groups, and sessions created through the resource manager.

SEE ALSO

Understanding Application Layer Gateway (ALG) in Logical Systems | 290

show security alg status logical-system | 899

RELATED DOCUMENTATION

Security Zones in Logical Systems | 156

DHCP for Logical Systems

IN THIS SECTION

Understanding DHCP Support for Logical Systems | 307

Minimum DHCPv6 Relay Agent Configuration for Logical Systems | 307

Example: Configuring the DHCPv6 Client for Logical Systems | 309
Example: Configuring the DHCPv6 Server Options for Logical Systems | 316

Understanding DHCP Support for Logical Systems

Starting in Junos OS Release 18.4R1, a logical system supports the DHCP client feature to learn IP addresses for interfaces assigned to the logical systems. Additionally, starting in Junos OS Release 18.4R1, logical systems support the DHCP relay feature. A DHCP relay agent forwards DHCP requests and responses between the DHCP client and the DHCP server.

A DHCP server allocates IP addresses and provides IP configuration settings such as the DNS server and default gateway to client hosts on a subnet served by an interface of a logical system. The DHCP allows network administrators centrally manage a pool of IP addresses among hosts and automate the assignment of IP addresses in a network within a logical system. An IP address is leased to a host for a limited time period, allowing the DHCP server to share a limited IP addresses among a group of hosts that do not require permanent IP addresses.

An interface of an SRX Series device operating as a DHCP client receives the TCP or IP settings and the IP address from an external DHCP server.

An SRX Series device operating as a DHCP relay agent for logical systems forwards incoming requests from the DHCP clients to a specified DHCP server. The client requests pass through interfaces on the logical systems.

Minimum DHCPv6 Relay Agent Configuration for Logical Systems

The following example describes the minimum configuration required to configure an SRX Series device as a DHCPv6 relay agent for the logical system.

Before you begin determine the following:

- The DHCPv6 relay group and the DHCP active server-group for logical system.

1. Configure an interface with an IPv6 address for the logical system.

```
user@host# set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 address 2001:db8::1/64
```

2. Specify the name of the server-group and add the IP address for the DHCP servers belonging to the same group.

```
user@host# set logical-systems LSYS1 forwarding-options dhcp-relay dhcpv6 group inf interface ge-0/0/0.0
```

3. Specify the name of the active server group.

```
user@host# set logical-systems LSYS1 forwarding-options dhcp-relay dhcpv6 active-server-group server6
```

4. Create a DHCP relay group that includes at least one interface for the logical system.

```
user@host# set logical-systems LSYS1 forwarding-options dhcp-relay dhcpv6 server-group server6
   2001:db8::1/64
```

5. Confirm your configuration by entering the **show logical-systems LSYS1** command.

```
[edit]
user@host# show logical-systems LSYS1
interfaces {
   ge-0/0/0 {
      unit 0 {
         family inet6 {
            address 2001:db8::1/64;;
         }
      }
   }
}
forwarding-options {
   dhcp-relay {
      dhcpv6 {
         group inf {
            interface ge-0/0/0.0;
         }
         server-group {
            server6 {
               2001:db8::1/64;
            }
         }
         active-server-group server6;
      }
   }
```

```
}
```

NOTE: To configure the DHCP relay agent in a routing instance for the logical system, configure the **dhcp-relay** statement in the **edit logical-systems LSYS1 routing-instances R1** hierarchy level.

Example: Configuring the DHCPv6 Client for Logical Systems

IN THIS SECTION

- Requirements | **309**
- Overview | **309**
- Configuration | **310**
- Verification | **313**

This example shows how to configure an SRX Series device as a DHCPv6 client for the logical systems.

Requirements

This example uses the following hardware and software components:

- An SRX Series device
- Junos OS Release 18.4R1

Before you begin:

- Read the "Understanding DHCP Support for Logical Systems" on page 307 to understand how and where this procedure fits in the overall support for DHCP.

  No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, the master administrator configures an SRX device as a DHCPv6 client for a logical system.

The DHCPv6 client for a logical system includes the following features:

- Identity association for non-temporary addresses (IA_NA)
- Identity association for prefix delegation (IA_PD)
- Autoconfig or stateful mode
- DHCP unique identifier (DUID)

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems LSYS1 security zones security-zone trust host-inbound-traffic system-services all
set logical-systems LSYS1 security zones security-zone trust host-inbound-traffic protocols all
set logical-systems LSYS1 security zones security-zone trust interfaces ge-0/0/0.0
set logical-systems LSYS1 routing-instances r1 instance-type virtual-router
set logical-systems LSYS1 routing-instances r1 interface ge-0/0/0.0
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-type autoconfig
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-type stateful
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-ia-type ia-na
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-ia-type ia-pd
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-identifier duid-type duid-ll
set logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client req-option dns-server
set protocols router-advertisement interface ge-0/0/0.0
```

Configuring DHCPv6 Client in a Logical System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Configure the security zones to permit traffic for a logical system.

```
[edit logical-systems LSYS1 security zones]
user@host# set security-zone trust host-inbound-traffic system-services all
user@host# set security-zone trust host-inbound-traffic protocols all
user@host# set security-zone trust interfaces ge-0/0/0.0
```

2. Create a routing instance and assign the routing instance type for a logical system.

```
[edit logical-systems LSYS1]
user@host# set routing-instances r1 instance-type virtual-router
```

3. Specify the interface name for the routing instance.

```
[edit logical-systems LSYS1]
user@host# set routing-instances r1 interface ge-0/0/0.0
```

4. Configure the DHCPv6 client type. The client type can be **autoconfig** or **stateful** for the logical system.
   - To enable the DHCPv6 auto configuration mode, configure the client type as **autoconfig**.

```
[edit logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-type autoconfig
```

   - For stateful address assignment, configure the client type as **stateful**.

```
[edit logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-type stateful
```

5. Specify the identity association type.
   - To configure identity association for nontemporary address (IA_NA) assignment, specify the **client-ia type** as **ia-na**.

```
[edit logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-ia-type ia-na
```

   - To configure identity association for prefix delegation (IA_PD), specify the **client-ia-type** as **ia-pd**.

```
[edit logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-ia-type ia-pd
```

6. Configure the DHCPv6 client identifier by specifying the DHCP unique identifier (DUID) type for the logical system. The following DUID type is supported:
   - Link layer address (duid-ll)

```
[edit tlogical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-identifier duid-type duid-ll
```

7. Specify the DHCPv6 client requested option as **dns-server** for the logical system.

```
[edit logical-systems LSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set req-option dns-server
```

8. Configure the router advertisement.

```
[edit]
user@host# set protocols router-advertisement interface ge-0/0/0.0
```

Results

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show logical-systems LSYS1
interfaces {
    ge-0/0/0 {
        unit 0 {
            family inet6 {
                dhcpv6-client {
                    client-type stateful;
                    client-ia-type ia-na;
                    client-ia-type ia-pd;
                    client-identifier duid-type duid-ll;
                    req-option dns-server;
                }
            }
        }
    }
}
routing-instances {
    r1 {
        instance-type virtual-router;
        interface ge-0/0/0.0;
    }
}
security {
    zones {
        security-zone trust {
            host-inbound-traffic {
                system-services {
                    all;
```

```
            }
            protocols {
                all;
            }
        }
        interfaces {
            ge-0/0/0.0;
        }
    }
  }
}
```

- From configuration mode, confirm your configuration by entering the **show protocols** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show protocols
router-advertisement {
   interface ge-0/0/0.0;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the DHCPv6 Client for Logical Systems | **313**
- Verifying the DHCPv6 Client Binding for Logical Systems | **314**
- Verifying the DHCPv6 Client Statistics for Logical Systems | **315**

To confirm that the configuration is working properly, perform these tasks:

Verifying the DHCPv6 Client for Logical Systems

Purpose

Verify that the DHCPv6 client information is configured.

Action

From the operational mode, enter the **show dhcpv6 client binding logical-systems LSYS1** command.

```
user@host> show dhcpv6 client binding logical-systems LSYS1
```

```
 IP/prefix                      Expires     State      ClientType    Interface
     Client DUID
        2000::17/128                    67762       BOUND      STATEFUL
ge-0/0/6.0      LL0x3-10:0e:7e:49:25:86
        2000:100::/64                   67762       BOUND      STATEFUL
ge-0/0/6.0      LL0x3-10:0e:7e:49:25:86
```

Meaning

The output displays the address binding information for the logical system.

Verifying the DHCPv6 Client Binding for Logical Systems

Purpose

Verify that the DHCPv6 client binding information is configured.

Action

From the operational mode, enter the **show dhcpv6 client binding detail logical-systems LSYS1** command.

```
user@host> show dhcpv6 client binding detail logical-systems LSYS1
```

```
Client Interface/Id: ge-0/0/6.0
     Hardware Address:             10:0e:7e:49:25:86
     State:                        BOUND(DHCPV6_CLIENT_STATE_BOUND)
     ClientType:                   STATEFUL
     Lease Expires:                2018-11-09 07:11:47 UTC
     Lease Expires in:             67760 seconds
     Lease Start:                  2018-11-08 07:11:47 UTC
     Bind Type:                    IA_NA IA_PD
     Preferred prefix length       0
     Sub prefix length             0
     Client DUID:                  LL0x3-10:0e:7e:49:25:86
     Rapid Commit:                 Off
     Server Identifier:            fe80::46f4:77ff:fed6:670a
     Client IP Address:            2000::17/128
     Client IP Prefix:             2000:100::/64
```

```
 DHCP options:
Name: server-identifier, Value: VENDOR0x00000583-0x34343a34
```

Meaning

The output displays the detailed client binding information for the logical system.

Verifying the DHCPv6 Client Statistics for Logical Systems

Purpose

Verify that the DHCPv6 client statistics information is configured.

Action

From the operational mode, enter the **show dhcpv6 client statistics logical-systems LSYS1** command.

```
user@host> show dhcpv6 client statistics logical-systems LSYS1
```

```
Dhcpv6 Packets dropped:
     Total              3
     Bad Send           3

    Messages received:
    DHCPV6_ADVERTISE          1
    DHCPV6_REPLY              1
    DHCPV6_RECONFIGURE        0

    Messages sent:
    DHCPV6_DECLINE            0
    DHCPV6_SOLICIT            1
    DHCPV6_INFORMATION_REQUEST 0
    DHCPV6_RELEASE            0
    DHCPV6_REQUEST            1
    DHCPV6_CONFIRM            0
    DHCPV6_RENEW              0
    DHCPV6_REBIND             0
```

Meaning

The output displays the information about the number of packets discarded, the number of messages received and the number of messages sent by the DHCP client for the logical system.

Example: Configuring the DHCPv6 Server Options for Logical Systems

IN THIS SECTION

- Requirements | 316
- Overview | 316
- Configuration | 316
- Verification | 320

This example shows how to configure DHCPv6 server options on SRX Series devices for the logical system.

Requirements

This example uses the following hardware and software components:

- An SRX Series device
- Junos OS Release 18.4R1

Before you begin determine the following:

- The IPv6 address pool range and the IPv6 prefix for logical systems.

Overview

In this example, you set a default client limit as 200 for all DHCPv6 groups. You then create a group called **my-group** that contains at least one interface. In this case, the interface is ge-0/0/2.0. You set a range of interfaces using the **upto** command and set a custom client limit as 200 for group **my-group** that overrides the default limit. Finally, you configure interface ge-0/0/2.0 with IPv6 address 2001:db8::1/64 and set router advertisement for interface ge-0/0/2.0.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems LSYS1 system services dhcp-local-server dhcpv6 group my-group overrides
    interface-client-limit 200
set logical-systems LSYS1 system services dhcp-local-server dhcpv6 group my-group interface ge-0/0/2.0
set logical-systems LSYS1 interfaces ge-0/0/2 unit 0 family inet6 address 2001:db8::1/64
set logical-systems LSYS1 access address-assignment pool my-pool family inet6 prefix 2001:db8::1/64
set logical-systems LSYS1 access address-assignment pool my-pool family inet6 range r1 low 2001:db8::1/64
set logical-systems LSYS1 access address-assignment pool my-pool family inet6 range r1 high 2001:db8::1/64
set logical-systems LSYS1 access address-assignment pool my-pool family inet6 dhcp-attributes
    maximum-lease-time 200
set logical-systems LSYS1 access address-assignment pool my-pool family inet6 dhcp-attributes option 21 string
    sip1.net
set logical-systems LSYS1 protocols router-advertisement interface ge-0/0/2.0 prefix 2001:db8::1/64
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure the DHCPv6 server options for logical systems:

1. Configure a DHCP local server.

   ```
   [edit logical-systems LSYS1]
   user@host# set system services dhcp-local-server dhcpv6
   ```

2. Set a default limit for all DHCPv6 groups.

   ```
   [edit logical-systems LSYS1 system services dhcp-local-server dhcpv6]
   user@host# set group my-group overrides interface-client-limit 200
   ```

3. Specify a group name and interface.

   ```
   [edit logical-systems LSYS1 system services dhcp-local-server dhcpv6]
   user@host# set group my-group interface ge-0/0/2.0
   ```

4. Configure an interface with an IPv6 address.

   ```
   [edit logical-systems LSYS1 interfaces]
   user@host# set ge-0/0/2 unit 0 family inet6 address 2001:db8::1/64
   ```

5. Configure an address-pool and specify the IPv6 family.

```
[edit logical-systems LSYS1 access]
user@host# set address-assignment pool my-pool family inet6 prefix 2001:db8::1/64
```

6. Configure the IPv6 prefix, the range name, and the IPv6 range for the DHCPv6 clients

```
[edit logical-systems LSYS1 access]
user@host# set address-assignment pool my-pool family inet6 range r1 low 2001:db8::1/64
user@host# set address-assignment pool my-pool family inet6 range r1 high 2001:db8::1/64
```

7. Configure the DHCPv6 attribute for the maximum lease time.

```
[edit logical-systems LSYS1 access]
user@host# set address-assignment pool my-pool family inet6 dhcp-attributes maximum-lease-time 200
```

8. Configure the user-defined option.

```
[edit logical-systems LSYS1 access]
user@host# set address-assignment pool my-pool family inet6 dhcp-attributes option 21 string sip1.net
```

9. Configure the router advertisement for the interface.

```
[edit logical-systems LSYS1 protocols]
user@host# set router-advertisement interface ge-0/0/2.0 prefix 2001:db8::1/64
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show logical-systems LSYS1
interfaces {
    ge-0/0/2 {
        unit 0 {
            family inet6 {
                address 2001:db8::1/64;
            }
        }
    }
```

```
}
protocols {
    router-advertisement {
        interface ge-0/0/2.0 {
            prefix 2001:db8::1/64;
        }
    }
}
system {
    services {
        dhcp-local-server {
            dhcpv6 {
                group my-group {
                    overrides {
                        interface-client-limit 200;
                    }
                    interface ge-0/0/2.0;
                }
            }
        }
    }
}
access {
    address-assignment {
        pool my-pool {
            family inet6 {
                prefix 2001:db8::1/64;
                range r1 {
                    low 2001:db8::1/64;
                    high 2001:db8::1/64;
                }
                dhcp-attributes {
                    maximum-lease-time 200;
                    option 21 string sip1.net;
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the DHCPv6 Local Server Configuration | 320

To confirm that the configuration is working properly, perform these tasks:

Verifying the DHCPv6 Local Server Configuration

Purpose

Displays the address bindings in the client table on the extended DHCPv6 local server.

Action

From operational mode, enter the **show dhcpv6 server binding summary** command to display the address bindings in the client table on the DHCPv6 local server.

```
user@host> show dhcpv6 server binding summary
```

```
5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```

Meaning

The output displays the information about the DHCPv6 local server address binding summary.

Application Security in Logical Systems

IN THIS SECTION

- Understanding Logical Systems Application Identification Services | 321
- Understanding Logical Systems Application Firewall Services | 322
- Example: Configuring Application Firewall Services for a Master Logical Systems | 323
- Understanding Logical Systems Application Tracking Services | 329
- Example: Configuring Application Firewall Services for a User Logical System | 329
- Example: Configuring AppTrack for a User Logical Systems | 335

Application Security in logical systems enables to identify application traffic traversing your network regardless of port, protocol, and encryption, thereby providing greater visibility to control network traffic. The application security controls network traffic by setting and enforcing security policies based on accurate application information. For more information, see the following topics:

Understanding Logical Systems Application Identification Services

Predefined and custom application signatures identify an application by matching patterns in the first few packets of a session. Identifying applications provides the following benefits:

- Allows Intrusion Detection and Prevention (IDP) to apply appropriate attack objects to applications running on nonstandard ports.
- Improves performance by narrowing the scope of attack signatures for applications without decoders.
- Enables you to create detailed reports using AppTrack on applications passing through the device.

With logical systems, predefined and custom application signatures are global resources that are shared by all logical systems. The master administrator is responsible for downloading and installing predefined Juniper Networks application signatures and creating custom application and nested application signatures to identify applications that are not part of the predefined database.

Application identification is enabled by default.

The application system cache (ASC) saves the mapping between an application type and the corresponding destination IP address, destination port, protocol type, and service. Each user logical system has its own ASC. A user logical system administrator can display the ASC entries for their logical system with the **show services application-identification application-system-cache** command. A user logical system administrator can use the **clear services application-identification application-system-cache** command to clear the ASC entries for their logical system.

Starting in Junos OS Release 18.2R1, the default behavior of the ASC is changed as follows:

- Security services including security policies, application firewall (AppFW), application tracking (AppTrack), application quality of service (AppQoS), Juniper Sky ATP, IDP, and UTM do not use the ASC by default.
- Miscellaneous services including advanced policy-based routing (APBR) use the ASC for application identification by default.

  For more information, see *Enabling or Disabling Application System Cache for Application Services*.

The master administrator can display or clear ASC entries for any logical system. The master administrator can also display or clear global counters with the **show services application-identification counter** and **clear services application-identification counter** commands.

Application signature package is installed at the global-level, that is shared by all user logical systems. The master logical system administrator can install or uninstall application signature package.

Starting in Junos OS Release 18.3R1, the application identification (AppID) support for logical systems include two new options to view and clear logical system statistics and logical system counters statistics.

The master logical system administrator can display or clear the statistics for all logical systems whereas the administrator for the user logical system can display or clear the statistics for their own logical system.

The user logical system administrator can view the AppID signature package status and version. Custom signatures configured by the master logical system administrator can be configured in the use logical system security policies.

You can view the status and version information about the AppID signature package status and version by using the commands **show services application-identification status** and **show services application-identification version**.

SEE ALSO

- *Understanding the Junos OS Application Identification Database*
- *Example: Scheduling the Application Signature Package Updates*
- *Example: Configuring Junos OS Application Identification Custom Application Signatures*
- *Understanding IDP Application Identification*
- *Understanding the Application System Cache*
- *Verifying Application System Cache Statistics*

Understanding Logical Systems Application Firewall Services

An application firewall enables administrators of logical systems to create security policies for traffic based on application identification defined by application signatures. The application firewall provides additional security protection against dynamic-application traffic that might not be adequately controlled by standard network firewall policies. The application firewall controls information transmission by allowing or blocking traffic originating from particular applications.

To configure an application firewall, you define a rule set that contains rules specifying the action to be taken on identified dynamic applications. The rule set is configured independently and assigned to a security policy. Each rule set contains at least two rules, a matched rule (consisting of match criteria and action) and a default rule.

- A matched rule defines the action to be taken on matching traffic. When traffic matches an application and other criteria specified in the rule, the traffic is allowed or blocked based on the action specified in the rule.
- A default rule is applied when traffic does not match any other rule in the rule set.

The master administrator can download a predefined application signature database from the Juniper Networks Security Engineering website or can define application signatures using the Junos OS configuration CLI. For more information about application identification and application signatures, see *Application Security User Guide for Security Devices*.

Configuring an application firewall on a logical system is the same process as configuring an application firewall on a device that is not configured with logical systems. However, the application firewall applies only to the logical system for which it is configured. The master administrator can configure, enable, and monitor application firewalls on the master logical system and all user logical systems on a device. User logical system administrators can configure, enable, and monitor application firewalls only on the user logical systems for which they have access.

SEE ALSO

Example: Configuring Application Firewall Services for a Master Logical Systems | 323
Example: Configuring Application Firewall Services for a User Logical System | 329

Example: Configuring Application Firewall Services for a Master Logical Systems

IN THIS SECTION

- Requirements | 324
- Overview | 324
- Configuration | 325
- Verification | 327

This example describes how to configure application firewall services on the master, or root, logical system by a master administrator. Only the master administrator can configure, manage, and view configuration of the master logical system, in addition to all user logical systems.

After configuring application firewall rule sets and rules, the master administrator adds the application firewall rule set information to the security policy on the master logical system.

For information about configuring an application firewall within a security policy, see *Application Firewall Overview*.

Requirements

Before you begin:

- Verify that all interfaces, routing instances, and security zones have been configured on the master logical system.

  See "Example: Configuring Security Features for the Master Logical Systems" on page 179.

- Verify that application firewall resources (appfw-rule-set and appfw-rule) have been allocated in a security profile and bound to the master logical system through the [**system security-profile**] command. For application firewall resources, a security profile configuration allows 0 to 10,000 rule sets and 0 to 10,000 rules.

  > **NOTE:** The master administrator allocates various global system resources through a security profile configuration which is then bound to the various logical systems on the device. The master administrator owns this function and configures the security profile for all user logical systems as well as the master logical system.
  >
  > For more information, see "Understanding Logical Systems Security Profiles (Master Administrators Only)" on page 88.

- Log in to the master logical system as the master administrator.

  For information about master administrator role functions, see "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

Overview

In this example you create application firewall services on the master logical system, called root-logical-system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example creates the following application firewall configuration:

- Rule set, root-rs1, with rules r1 and r2. When r1 is matched, telnet traffic is allowed through the firewall. When r2 is matched, web traffic is allowed through the firewall.
- Rule set, root-rs2, with rule r1. When r1 is matched, example2 traffic is blocked by the firewall.

All rule sets require a default rule, which specifies whether to permit or deny traffic that is not specified in any rules of a rule set. The default-rule action (permit or deny) must be the opposite from the action that is specified for the other rule(s) in the rule set.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems root-logical-system security application-firewall rule-sets root-rs1 rule r1 match
    dynamic-application junos:telnet
set logical-systems root-logical-system security application-firewall rule-sets root-rs1 rule r1 then permit
set logical-systems root-logical-system security application-firewall rule-sets root-rs1 rule r2 match
    dynamic-application-group junos:web
set logical-systems root-logical-system security application-firewall rule-sets root-rs1 rule r2 then permit
set logical-systems root-logical-system security application-firewall rule-sets root-rs1 default-rule deny
set logical-systems root-logical-system security application-firewall rule-sets root-rs2 rule r1 match
    dynamic-application junos:facebook
set logical-systems root-logical-system security application-firewall rule-sets root-rs2 rule r1 then deny
set logical-systems root-logical-system security application-firewall rule-sets root-rs2 default-rule permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure application firewall for a master logical system:

1. Log in to the master logical system as the master administrator. See "Example: Configuring Root Password for Logical Systems" on page 74 and enter configuration mode.

   ```
   admin@host> configure
   admin@host#
   ```

2. Configure an application firewall rule set for root-logical-system.

   ```
   [edit ]
   admin@host# set logical-systems security application-firewall rule-sets root-rs1
   ```

3. Configure a rule for this rule set and specify which dynamic applications and dynamic application groups the rule should match.

```
[edit]
admin@host# set logical-systems security application-firewall rule-sets root-rs1 rule r1 match
   dynamic-application telnet then permit
```

4. Configure the default rule for this rule set and specify the action to take when the identified dynamic application is not specified in any rules of the rule set.

```
[edit]
admin@host# set logical-systems security application-firewall rule-sets root-rs1 default-rule deny
```

5. Repeat these steps to configure another rule set, root-rs2, if desired.

Results

From configuration mode, confirm your configuration by entering the **show security application-firewall rule-sets** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
admin@host# show security application-firewall rule-sets all
...
   application-firewall {
      rule-sets root-rs1 {
         rule r1 {
            match {
               dynamic-application [junos:telnet];
            }
            then {
               permit;
            }
         }
         default-rule {
            deny;
         }
      }
      rule-sets root-rs1 {
         rule r2 {
            match {
               dynamic-application-group [junos:web];
```

```
    }
    then {
      permit;
    }
  }
  rule-sets root-rs2 {
    rule r1 {
      match {
        dynamic-application [junos:FACEBOOK];
      }
      then {
        deny;
      }
    }
    default-rule {
      permit;
    }
  }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Application Firewall Configuration | **327**

Confirm that the configuration is working properly.

Verifying Application Firewall Configuration

Purpose

View the application firewall configuration on the master logical system.

Action

From operational mode, enter the **show security application-firewall rule-set logical-system root-logical-system rule-set all** command.

```
admin@host> show security application-firewall rule-set logical-system root-logical-system rule-set all
```

```
Rule-set: root-rs1
    Logical system: root-logical-system
    Rule: r1
        Dynamic Applications: junos:telnet
        Action:permit
        Number of sessions matched: 10
Default rule:deny
        Number of sessions matched: 100
Number of sessions with appid pending: 2

Rule-set: root-rs1
    Logical system: root-logical-system
    Rule: r2
        Dynamic Applications: junos:web
        Action:permit
        Number of sessions matched: 20
Default rule:deny
        Number of sessions matched: 200
Number of sessions with appid pending: 4

Rule-set: root-rs2
    Logical system: root-logical-system
    Rule: r1
        Dynamic Applications: junos:FACEBOOK
        Action:deny
        Number of sessions matched: 40
Default rule:permit
        Number of sessions matched: 400
Number of sessions with appid pending: 10
```

SEE ALSO

- SRX Series Logical Systems Master Administrator Configuration Tasks Overview | 47
- Understanding Logical Systems Security Profiles (Master Administrators Only) | 88
- Understanding Logical Systems Application Firewall Services | 322
- Example: Configuring Security Features for the Master Logical Systems | 179

Understanding Logical Systems Application Tracking Services

AppTrack is an application tracking tool that provides statistics for analyzing bandwidth usage of your network. When enabled, AppTrack collects byte, packet, and duration statistics for application flows in the specified zone. By default, when each session closes, AppTrack generates a message that provides the byte and packet counts and duration of the session, and sends it to the host device. The Security Threat Response Manager (STRM) retrieves the data and provides flow-based application visibility.

AppTrack can be enabled and configured within any logical system. Configuring AppTrack in a logical system is the same as configuring AppTrack on a device that is not configured for logical systems. An AppTrack configuration only applies to the logical system in which it is configured. The name of the logical system is added to AppTrack logs. The master administrator can configure AppTrack for any logical system while a user logical system administrator can only configure AppTrack for the logical system that they are logged in to.

> **NOTE:** The system log configuration is global on the device and must be configured by the master administrator. The user logical system administrator cannot configure system logging for a logical system.

Counters keep track of the number of log messages sent and logs that have failed. AppTrack counters are global to the device. The master administrator as well as user logical system administrators can view AppTrack counters with the **show security application-tracking counters** command.

SEE ALSO

Understanding AppTrack

Example: Configuring AppTrack

Example: Configuring AppTrack for a User Logical Systems | 335

Example: Configuring Application Firewall Services for a User Logical System

IN THIS SECTION

- Requirements | 330
- Overview | 330

Configuration | 331
Verification | 333

This example describes how to configure application firewall services on a user logical system by a user logical system administrator. User logical system administrators can manage and monitor their own system application firewall rule sets and rules and manage the dynamic applications allowed or blocked on their respective logical systems.

After configuring application firewall rule sets and rules, user logical system administrators add the application firewall rule set information to the security policy on their individual logical systems.

For information about configuring an application firewall within a security policy, see *Application Firewall Overview*.

Requirements

Before you begin:

- Verify that the security zones are configured for the user logical system.
- Verify that the master administrator has allocated application firewall resources (appfw-rule-set and appfw-rule) in the security profile bound to the user logical system.

  For more information, see "Understanding Logical Systems Security Profiles (Master Administrators Only)" on page 88.
- Log in to the logical system as the user logical system administrator.

  For information about user logical system administrator role functions, see "Understanding User Logical Systems and the User Logical System Administrator Role" on page 73.

Overview

In this example you configure application firewall services on the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

This example creates the following application firewall configuration:

- Rule set, ls-product-design-rs1, with rules r1 and r2. When r1 is matched, telnet traffic is allowed through the firewall. When r2 is matched, web traffic is allowed through the firewall.

- Rule set, ls-product-design-rs2, with rule r1. When r1 is matched, Facebook traffic is blocked by the firewall.

All rule sets require a default rule, which specifies whether to permit or deny traffic that is not specified in any rules of a rule set. The default-rule action (permit or deny) must be the opposite from the action that is specified for the other rule(s) in the rule set.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security application-firewall rule-sets ls-product-design-rs1 rule r1 match dynamic-application junos:telnet
set security application-firewall rule-sets ls-product-design-rs1 rule r1 then permit
set security application-firewall rule-sets ls-product-design-rs1 rule r2 match dynamic-application-group
    junos:web
set security application-firewall rule-sets ls-product-design-rs1 rule r2 then permit
set security application-firewall rule-sets ls-product-design-rs1 default-rule deny
set security application-firewall rule-sets ls-product-design-rs2 rule r1 match dynamic-application junos:facebook
set security application-firewall rule-sets ls-product-design-rs2 rule r1 then deny
set security application-firewall rule-sets ls-product-design-rs2 default-rule permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure application firewall for a user logical system:

1. Log in to the user logical system as the user logical system administrator and enter configuration mode.

   ```
   lsdesignadmin1@host:ls-product-design> configure
   lsdesignadmin1@host:ls-product-design#
   ```

2. Configure an application firewall rule set for this logical system.

   ```
   [edit]
   lsdesignadmin1@host:ls-product-design# set security application-firewall rule-sets ls-product-design-rs1
   ```

3. Configure a rule for this rule set and specify which dynamic applications and dynamic application groups the rule should match.

```
[edit]
lsdesignadmin1@host:ls-product-design# set security application-firewall rule-sets ls-product-design-rs1
   rule r1 match dynamic-application telnet then permit
```

4. Configure the default rule for this rule set and specify the action to take when the identified dynamic application is not specified in any rules of the rule set.

```
[edit]
lsdesignadmin1@host:ls-product-design# set security application-firewall rule-sets ls-product-design-rs1
   default-rule deny
```

5. Repeat these steps to configure another rule set, ls-product-design-rs2, if desired.

Results

From configuration mode, confirm your configuration by entering the **show security application-firewall rule-set all** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
lsdesignadmin1@host:ls-product-design# show security application-firewall rule-set all
...
   application-firewall {
      rule-sets ls-product-design-rs1 {
         rule r1 {
            match {
               dynamic-application [junos:telnet];
            }
            then {
               permit;
            }
         }
         default-rule {
            deny;
         }
      }
      rule-sets ls-product-design-rs1 {
         rule r2 {
            match {
```

```
            dynamic-application-group [junos:web];
        }
        then {
            permit;
        }
    }
    rule-sets ls-product-design-rs2 {
        rule r1 {
            match {
                dynamic-application [junos:FACEBOOK];
            }
            then {
                deny;
            }
        }
        default-rule {
            permit;
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Application Firewall Configuration | 333

Confirm that the configuration is working properly.

Verifying Application Firewall Configuration

Purpose

View the application firewall configuration on the user logical system.

Action

From operational mode, enter the **show security application-firewall rule-set all** command.

```
lsdesignadmin1@host:ls-product-design> show security application-firewall rule-set all
```

```
Rule-set: ls-product-design-rs1
    Logical system: ls-product-design
    Rule: r1
        Dynamic Applications: junos:telnet
        Action:permit
        Number of sessions matched: 10
Default rule:deny
        Number of sessions matched: 100
Number of sessions with appid pending: 2

Rule-set: ls-product-design-rs1
    Logical system: ls-product-design
    Rule: r2
        Dynamic Applications: junos:web
        Action:permit
        Number of sessions matched: 20
Default rule:deny
        Number of sessions matched: 200
Number of sessions with appid pending: 4

Rule-set: ls-product-design-rs2
    Logical system: ls-product-design
    Rule: r1
        Dynamic Applications: junos:FACEBOOK
        Action:deny
        Number of sessions matched: 40
Default rule:permit
        Number of sessions matched: 400
Number of sessions with appid pending: 10
```

SEE ALSO

User Logical Systems Configuration Overview | 71

Understanding Logical Systems Application Firewall Services | 322

Example: Configuring AppTrack for a User Logical Systems

IN THIS SECTION

- Requirements | 335
- Overview | 335
- Configuration | 335
- Verification | 337

This example shows how to configure the AppTrack tracking tool so you can analyze the bandwidth usage of your network.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- (Master administrator) Configure system logging in the master logical system. See *Network Management and Monitoring Guide*.

Overview

This example shows how to enable application tracking for the security zone ls-product-design-trust in the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.

The first message is generated at session start and update messages are sent every 5 minutes after that or until the session ends. A final message is sent at session end.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security zones security-zone ls-product-design-trust application-tracking
set security application-tracking first-update
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure AppTrack for a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Enable AppTrack for the security zone.

```
[edit security]
lsdesignadmin1@host:ls-product-design# set zones security-zone ls-product-design-trust application-tracking
```

3. Generate update messages at session start and at 5-minute intervals.

```
[edit security]
lsdesignadmin1@host:ls-product-design# set application-tracking first-update
```

Results

From configuration mode, confirm your configuration by entering the **show security** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

For brevity, this **show** command output includes only the configuration that is relevant to this example. Any other configuration on the system has been replaced with ellipses (...).

```
[edit]
lsdesignadmin1@host:ls-product-design# show security
...
    application-tracking {
        first-update;
    }
...
    zones {
```

```
        security-zone ls-product-design-trust {
            ...
            application-tracking;
        }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying AppTrack Operation | **337**
- Verifying Security Flow Session Statistics | **337**
- Verifying Application System Cache Statistics | **337**
- Verifying the Status of Application Identification Counter Values | **338**

To confirm that the configuration is working properly, perform these tasks:

Verifying AppTrack Operation

Purpose

View the AppTrack counters periodically to monitor tracking.

Action

From operational mode, enter the **show application-tracking counters** command.

Verifying Security Flow Session Statistics

Purpose

Compare byte and packet counts in logged messages with the session statistics from the **show security flow session** command output.

Action

From operational mode, enter the **show security flow session** command.

Verifying Application System Cache Statistics

Purpose

Compare cache statistics such as IP address, port, protocol, and service for an application from the **show services application-identification application-system-cache** command output.

Action

From operational mode, enter the **show services application-identification application-system-cache** command.

Verifying the Status of Application Identification Counter Values

Purpose

Compare session statistics for application identification counter values from the **show services application-identification counter** command output.

Action

From operational mode, enter the **show services application-identification counter** command.

SEE ALSO

Understanding Logical Systems Application Tracking Services | 329

User Logical Systems Configuration Overview | 71

IPv6 for Logical Systems

IN THIS SECTION

- IPv6 Addresses in Logical Systems Overview | 339
- Understanding IPv6 Dual-Stack Lite in Logical Systems | 340
- Example: Configuring IPv6 for the Master, Interconnect, and User Logical Systems (Master Administrators Only) | 341
- Example: Configuring IPv6 Zones for a User Logical Systems | 351
- Example: Configuring IPv6 Security Policies for a User Logical Systems | 355
- Example: Configuring IPv6 Dual-Stack Lite for a User Logical Systems | 359

IPv6 builds upon the functionality of IPv4, providing improvements to IP addressing, configuration and maintenance, and security. IPv6 supports extensions for authentication and data integrity, which enhance privacy and security. IPv6 uses 128-bit addresses and supports a virtually unlimited number of devices—2 to the 128th power. For more information, see the following topics:

IPv6 Addresses in Logical Systems Overview

IP version 6 (IPv6) increases the size of an IP address from the 32 bits that compose an IPv4 address to 128 bits. Each extra bit given to an address doubles the size of its address space. IPv6 has a much larger address space than the soon-to-be exhausted IPv4 address space.

IPv6 addresses can be configured in logical systems for the following features:

- Interfaces
- Firewall authentication
- Flows
- Routing (BGP only)
- Zones and security policies
- Screen options
- Network Address Translation (except for interface NAT)
- Administrative operations such as SSH, HTTPS, and other utilities
- Chassis clusters

> **NOTE:** An IPv6 session consumes twice the memory of an IPv4 session. Therefore the number of sessions available for IPv6 is half the reserved and maximum quotas configured for the flow session resource in a security profile. Use the vty command **show usp flow resource usage cp-session** to check flow session usage.

SEE ALSO

Understanding IPv6 Address Space, Addressing, Address Format, and Address Types

Example: Configuring IPv6 for the Master, Interconnect, and User Logical Systems (Master Administrators Only) | **341**

Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (IPv6) (Master Administrators Only) | **424**

Understanding IPv6 Dual-Stack Lite in Logical Systems | **340**

Understanding IPv6 Dual-Stack Lite in Logical Systems

IPv6 dual-stack lite (DS-Lite) allows migration to an IPv6 access network without changing end-user software. IPv4 users can continue to access IPv4 internet content using their current hardware, while IPv6 users are able to access IPv6 content. A DS-Lite softwire initiator at the customer edge encapsulates IPv4 packets into IPv6 packets while a softwire concentrator decapsulates the IPv4-in-IPv6 packets and also performs IPv4 NAT translations.

A specific softwire concentrator and the set of softwire initiators that connect with that softwire concentrator can belong to only one logical system. The master administrator configures the maximum and reserved numbers of softwire initiators that can be connected to a softwire concentrator in a logical system using the **dslite-softwire-initiator** configuration statement at the [**edit system security-profile resources**] hierarchy level. The default maximum value is the system maximum; the default reserved value is 0.

> **NOTE:** The master administrator can configure a security profile for the master logical system that specifies the maximum and reserved numbers of softwire initiators that can connect to a softwire concentrator configured for the master logical system. The number of softwire initiators configured in the master logical system count toward the maximum number of softwire initiators available on the device.

The user logical system administrator can configure softwire concentrators for their user logical system and the master administrator can configure softwire concentrators for the master logical system at the [**edit security softwires**] hierarchy level. The master administrator can also configure softwire concentrators for a user logical system at the [**edit logical-systems *logical-system* security softwires**] hierarchy level.

> **NOTE:** The softwire concentrator IPv6 address can match an IPv6 address configured on either a physical interface or a loopback interface.

SEE ALSO

Example: Configuring IPv6 Dual-Stack Lite for a User Logical Systems | 359

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Example: Configuring IPv6 for the Master, Interconnect, and User Logical Systems (Master Administrators Only)

IN THIS SECTION

- Requirements | 341
- Overview | 341
- Configuration | 344
- Verification | 350

This topic covers configuration of IPv6 interfaces, static routes, and routing instances for the master and interconnect logical systems. It also covers configuration of IPv6 logical tunnel interfaces for user logical systems.

Requirements

Before you begin:

- See "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 to understand how and where this procedure fits in the overall master administrator configuration process.
- See "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76.
- See "Understanding the Interconnect Logical System and Logical Tunnel Interfaces" on page 35.

Overview

This scenario shows how to configure interfaces for the logical systems on the device, including an interconnect logical system.

- For the interconnect logical system, the example configures logical tunnel interfaces lt-0/0/0.0, lt-0/0/0.2, and lt-0/0/0.4. The example configures a routing instance called vr and assigns the interfaces to it.

  Because the interconnect logical system acts as a virtual switch, it is configured as a VPLS routing instance type. The interconnect logical system's lt-0/0/0 interfaces are configured with ethernet-vpls as the encapsulation type. The corresponding peer lt-0/0/0 interfaces in the master and user logical systems are configured with Ethernet as the encapsulation type.

  - lt-0/0/0.0 connects to lt-0/0/0.1 on the root logical system.

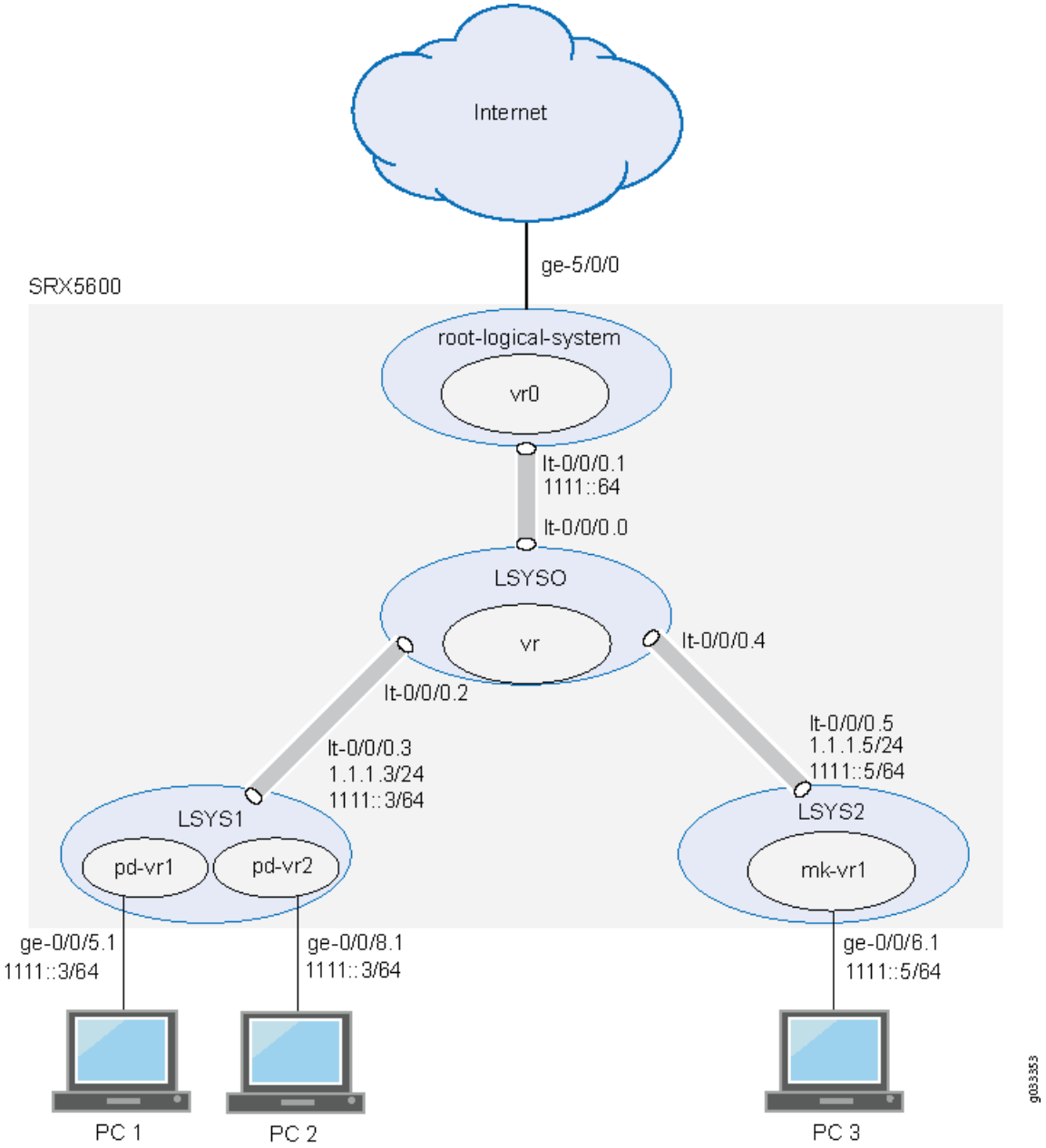
  - lt-0/0/0.2 connects to lt-0/0/0.3 on the LSYS1 logical system.
  - lt-0/0/0.4 connects to lt-0/0/0.5 on the LSYS2 logical system.

- For the master logical system, called root-logical-system, the example configures ge-5/0/0 and assigns it to the vr0 routing instance. The example configures lt-0/0/0.1 to connect to lt-0/0/0.0 on the interconnect logical system and assigns it to the vr0 routing instance. The example configures static routes to allow for communication with other logical systems and assigns them to the vr0 routing instance.
- For the LSYS1 logical system, the example configures lt-0/0/0.3 to connect to lt-0/0/0.2 on the interconnect logical system.
- For the LSYS2 logical system, the example configures lt-0/0/0.5 to connect to lt-0/0/0.4 on the interconnect logical system.

Figure 9 on page 343 shows the topology for this deployment including virtual routers and their interfaces for all IPv6 logical systems.

Topology

Figure 9: Configuring IPv6 Logical Tunnel Interfaces, Logical Interfaces, and Virtual Routers



Configuration

IN THIS SECTION

- Configuring Logical Tunnel Interfaces and a Routing Instance for the Interconnect Logical System | 344
- Configuring Interfaces, a Routing Instance, and Static Routes for the Master Logical System | 346
- Configuring Logical Tunnel Interfaces for the User Logical Systems | 348

This topic explains how to configure interfaces for logical systems.

Configuring Logical Tunnel Interfaces and a Routing Instance for the Interconnect Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set forwarding-options family inet6 mode flow-based
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 peer-unit 1
set logical-systems LSYS0 interfaces lt-0/0/0 unit 2 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 2 peer-unit 3
set logical-systems LSYS0 interfaces lt-0/0/0 unit 4 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 4 peer-unit 5
set logical-systems LSYS0 routing-instances vr instance-type vpls
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.0
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.2
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.4
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure the interconnect system lt-0/0/0 interfaces and routing instances:

1. Enable flow-based forwarding for IPv6 traffic.

```
[edit security]
user@host# set forwarding-options family inet6 mode flow-based
```

2. Configure the lt-0/0/0 interfaces.

```
[edit logical-systems LSYS0 interfaces]
user@host# set lt-0/0/0 unit 0 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 0 peer-unit 1
user@host# set lt-0/0/0 unit 2 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 2 peer-unit 3
user@host# set lt-0/0/0 unit 4 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 4 peer-unit 5
```

3. Configure the routing instance for the interconnect logical system and add its lt-0/0/0 interfaces to it.

```
[edit logical-systems LSYS0 routing-instances]
user@host# set vr instance-type vpls
user@host# set vr interface lt-0/0/0.0
user@host# set vr interface lt-0/0/0.2
user@host# set vr interface lt-0/0/0.4
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems interconnect-logical-system** command. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

If you are done configuring the device, enter **commit** from configuration mode.

```
user@host# show logical-systems LSYS0
interfaces {
    lt-0/0/0 {
        unit 0 {
            encapsulation ethernet-vpls;
            peer-unit 1;
        }
        unit 2 {
            encapsulation ethernet-vpls;
            peer-unit 3;
            }
            unit 4 {
                encapsulation ethernet-vpls;
                peer-unit 5;
            }
        }
    }
```

```
routing-instances {
    vr {
        instance-type vpls;
        interface lt-0/0/0.0;
        interface lt-0/0/0.2;
        interface lt-0/0/0.4;
    }
}
```

Configuring Interfaces, a Routing Instance, and Static Routes for the Master Logical System

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces ge-5/0/0 vlan-tagging
set interfaces ge-5/0/0 unit 0 vlan-id 600
set interfaces lt-0/0/0 unit 1 encapsulation Ethernet
set interfaces lt-0/0/0 unit 1 peer-unit 0
set interfaces lt-0/0/0 unit 1 family inet address 1.1.1.1/24
set interfaces lt-0/0/0 unit 1 family inet6 address 1111::1/64
set interfaces ge-5/0/0 unit 0 family inet address 99.99.99.1/24
set interfaces ge-5/0/0 unit 0 family inet6 address 9999::1/64
set routing-instances vr0 instance-type virtual-router
set routing-instances vr0 interface lt-0/0/0.1
set routing-instances vr0 interface ge-5/0/0.0
set routing-instances vr0 routing-options rib vr0.inet6.0 static route 7777::/64 next-hop 1111::3
set routing-instances vr0 routing-options rib vr0.inet6.0 static route 8888::/64 next-hop 1111::3
set routing-instances vr0 routing-options rib vr0.inet6.0 static route 6666::/64 next-hop 1111::5
set routing-instances vr0 routing-options static route 77.77.77.0/24 next-hop 1.1.1.3
set routing-instances vr0 routing-options static route 88.88.88.0/24 next-hop 1.1.1.3
set routing-instances vr0 routing-options static route 66.66.66.0/24 next-hop 1.1.1.5
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure the master logical system interfaces:

1. Configure the master (root) logical system and lt-0/0/0.1 interfaces.

   ```
   [edit interfaces]
   ```

```
user@host# set ge-5/0/0 vlan-tagging
user@host# set ge-5/0/0 unit 0 vlan-id 600
user@host# set lt-0/0/0 unit 1 encapsulation Ethernet
user@host# set lt-0/0/0 unit 1 peer-unit 0
user@host# set lt-0/0/0 unit 1 family inet address 1.1.1.1/24
user@host# set lt-0/0/0 unit 1 family inet6 address 1111::1/64
user@host# set ge-5/0/0 unit 0 family inet address 99.99.99.1/24
user@host# set ge-5/0/0 unit 0 family inet6 address 9999::1/64
```

2. Configure a routing instance for the master logical system, assign its interfaces to it, and configure static routes for it.

```
[edit interfaces routing-instances]
user@host# set vr0 instance-type virtual-router
user@host# set vr0 interface lt-0/0/0.1
user@host# set vr0 interface ge-5/0/0.0
user@host# set vr0 routing-options rib vr0.inet6.0 static route 7777::/64 next-hop 1111::3
user@host# set vr0 routing-options rib vr0.inet6.0 static route 8888::/64 next-hop 1111::3
user@host# set vr0 routing-options rib vr0.inet6.0 static route 6666::/64 next-hop 1111::5
user@host# set vr0 routing-options static route 77.77.77.0/24 next-hop 1.1.1.3
user@host# set vr0 routing-options static route 88.88.88.0/24 next-hop 1.1.1.3
user@host# set vr0 routing-options static route 66.66.66.0/24 next-hop 1.1.1.5
```

Results

From configuration mode, confirm your configuration by entering the **show interfaces** and **show routing-instances** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
[edit]
user@host# show interfaces
ge-5/0/0 {
    vlan-tagging;
    unit 0 {
        vlan-id 600;
        family inet {
            address 99.99.99.1/24;
        }
        family inet 6{
            address 9999::1/64;
        }
    }
```

```
}
lt-0/0/0 {
    unit 1 {
        encapsulation ethernet;
        peer-unit 0;
        family inet {
            address 1.1.1.1/24;
        }
        family inet 6{
            address 1111::1/64;
        }
    }
}
```

```
[edit]
user@host# show routing-instances
vr0 {
    instance-type virtual-router;
    interface ge-5/0/0.0;
    interface lt-0/0/0;
    routing-options {
        rib vr0.inet6.0 {
        static {
            route 8888::/64 next-hop 1111::3;
            route 7777::/64 next-hop 1111::3;
            route 6666::/64 next-hop 1111::5;
        }
        }
        static {
            route 77.77.77.0/24 next-hop 1.1.1.3;
            route 88.88.88.0/24 next-hop 1.1.1.3;
            route 66.66.66.0/24 next-hop 1.1.1.5;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring Logical Tunnel Interfaces for the User Logical Systems

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 encapsulation ethernet
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 peer-unit 2
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 family inet address 1.1.1.3/24
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 family inet6 address 1111::3/64
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 encapsulation ethernet
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 peer-unit 4
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 family inet address 1.1.1.5/24
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 family inet6 address 1111::5/64
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

1. Configure the lt-0/0/0 interface for the first user logical system:

```
[edit logical-systems LSYS1 interfaces lt-0/0/0 unit 3]
user@host# set encapsulation ethernet
user@host# set peer-unit 2
user@host# set family inet address 1.1.1.3/24
user@host# set family inet6 address 1111::3/64
```

2. Configure the lt-0/0/0 interface for the second user logical system.

```
[edit logical-systems LSYS2 interfaces lt-0/0/0 unit 5]
user@host# set encapsulation ethernet
user@host# set peer-unit 4
user@host# set family inet address 1.1.1.5/24
user@host# set family inet6 address 1111::5/64
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1 interfaces lt-0/0/0**, and **show logical-systems LSYS2 interfaces lt-0/0/0** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@host# show logical-systems LSYS1 interfaces lt-0/0/0
```

```
lt-0/0/0 {
    unit 3 {
        encapsulation ethernet;
        peer-unit 2;
```

```
        family inet {
            address 1.1.1.3/24;
        }
        family inet 6{
            address 1111::3/64;
        }
    }
}
```

```
user@host#  show logical-systems LSYS2 interfaces lt-0/0/0
```

```
lt-0/0/0 {
    unit 5 {
        encapsulation ethernet;
        peer-unit 4;
        family inet {
            address 1.1.1.5/24;
        }
        family inet 6{
            address 1111::5/64;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying That the Static Routes Configured for the Master Administrator Are Correct

Purpose

Confirm that the configuration is working properly. Verify if you can send data from the master logical system to the other logical systems.

Action

From operational mode, use the **ping** command.

SEE ALSO

Understanding the Master Logical Systems and the Master Administrator Role | 45

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Understanding the Interconnect Logical System and Logical Tunnel Interfaces | 35
Example: Configuring IPv6 Zones for a User Logical Systems | 351
Example: Configuring IPv6 Security Policies for a User Logical Systems | 355

Example: Configuring IPv6 Zones for a User Logical Systems

IN THIS SECTION

- Requirements | 351
- Overview | 351
- Configuration | 352

This example shows how to configure IPv6 zones for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the user logical system administrator.

  See "User Logical Systems Configuration Overview" on page 71.

- Ensure that forwarding options for inet6 is flow-based. Otherwise, you must configure it and reset the device.

  Use the **show security forwarding-options** command to check the configuration.

  NOTE: Only the user logical system administrator can configure the forwarding options.

Overview

This example configures the ls-product-design user logical system described in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76

This example creates the IPv6 zones and address books described in Table 26 on page 352.

Table 26: User Logical System Zone and Address Book Configuration

Feature	Name	Configuration Parameters
Zones	ls-product-design-trust	• Bind to interface ge-0/0/5.1. • TCP reset enabled.
	ls-product-design-untrust	• Bind to interface lt-0/0/0.3.
Address books	product-design-internal	• Address product-designers: 3002::1/96 • Attach to zone ls-product-design-trust
	product-design-external	• Address marketing: 3003::1/24 • Address accounting: 3004::1/24 • Address others: 3002::2/24 • Address set otherlsys: marketing, accounting • Attach to zone ls-product-design-untrust

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-system lsys1 security address-book product-design-internal address product-designers 3002::1/96
set logical-system lsys1 security address-book product-design-internal attach zone ls-product-design-trust
set logical-system lsys1 security address-book product-design-external address marketing 3003::1/24
set logical-system lsys1 security address-book product-design-external address accounting 3004::1/24
set logical-system lsys1 security address-book product-design-external address others 3002::2/24
set logical-system lsys1 security address-book product-design-external address-set otherlsys address marketing
set logical-system lsys1 security address-book product-design-external address-set otherlsys address accounting
set logical-system lsys1 security address-book product-design-external attach zone ls-product-design-untrust
set logical-system lsys1 security zones security-zone ls-product-design-trust tcp-rst
set logical-system lsys1 security zones security-zone ls-product-design-trust interfaces ge-0/0/5.1
set logical-system lsys1 security zones security-zone ls-product-design-untrust interfaces lt-0/0/0.3
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure IPv6 zones in a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a security zone and assign it to an interface.

```
[edit logical-system lsys1 security zones]
lsdesignadmin1@host:ls-product-design# set security-zone ls-product-design-trust interfaces ge-0/0/5.1
```

3. Configure the TCP-Reset parameter for the zone.

```
[edit logical-system lsys1 security zones security-zone ls-product-design-trust]
lsdesignadmin1@host:ls-product-design# set tcp-rst
```

4. Configure a security zone and assign it to an interface.

```
[edit logical-system lsys1 security zones]
lsdesignadmin1@host:ls-product-design# set security-zone ls-product-design-untrust interfaces lt-0/0/0.3
```

5. Create global address book entries.

```
[edit logical-system lsys1 security]
lsdesignadmin1@host:ls-product-design# set address-book product-design-internal address product-designers
    3002::1/96
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address marketing
    3003::1/24
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address accounting
    3004::1/24
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address others 3002::2/24
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address-set otherlsys
    address marketing
lsdesignadmin1@host:ls-product-design# set address-book product-design-external address-set otherlsys
    address accounting
```

6. Attach address books to zones.

```
[edit logical-system lsys1 security]
lsdesignadmin1@host:ls-product-design#set address-book product-design-internal attach zone
    ls-product-design-trust
```

```
lsdesignadmin1@host:ls-product-design#set address-book product-design-external attach zone
    ls-product-design-untrust
```

Results

From configuration mode, confirm your configuration by entering the **show security zones** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security zones
address-book {
    product-design-internal {
        address product-designers 3002::1/96;
        attach {
            zone ls-product-design-trust;
        }
    }
    product-design-external {
        address marketing 3003::1/24;
        address accounting 3004::1/24;
        address others 3002::2/24;
        address-set otherlsys {
            address marketing;
            address accounting;
        }
        attach {
            zone ls-product-design-untrust;
        }
    }
}
zones {
    security-zone ls-product-design-trust {
        tcp-rst;
        interfaces {
            ge-0/0/5.1;
        }
    }
    security-zone ls-product-design-untrust {
        interfaces {
            lt-0/0/0.3;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

SEE ALSO

- Understanding Logical Systems Zones | **156**
- User Logical Systems Configuration Overview | **71**
- Example: Configuring IPv6 for the Master, Interconnect, and User Logical Systems (Master Administrators Only) | **341**
- Example: Configuring IPv6 Security Policies for a User Logical Systems | **355**

Example: Configuring IPv6 Security Policies for a User Logical Systems

IN THIS SECTION

- Requirements | **355**
- Overview | **356**
- Configuration | **356**
- Verification | **358**

This example shows how to configure IPv6 security policies for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the logical system administrator.

  See “User Logical Systems Configuration Overview” on page 71.

- Use the **show system security-profiles policy** command to see the security policy resources allocated to the logical system.
- Configure zones and address books.

  See “Example: Configuring IPv6 Zones for a User Logical Systems” on page 351

Overview

This example shows how to configure the security policies described in Table 27 on page 356.

Table 27: User Logical System Security Policies Configuration

Policy Name	Configuration Parameters
permit-all-to-otherlsys	Permit the following traffic: • From zone: ls-product-design-trust • To zone: ls-product-design-untrust • Source address: product-designers • Destination address: otherlsys • Application: any
permit-all-from-otherlsys	Permit the following traffic: • From zone: ls-product-design-untrust • To zone: ls-product-design-trust • Source address: otherlsys • Destination address: product-designers • Application: any

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems lsys1 security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust
    policy permit-all-to-otherlsys match source-address product-designers
set logical-systems lsys1 security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust
    policy permit-all-to-otherlsys match destination-address otherlsys
set logical-systems lsys1 security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust
    policy permit-all-to-otherlsys match application any
set logical-systems lsys1 security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust
    policy permit-all-to-otherlsys then permit
set logical-systems lsys1 security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust
    policy permit-all-from-otherlsys match source-address otherlsys
set logical-systems lsys1 security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust
    policy permit-all-from-otherlsys match destination-address product-designers
```

```
set logical-systems lsys1 security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust
    policy permit-all-from-otherlsys match application any
set logical-systems lsys1 security policies from-zone ls-product-design-untrust to-zone ls-product-d esign-trust
    policy permit-all-from-otherlsys then permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure IPv6 security policies for a user logical system:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

```
lsdesignadmin1@host:ls-product-design> configure
lsdesignadmin1@host:ls-product-design#
```

2. Configure a security policy that permits traffic from the ls-product-design-trust zone to the ls-product-design-untrust zone.

```
[edit logical-systems lsys1 security policies from-zone ls-product-design-trust to-zone ls-product-design-untrust]
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys match source-address
    product-designers
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys match destination-address
    otherlsys
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys match application any
lsdesignadmin1@host:ls-product-design# set policy permit-all-to-otherlsys then permit
```

3. Configure a security policy that permits traffic from the ls-product-design-untrust zone to the ls-product-design-trust zone.

```
[edit logical-systems lsys1 security policies from-zone ls-product-design-untrust to-zone ls-product-design-trust]
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys match source-address otherlsys
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys match destination-address
    product-designers
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys match application any
lsdesignadmin1@host:ls-product-design# set policy permit-all-from-otherlsys then permit
```

Results

From configuration mode, confirm your configuration by entering the **show security policies** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsdesignadmin1@host:ls-product-design# show security policies
from-zone ls-product-design-trust to-zone ls-product-design-untrust {
    policy permit-all-to-otherlsys {
        match {
            source-address product-designers;
            destination-address otherlsys;
            application any;
        }
        then {
            permit;
        }
    }
}
from-zone ls-product-design-untrust to-zone ls-product-design-trust {
    policy permit-all-from-otherlsys {
        match {
            source-address otherlsys;
            destination-address product-designers;
            application any;
        }
        then {
            permit;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying Policy Configuration

Purpose

Verify information about policies and rules.

Action

From operational mode, enter the **show security policies detail** command to display a summary of all policies configured on the logical system.

SEE ALSO

Understanding Logical Systems Security Policies | 210

User Logical Systems Configuration Overview | 71

Troubleshooting Security Policies

Example: Configuring IPv6 Zones for a User Logical Systems | 351

Example: Configuring IPv6 for the Master, Interconnect, and User Logical Systems (Master Administrators Only) | 341

Example: Configuring IPv6 Dual-Stack Lite for a User Logical Systems

IN THIS SECTION

- Requirements | 359
- Overview | 359
- Configuration | 360
- Verification | 361

This example shows how to configure a softwire concentrator for a user logical system.

Requirements

Before you begin:

- Log in to the user logical system as the user logical system administrator. See "User Logical Systems Configuration Overview" on page 71.
- Use the **show system security-profile dslite-softwire-initiator** command to see the number softwire initiators that can be connected to a softwire concentrator in the logical system.

Overview

This example shows how to configure a softwire concentrator to decapsulate IPv4-in-IPv6 packets in the ls-product-design user logical system shown in "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76. The IPv6 address of the softwire concentrator is 3000::1 and the name of the softwire configuration is sc_1.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security softwires softwire-name sc_1 softwire-concentrator 3000::1 softwire-type IPv4-in-IPv6
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure an IPv6 DS-Lite softwire concentrator:

1. Log in to the user logical system as the logical system administrator and enter configuration mode.

   ```
   lsdesignadmin1@host:ls-product-design> configure
   lsdesignadmin1@host:ls-product-design#
   ```

2. Specify the address of the softwire concentrator and the softwire type.

   ```
   [edit security]
   lsdesignadmin1@host:ls-product-design# set softwires softwire-name sc_1 softwire-concentrator 3000::1
     softwire-type IPv4-in-IPv6
   ```

Results

From configuration mode, confirm your configuration by entering the **show security softwires** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
lsdesignadmin1@host:ls-product-design# show security softwires
softwire-name sc_1 {
   softwire-concentrator 3000::1;
   softwire-type IPv4-in-IPv6;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying the DS-Lite Configuration

Purpose

Verify that the softwire initiators can connect to the softwire concentrator configured in the user logical system.

Action

From operational mode, enter the **show security softwires** command.

If a softwire initiator is not connected, the operational output looks like this:

```
lsdesignadmin1@host:ls-product-design> show security softwires
```

```
Softwire Name            SC Address         Status   Number of SI connected
  sc_1                      3000::1         Active         0
```

If a softwire initiator is connected, the operational output looks like this:

```
lsdesignadmin1@host:ls-product-design> show security softwires
```

```
Software Name            SC Address         Status   Number of SI connected
  sc_1                      3000::1         Connected      1
```

SEE ALSO

Understanding IPv6 Dual-Stack Lite in Logical Systems | 340

User Logical Systems Configuration Overview | 71

RELATED DOCUMENTATION

Understanding Logical Systems Zones | 156

SSL Proxy for Logical Systems

IN THIS SECTION

- Understanding SSL Forward and Reverse Proxy for Logical Systems | 362
- Example: Configuring SSL Forward and Reverse Proxy for Logical Systems | 363

Secure Sockets Layer (SSL) is an application-level protocol that provides encryption technology for the Internet. For more information, see the following topics:

Understanding SSL Forward and Reverse Proxy for Logical Systems

SSL proxy acts as an intermediary, performing SSL encryption and decryption between the client and the server. SSL, also called Transport Layer Security (TLS), ensures the secure transmission of data between a client and a server through a combination of privacy, authentication, confidentiality, and data integrity.

SSL proxy is a transparent proxy that performs SSL encryption and decryption between the client and the server as follows:

- Reverse proxy is an inbound session, that is, externally initiated SSL sessions from the Internet to the local server.

  The proxy model implementation for server protection (often called reverse proxy) is supported on SRX Series devices to provide improved handshaking and support for more protocol versions.

- Forward proxy is an outbound session, that is, locally initiated SSL session to the Internet.

SSL proxy works transparently between the client and the server. All requests from a client first go to the proxy server; the proxy server evaluates the request, and if the request is valid, forwards the request to the outbound side. Similarly, inbound requests are also evaluated by the proxy server. Both client and server interpret that they are communicating with each other; however, it is the SSL proxy that functions between the two.

Example: Configuring SSL Forward and Reverse Proxy for Logical Systems

IN THIS SECTION

- Requirements | 363
- Overview | 363
- Configuration | 363
- Verification | 366

This example shows how to configure SSL proxy to enable server protection. A reverse proxy protects servers by hiding the details of the servers from the clients, there by adding an extra layer of security and the purpose of a forward proxy is to manage traffic to the client systems.

Requirements

To configure an SSL reverse and forward proxy, you must:

- Load the server certificates and their keys into SRX Series device's certificate repository.
- Attach the server certificate identifiers to the SSL proxy profile.
- Apply SSL proxy profile as application services in a security policy.

Overview

This example shows how to configure reverse proxy to enable server protection and forward proxy is for client protection. It shows how to configure an SSL proxy profile and apply it at the security policy rule level. For server protection, additionally, server certificates with private keys must be configured.

Configuration

IN THIS SECTION

- Configuring the SSL Reverse and Forward Proxy | 364
- Results | 365

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems LSYS1 services ssl proxy profile ssl-fp-profile root-ca new-srvr-cert
set logical-systems LSYS1 services ssl proxy profile ssl-fp-profile actions ignore-server-auth-failure
set logical-systems LSYS1 services ssl proxy profile ssl-rp-profile actions log all
set logical-systems LSYS1 security log mode event
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 match source-address any
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 match destination-address
    any
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 match application any
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then permit
    application-services ssl-proxy profile-name ssl-rp-profile
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then log session-init
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then log session-close
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 match source-address any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 match destination-address
    any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 match application any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 then permit
    application-services ssl-proxy profile-name ssl-rp-profile
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 then log session-init
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 then log session-close
```

Configuring the SSL Reverse and Forward Proxy

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the **Junos OS CLI User Guide**.

To configure the SSL Proxy:

1. Configure the SSL Reverse Proxy.

```
[edit logical-systems LSYS1]
user@host# set logical-systems LSYS1 services ssl proxy profile ssl-rp-profile actions log all
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 match
    source-address any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 match
    destination-address any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 match
    application any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 then permit
    application-services ssl-proxy profile-name ssl-rp-profile
```

2. Configure the SSL Forward Proxy.

```
[edit logical-systems LSYS1]
user@host# set logical-systems LSYS1 services ssl proxy profile ssl-fp-profile root-ca new-srvr-cert
user@host# set logical-systems LSYS1 services ssl proxy profile ssl-fp-profile actions ignore-server-auth-failure
user@host# set logical-systems LSYS1 security log mode event
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 match
   source-address any
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 match
   destination-address any
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 match
   application any
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then permit
   application-services idp
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then permit
   application-services ssl-proxy profile-name ssl-rp-profile
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then log
   session-init
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy 1 then log
   session-close
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 then log
   session-init
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy 1 then log
   session-close
```

Results

From configuration mode, confirm your configuration by entering the **show logical-system LSYS1 services ssl proxy** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

You must configure either **root-ca** (forward proxy) or **server-certificate** (reverse proxy) in an SSL proxy profile. Otherwise, the commit check fails.

```
user@host# show logical-systems LSYS1 services ssl proxy
profile ssl-rp-profile {
   server-certificate ssl-inspect-sp1; { # For reverse proxy. No root-ca is needed.
   actions {
      log {
         all;
      }
   }
}
profile ssl-fp-profile { # For forward proxy. No server cert/key is needed.
```

```
    root-ca new-srvr-cert;
    actions {
        ignore-server-auth-failure;
        log {
            all;
        }
    }
}
```

Verification

IN THIS SECTION

- Verifying the SSL Proxy Configuration on the Device | **366**

Verifying the SSL Proxy Configuration on the Device

Purpose

Viewing the SSL reverse proxy statistics on the SRX Series device.

Action

You can view the SSL proxy statistics by using the **show services ssl proxy statistics logical-system** command.

```
user@host> show services ssl proxy statistics logical-system LSYS1
```

```
PIC:spu-3 fpc[0] pic[3] ------
        sessions matched                                1
        sessions bypassed:non-ssl                       0
        sessions bypassed:mem overflow                  0
        sessions bypassed:low memory                    0
        sessions created                                1
        sessions ignored                                0
        sessions active                                 1
        sessions dropped                                0
        sessions whitelisted                            0
        whitelisted url category match                  0
        default profile hit                             0
        session dropped no default profile              0
```

```
        policy hit no profile configured                  0
```

SEE ALSO

Example: Loading CA and Local Certificates Manually

Example: Configuring a Device for Peer Certificate Chain Validation

ICAP Redirects for Logical Systems

IN THIS SECTION

- ICAP Redirect Support for Logical Systems | **367**
- Example: Configuring ICAP Redirect Service on SRX Devices | **369**

ICAP is a lightweight protocol used to extend transparent proxy servers, thereby freeing up resources. For more information, see the following topics:

ICAP Redirect Support for Logical Systems

Starting in Junos OS Release 18.3R1, SRX Series devices support the Internet Content Adaptation Protocol (ICAP) service redirect when the device is configured for logical systems.

ICAP redirect profile is only allowed to attach on the policy which belongs to the same logical system. This profile is applied to a security policy as application services for the permitted traffic. The ICAP profile defines the settings that allow the ICAP server to process request messages, response messages, fallback options (in case of a timeout), connectivity issues, too many requests, or any other conditions.

Secure Sockets Layer (SSL) is an application-level protocol that provides encryption technology for the Internet. SSL proxy acts as an intermediary, performing SSL encryption and decryption between the client and the server. SSL, also called Transport Layer Security (TLS), ensures the secure transmission of data between a client and a server through a combination of privacy, authentication, confidentiality, and data

integrity. SSL relies on certificates and private-public key exchange pairs for this level of security. SSL proxy acts as an intermediary, performing SSL encryption and decryption between the client and the server, but neither the server nor the client can detect its presence.

ICAP redirect services has the dependency on SSL proxy to build secure connections. Because the SSL proxy is not supported on user logical systems in Junos OS Release 18.3R1, ICAP redirect works with clear text connections or with shared certificates in Junos OS Release 18.3R1.

The following sequences are involved in a typical ICAP redirect scenario:

1. The user opens a connection to a Website on the internet.
2. The request goes through the SRX Series device that is acting as a proxy server.
3. The SRX Series device receives information from the end-host, encapsulates the message and forwards the encapsulated ICAP message to the third-party on-premise ICAP server.
4. The ICAP server receives the ICAP request and analyzes it.
5. If the request does not contain any confidential information, the ICAP server sends it back to the proxy server, and directs the proxy server to send the HTTP to the internet.
6. If the request contains confidential information, you can choose to take action (block, permit and log) as per your requirement.

Limitations of SSL Proxy with Logical Systems

Following are the limitations for using ICAP redirect service for user logical systems:

- SSL Proxy is supported only on master logical system in Junos OS Release 18.3R1.
- SSL profile configured to provide a secure connection to the ICAP server is not supported on user logical systems in Junos OS Release 18.3R1.

SEE ALSO

For more information on SSL Proxy and benefits of ICAP Redirect, See: *SSL Proxy*.

Example: Configuring ICAP Redirect Service on SRX Devices

IN THIS SECTION

- Requirements | 369
- Overview | 369
- Configuration | 370
- Verification | 374

This example shows how to define an ICAP redirect profile for an SRX Series device.

Requirements

This example uses the following hardware and software components:

- SRX Series device with Junos OS Release 18.3R1 or later. This configuration example is tested for Junos OS Release 18.3R1.

No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, you configure an ICAP redirect profile in logical systems and apply these profiles as application services in the security policy for the permitted traffic.

Table 28 on page 369 lists the details of the parameters used in this example.

Table 28: ICAP Redirect Configuration Parameters

Parameters	Names	Description
Profile	icap-pf1	The ICAP server profile allows the ICAP server to process request messages, response messages, fallback options and so on, for the permitted traffic. This profile is applied as an application service in the security policy.
Server name	icap-svr1 icap-svr2	The machine name of the remote ICAP host. Client's request is redirected to this ICAP server.

Table 28: ICAP Redirect Configuration Parameters *(continued)*

Parameters	Names	Description
Server IP address	192.0.2.2/24 192.0.2.179/24	The IP address of the remote ICAP host. Client's request is redirected to this ICAP server.
Logical system name	LSYS1	Displays the logical system name which belongs to the same profile.
Security policy	sp1	In a security policy, apply the SSL proxy profile and ICAP redirect profile. to the permitted traffic.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr1 host 192.0.2.2/24
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr1 reqmod-uri echo
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr1 respmod-uri echo
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr1 sockets 64
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr2 host 192.0.2.179/24
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr2 reqmod-uri echo
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr2 respmod-uri echo
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr2 sockets 64
set logical-systems LSYS1 services icap-redirect profile icap-pf1 server icap-svr2 tls-profile dlp_ssl
set logical-systems LSYS1 services icap-redirect profile icap-pf1 http redirect-request
set logical-systems LSYS1 services icap-redirect profile icap-pf1 http redirect-response
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy sec_policy match source-address
    any
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy sec_policy match
    destination-address any
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy sec_policy match application
    any
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy sec_policy then permit
    application-services ssl-proxy profile-name ssl-inspect-profile
set logical-systems LSYS1 security policies from-zone trust to-zone untrust policy sec_policy then permit
    application-services icap-redirect icap-pf1
set logical-systems LSYS1 security policies default-policy permit-all
set logical-systems LSYS1 security zones security-zone trust host-inbound-traffic system-services all
```

```
set logical-systems LSYS1 security zones security-zone trust host-inbound-traffic protocols all
set logical-systems LSYS1 security zones security-zone trust interfaces xe-5/0/0.0
set logical-systems LSYS1 security zones security-zone untrust host-inbound-traffic system-services all
set logical-systems LSYS1 security zones security-zone untrust host-inbound-traffic protocols all
set logical-systems LSYS1 security zones security-zone untrust interfaces xe-5/0/1.0
set logical-systems LSYS1 interfaces xe-5/0/0 unit 0 family inet address 192.0.2.1/8
set logical-systems LSYS1 interfaces xe-5/0/0 unit 0 family inet6 address 2001:db8::1/64
set logical-systems LSYS1 interfaces xe-5/0/1 unit 0 family inet address 198.51.100.1/8
set logical-systems LSYS1 interfaces xe-5/0/1 unit 0 family inet6 address 2001:db8::2/64
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure the ICAP redirect service:

1. Configure the ICAP redirect profile for the first server (icap-svr1).

```
[edit logical-systems LSYS1 services]
user@host# set icap-redirect profile icap-pf1 server icap-svr1 host 192.0.2.2/24
user@host# set icap-redirect profile icap-pf1 server icap-svr1 reqmod-uri echo
user@host# set icap-redirect profile icap-pf1 server icap-svr1 respmod-uri echo
user@host# set icap-redirect profile icap-pf1 server icap-svr1 sockets 64
```

2. Configure the ICAP redirect profile for the second server (icap-svr2).

```
[edit logical-systems LSYS1 services]
user@host# set icap-redirect profile icap-pf1 server icap-svr2 host 192.0.2.179/24
user@host# set icap-redirect profile icap-pf1 server icap-svr2 reqmod-uri echo
user@host# set icap-redirect profile icap-pf1 server icap-svr2 respmod-uri echo
user@host# set icap-redirect profile icap-pf1 server icap-svr2 sockets 64
user@host# set icap-redirect profile icap-pf1 server icap-svr2 tls-profile dlp_ssl
```

3. Configure the redirect request and the redirect response for the HTTP traffic.

```
[edit logical-systems LSYS1 services]
user@host# set icap-redirect profile icap-pf1 http redirect-request
user@host# set icap-redirect profile icap-pf1 http redirect-response
```

4. Configure a security policy to apply application services for the ICAP redirect to the permitted traffic.

```
[edit logical-systems LSYS1 security]
user@host# set policies from-zone trust to-zone untrust policy sec_policy match source-address any
user@host# set policies from-zone trust to-zone untrust policy sec_policy match destination-address any
user@host# set policies from-zone trust to-zone untrust policy sec_policy match application any
user@host# set policies from-zone trust to-zone untrust policy sec_policy then permit application-services
   ssl-proxy profile-name ssl-inspect-profile
user@host# set policies from-zone trust to-zone untrust policy sec_policy then permit application-services
   icap-redirect icap-pf1
user@host# set policies default-policy permit-all
```

5. Configure zones.

```
[edit logical-systems LSYS1 security]
user@host# set zones security-zone trust host-inbound-traffic system-services all
user@host# set zones security-zone trust host-inbound-traffic protocols all
user@host# set zones security-zone trust interfaces xe-5/0/0.0
user@host# set zones security-zone untrust host-inbound-traffic system-services all
user@host# set zones security-zone untrust host-inbound-traffic protocols all
user@host# set zones security-zone untrust interfaces xe-5/0/1.0
```

6. Configure interfaces.

```
[edit logical-systems LSYS1]
user@host# set interfaces xe-5/0/0 unit 0 family inet address 192.0.2.1/8
user@host# set interfaces xe-5/0/0 unit 0 family inet6 address 2001:db8::1/64
user@host# set interfaces xe-5/0/1 unit 0 family inet address 198.51.100.1/8
user@host# set interfaces xe-5/0/1 unit 0 family inet6 address 2001:db8::2/64
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1 services icap-redirect**, **show logical-systems LSYS1 security policies**, **show logical-systems LSYS1 security zones**, and **show logical-systems LSYS1 interfaces** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show logical-systems LSYS1 services icap-redirect
profile icap-pf1 {
   server icap-svr1 {
      host 192.0.2.2/24;
      reqmod-uri echo;
      respmod-uri echo;
```

```
        sockets 64;
    }
    server icap-svr2 {
        host 192.0.2.179/24;
        reqmod-uri echo;
        respmod-uri echo;
        sockets 64;
        tls-profile dlp_ssl;
    }
    http {
        redirect-request;
        redirect-response;
    }
}
```

```
from-zone trust to-zone untrust {
    policy sec_policy {
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit {
                application-services {
                    ssl-proxy {
                        profile-name ssl-inspect-profile;
                    }
                    icap-redirect icap-pf1;
                }
            }
        }
    }
}
default-policy {
    permit-all;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying ICAP Redirect Configuration

Purpose

Verify that the ICAP redirect service is configured on the device.

Action

From operational mode, enter the **show services icap-redirect status logical-system** and **show services icap-redirect statistic logical-system** commands.

```
user@host> show services icap-redirect status logical-system LSYS1

ICAP Status :
         spu-1 Profile: icap-pf1 Server: icap-svr1 : UP
ICAP Status :
         spu-2 Profile: icap-pf1 Server: icap-svr1 : UP
ICAP Status :
         spu-3 Profile: icap-pf1 Server: icap-svr1 : UP
```

```
user@host> show services icap-redirect statistic logical-system LSYS1

ICAP Redirect statistic:
  Message Redirected                  : 12
      Message REQMOD Redirected       : 6
      Message RESPMOD Redirected      : 6
  Message Received                    : 12
      Message REQMOD Received         : 6
      Message RESPMOD Received        : 6
Fallback:      permit           log-permit       reject
  Timeout         0                 0                0
  Connectivity    0                 0                0
  Default         0                 0                0
```

Meaning

The status **Up** indicates that the ICAP redirect service is enabled. The **Message Redirected** and the **Message Received** fields show the number of HTTP requests that have passed through the ICAP channel.

RELATED DOCUMENTATION

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

AppQoS for Logical Systems

IN THIS SECTION

- Application Quality of Service Support for Logical Systems Overview | 375
- Example: Configure Application Quality of Service for Logical Systems | 376

Application quality of service (AppQoS) enable you to identify and control access to specific applications and provides the granularity of the stateful firewall rule base to match and enforce quality of service (QoS) at the application layer. AppQoS feature expands the capability of Junos OS class of service (CoS) for logical systems.

Application Quality of Service Support for Logical Systems Overview

The application quality of service (AppQoS) feature expands the capability of Junos OS class of service (CoS) for logical systems. This includes marking DSCP values based on Layer-7 application types, honoring application-based traffic through loss priority settings, and controlling transfer rates on egress PICs based on Layer-7 application types.

When a network experiences congestion and delay, some packets must be dropped. Junos OS CoS allows you to divide traffic into classes and offer various levels of throughput and packet loss when congestion occurs. This allows packet loss to happen according to the rules you configure.

Logical system enables you to partition a single device into multiple domains to perform security and routing functions.

Starting in Junos OS Release 19.3R1, AppQoS is supported when the SRX Series device is configured with logical system. You can configure a default AppQoS rule set to manage the application- traffic-control within the logical system. AppQoS provides the ability to prioritize and meter the application traffic to provide better service to business-critical or high-priority application traffic.

AppQoS rule sets are included in the logical system to implement application-aware quality-of-service control. You can configure a rule set with rules under the application-traffic-control option, and attach the AppQoS rule set to a logical system as an application service. If the traffic matches the specified application the application-aware quality of service is applied for logical system.

For AppQoS, traffic is grouped based on rules that associate a defined forwarding class with selected applications for logical system. The match criteria for the rule includes one or more applications. When

traffic from a matching application encounters the rule, the rule action sets the forwarding class, and remarks the DSCP value and loss priority to values appropriate for the application.

The AppQoS DSCP rewriter conveys a packet's quality of service through both the forwarding class and a loss priority. The AppQoS rate-limiting parameters control the transmission speed and volume for its associated queues for logical system. The default AppQoS rule set is leveraged from one of the existing AppQoS rule sets, which are configured under the **[edit class-of-service application-traffic-control]** hierarchy level.

Rate limiters are applied in rules based on the application of the traffic for logical system. Two rate limiters are applied for each session: **client-to-server** and **server-to-client**. This usage allows traffic in each direction to be provisioned separately.

Example: Configure Application Quality of Service for Logical Systems

IN THIS SECTION

- Requirements | **376**
- Overview | **377**
- Configuration | **377**
- Verification | **380**

This example shows how to enable application quality of service (AppQoS) within a logical system to provide prioritization and rate limiting for the traffic.

Requirements

This example uses the following hardware and software components:

- An SRX Series device configured with logical systems.
- Junos OS Release 19.3R1 and later releases.

Before you begin:

- Read the "Application Quality of Service Support for Logical Systems Overview" on page 375 to understand how and where this procedure fits in the overall support for AppQos.

  No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, you configure an AppQoS rule set and invoke AppQoS as an application service in the logical system. You configure the class of service (CoS) for logical system. The AppQoS rule sets are included in the logical system to implement application-aware quality-of-service control.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter commit from configuration mode.

```
set logical-systems LSYS1 class-of-service application-traffic-control rate-limiters HTTP-BW-RL bandwidth-limit 512
set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 match application junos:HTTP
set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then forwarding-class best-effort
set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then dscp-code-point 001000
set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then loss-priority high
set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then log
set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then rate-limit server-to-client HTTP-BW-RL
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet match source-address any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet match destination-address any
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet match application any
set logical-systems LSYS1 security policies from-zone trust to-zone trust policy p1 match dynamic-application junos:web
set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet then permit application-services application-traffic-control rule-set RS1
```

Configuring AppQoS with a Logical System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure AppQoS with a Logical System:

1. Configure the AppQoS real-time run information about application rate limiting of current or recent sessions for logical system LSYS1.

```
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rate-limiters HTTP-BW-RL
    bandwidth-limit 512
```

2. Configure the AppQoS rules and application match criteria for logical system LSYS1.

```
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1
    match application junos:HTTP
```

3. Configure the AppQoS rules and the forwarding class for logical system LSYS1.

```
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1
    then forwarding-class best-effort
```

4. Configure the AppQoS rules and the dscp-code-point for logical system LSYS1.

```
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1
    then dscp-code-point 001000
```

5. Configure the AppQoS rules and the loss priority for logical system LSYS1.

```
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1
    then loss-priority high
```

6. Assign the rate limiters for rule-sets.

```
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1
    then log
user@host# set logical-systems LSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1
    then rate-limit server-to-client HTTP-BW-RL
```

7. Assign the class-of-service rule set to the security policy for logical system LSYS1.

```
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet
    match source-address any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet
    match destination-address any
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet
    match application any
user@host# set logical-systems LSYS1 security policies from-zone trust to-zone trust policy p1 match
    dynamic-application junos:web
user@host# set logical-systems LSYS1 security policies from-zone untrust to-zone trust policy from_internet
    then permit application-services application-traffic-control rule-set RS1
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show logical-systems LSYS1
security {
    policies {
        from-zone untrust to-zone trust {
            policy from_internet {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
                then {
                    permit {
                        application-services {
                            application-traffic-control {
                                rule-set RS1;
                            }
                        }
                    }
                }
            }
        }
        from-zone trust to-zone trust {
            policy p1 {
                match {
                    dynamic-application junos:web;
```

```
            }
          }
        }
      }
    }
    class-of-service {
      application-traffic-control {
        rate-limiters HTTP-BW-RL {
          bandwidth-limit 512;
        }
        rule-sets RS1 {
          rule RL1 {
            match {
              application junos:HTTP;
            }
            then {
              forwarding-class best-effort;
              dscp-code-point 001000;
              loss-priority high;
              rate-limit {
                server-to-client HTTP-BW-RL;
              }
              log;
            }
          }
        }
      }
    }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the class-of-service application-traffic-control counter | **381**
- Verifying the class-of-service application-traffic-control statistics rate-limiter | **381**

To confirm that the configuration is working properly, perform the below tasks:

Verifying the class-of-service application-traffic-control counter

Purpose

Verify the class-of-service application-traffic-control counter for logical systems.

Action

To verify the configuration is working properly, enter the **show class-of-service application-traffic-control counter logical-system LSYS1** command.

`user@host>`**show class-of-service application-traffic-control counter logical-system LSYS1**

```
Logical System: LSYS1

pic: 0/0
  Counter type                                                  Value
 Sessions processed                                             1
 Sessions marked                                                0
 Sessions honored                                               0
 Sessions rate limited                                          0
 Client-to-server flows rate limited                            0
 Server-to-client flows rate limited                            0
 Session default ruleset hit                                    0
 Session ignored no default ruleset                             0
```

Meaning

The output displays AppQoS DSCP marking and honoring statistics based on Layer 7 application classifiers.

Verifying the class-of-service application-traffic-control statistics rate-limiter

Purpose

Verify the class-of-service application-traffic-control statistics rate-limiter for logical systems.

Action

To verify the configuration is working properly, enter the **show class-of-service application-traffic-control statistics rate-limiter logical-system LSYS1** command.

`user@host>`**show class-of-service application-traffic-control statistics rate-limiter logical-system LSYS1**

```
Logical System: LSYS1

pic: 0/0
```

Meaning

The output displays AppQoS real-time run information about application rate limiting of current or recent sessions.

Logical Systems in a Chassis Cluster

IN THIS SECTION

- Understanding Logical Systems in the Context of Chassis Cluster | **382**
- Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (Master Administrators Only) | **383**
- Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (IPv6) (Master Administrators Only) | **424**

A chassis cluster provides high availability on SRX Series devices where two devices operate as a single device. Chassis cluster includes the synchronization of configuration files and the dynamic runtime session states between the SRX Series devices, which are part of chassis cluster setup. For more information, see the following topics:

Understanding Logical Systems in the Context of Chassis Cluster

The behavior of a chassis cluster whose nodes consist of SRX Series devices running logical systems is the same as that of a cluster whose SRX Series nodes in the cluster are not running logical systems. No difference exists between events that cause a node to fail over. In particular, if a link associated with a single logical system fails, then the device fails over to another node in the cluster.

The master administrator configures the chassis cluster (including both primary and secondary nodes) before he or she creates and configures the logical systems. Each node in the cluster has the same configuration, as is the case for nodes in a cluster not running logical systems. All logical system configurations are synchronized and replicated between both nodes in the cluster.

When you use SRX Series devices running logical systems within a chassis cluster, you must purchase and install the same number of licenses for each node in the chassis cluster. Logical systems licenses pertain to a single chassis, or node, within a chassis cluster and not to the cluster collectively.

Starting with Junos OS Release 12.3X48-D50, when you configure the logical systems within a chassis cluster, if logical systems licenses on backup node are not sufficient when you **commit** the configuration,

a warning message is displayed about the number of licenses required on backup node as well, just as on primary node in all the previous releases.

SEE ALSO

- Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (Master Administrators Only) | 383
- Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (IPv6) (Master Administrators Only) | 424
- Understanding the Interconnect Logical System and Logical Tunnel Interfaces | 35
- Understanding Logical Systems for SRX Series Services Gateways | 29
- *Chassis Cluster Overview*

Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (Master Administrators Only)

IN THIS SECTION

- Requirements | 384
- Overview | 384
- Configuration | 386
- Verification | 416

This example shows how to configure logical systems in a basic active/passive chassis cluster.

NOTE: The master administrator configures the chassis cluster and creates logical systems (including an optional interconnect logical system), administrators, and security profiles. Either the master administrator or the user logical system administrator configures a user logical system. The configuration is synchronized between nodes in the cluster.

Requirements

Before you begin:

- Obtain two SRX Series Services Gateways with identical hardware configurations. See *Example: Configuring an Active/Passive Chassis Cluster on SRX5800 Devices*. This chassis cluster deployment scenario includes the configuration of the SRX Series device for connections to an MX240 edge router and an EX8208 Ethernet Switch.
- Physically connect the two devices (back-to-back for the fabric and control ports) and ensure that they are the same models. You can configure both the fabric and control ports on the SRX5000 line. For the SRX1400 or SRX1500 devices or the SRX3000 line, you can configure the fabric ports only. (Platform support depends on the Junos OS release in your installation.) See *Connecting SRX Series Devices to Create a Chassis Cluster*.
- Set the chassis cluster ID and node ID on each device and reboot the devices to enable clustering. See *Example: Setting the Node ID and Cluster ID for Security Devices in a Chassis Cluster* .

> **NOTE:** For this example, chassis cluster and logical system configuration is performed on the primary (node 0) device at the root level by the master administrator. Log in to the device as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

> **NOTE:** When you use SRX Series devices running logical systems in a chassis cluster, you must purchase and install the same number of logical system licenses for each node in the chassis cluster. Logical system licenses pertain to a single chassis or node within a chassis cluster and not to the cluster collectively.

Overview

In this example, the basic active/passive chassis cluster consists of two devices:

- One device actively provides logical systems, along with maintaining control of the chassis cluster.
- The other device passively maintains its state for cluster failover capabilities should the active device become inactive.

> **NOTE:** Logical systems in an active/active chassis cluster are configured in a similar manner as for logical systems in an active/passive chassis cluster. For active/active chassis clusters, there can be multiple redundancy groups that can be primary on different nodes.

The master administrator configures the following logical systems on the primary device (node 0):

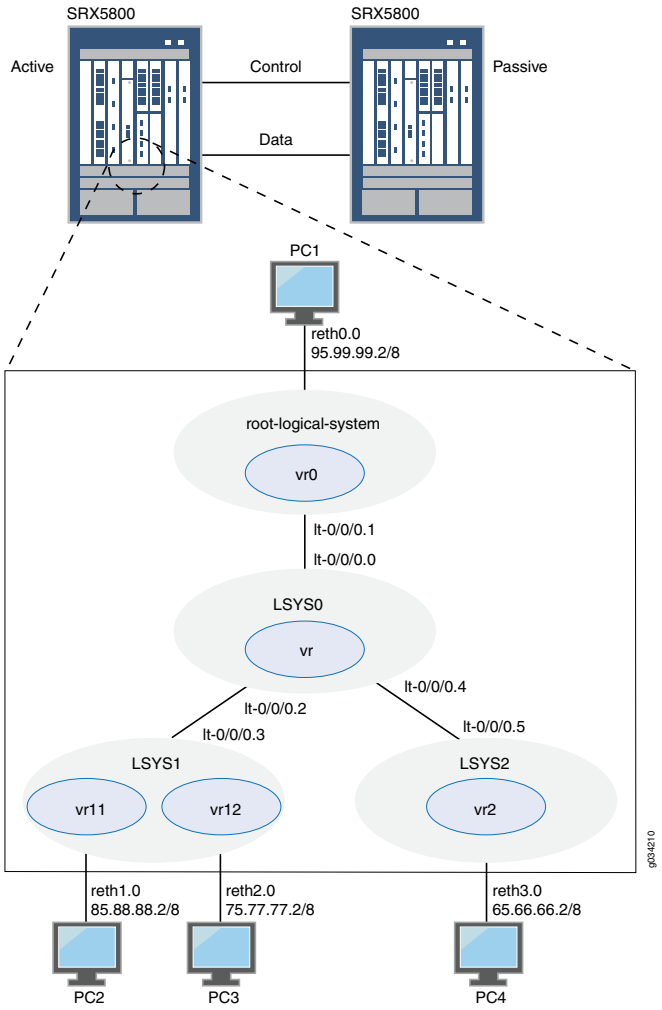
- Master logical system—The master administrator configures a security profile to provision portions of the system's security resources to the master logical system and configures the resources of the master logical system.
- User logical systems LSYS1 and LSYS2 and their administrators—The master administrator also configures security profiles to provision portions of the system's security resources to user logical systems. The user logical system administrator can then configure interfaces, routing, and security resources allocated to his or her logical system.
- Interconnect logical system LSYS0 that connects logical systems on the device—The master administrator configures logical tunnel interfaces between the interconnect logical system and each logical system. These peer interfaces effectively allow for the establishment of tunnels.

> **NOTE:** This example does not describe configuring features such as NAT, IDP, or VPNs for a logical system. See "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 and "User Logical Systems Configuration Overview" on page 71 for more information about features that can be configured for logical systems.
>
> If you are performing proxy ARP in a chassis cluster configuration, you must apply the proxy ARP configuration to the reth interfaces rather than the member interfaces because the reth interfaces contain the logical configurations. See *Configuring Proxy ARP for NAT (CLI Procedure)*.

Topology

Figure 10 on page 386 shows the topology used in this example.

Figure 10: Logical Systems in a Chassis Cluster



Configuration

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Chassis Cluster Configuration (Master Administrator)

CLI Quick Configuration

To quickly create logical systems and user logical system administrators and configure the master and interconnect logical systems, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

On {primary:node0}

```
set chassis cluster control-ports fpc 0 port 0
set chassis cluster control-ports fpc 6 port 0
set interfaces fab0 fabric-options member-interfaces ge-1/1/0
set interfaces fab1 fabric-options member-interfaces ge-7/1/0
set groups node0 system host-name SRX5800-1
set groups node0 interfaces fxp0 unit 0 family inet address 10.157.90.24/9
set groups node0 system backup-router 10.157.64.1 destination 0.0.0.0/0
set groups node1 system host-name SRX5800-2
set groups node1 interfaces fxp0 unit 0 family inet address 10.157.90.23/19
set groups node1 system backup-router 10.157.64.1 destination 0.0.0.0/0
set apply-groups “${node}”
set chassis cluster reth-count 5
set chassis cluster redundancy-group 0 node 0 priority 200
set chassis cluster redundancy-group 0 node 1 priority 100
set chassis cluster redundancy-group 1 node 0 priority 200
set chassis cluster redundancy-group 1 node 1 priority 100
set interfaces ge-1/0/0 gigether-options redundant-parent reth0
set interfaces ge-1/0/1 gigether-options redundant-parent reth1
set interfaces ge-1/0/2 gigether-options redundant-parent reth2
set interfaces ge-1/0/3 gigether-options redundant-parent reth3
set interfaces ge-7/0/0 gigether-options redundant-parent reth0
set interfaces ge-7/0/1 gigether-options redundant-parent reth1
set interfaces ge-7/0/2 gigether-options redundant-parent reth2
set interfaces ge-7/0/3 gigether-options redundant-parent reth3
set interfaces reth0 redundant-ether-options redundancy-group 1
set interfaces reth0 unit 0 family inet address 95.99.99.1/8
set interfaces reth1 redundant-ether-options redundancy-group 1
set interfaces reth2 redundant-ether-options redundancy-group 1
set interfaces reth3 redundant-ether-options redundancy-group 1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a chassis cluster:

> **NOTE:** Perform the following steps on the primary device (node 0). They are automatically copied over to the secondary device (node 1) when you execute a **commit** command.

1. Configure control ports for the clusters.

```
[edit chass cluster]
user@host# set control-ports fpc 0 port 0
user@host# set control-ports fpc 6 port 0
```

2. Configure the fabric (data) ports of the cluster that are used to pass RTOs in active/passive mode.

```
[edit interfaces]
user@host# set fab0 fabric-options member-interfaces ge-1/1/0
user@host# set fab1 fabric-options member-interfaces ge-7/1/0
```

3. Assign some elements of the configuration to a specific member. Configure out-of-band management on the fxp0 interface of the SRX Services Gateway using separate IP addresses for the individual control planes of the cluster.

```
[edit]
user@host# set groups node0 system host-name SRX5800-1
user@host# set groups node0 interfaces fxp0 unit 0 family inet address 10.157.90.24/9
user@host# set groups node0 system backup-router 10.157.64.1 destination 0.0.0.0/0
user@host# set groups node1 system host-name SRX5800-2
user@host# set groups node1 interfaces fxp0 unit 0 family inet address 10.157.90.23/19
user@host# set groups node1 system backup-router 10.157.64.1 destination 0.0.0.0/0
user@host# set apply-groups “${node}”
```

4. Configure redundancy groups for chassis clustering.

```
[edit chassis cluster]
user@host# set reth-count 5
user@host# set redundancy-group 0 node 0 priority 200
user@host# set redundancy-group 0 node 1 priority 100
```

```
user@host# set redundancy-group 1 node 0 priority 200
user@host# set redundancy-group 1 node 1 priority 100
```

5. Configure the data interfaces on the platform so that in the event of a data plane failover, the other chassis cluster member can take over the connection seamlessly.

```
[edit interfaces]
user@host# set ge-1/0/0 gigether-options redundant-parent reth0
user@host# set ge-1/0/1 gigether-options redundant-parent reth1
user@host# set ge-1/0/2 gigether-options redundant-parent reth2
user@host# set ge-1/0/3 gigether-options redundant-parent reth3
user@host# set ge-7/0/0 gigether-options redundant-parent reth0
user@host# set ge-7/0/1 gigether-options redundant-parent reth1
user@host# set ge-7/0/2 gigether-options redundant-parent reth2
user@host# set ge-7/0/3 gigether-options redundant-parent reth3
user@host# set reth0 redundant-ether-options redundancy-group 1
user@host# set reth0 unit 0 family inet address 95.99.99.1/8
user@host# set reth1 redundant-ether-options redundancy-group 1
user@host# set reth2 redundant-ether-options redundancy-group 1
user@host# set reth3 redundant-ether-options redundancy-group 1
```

Results

From operational mode, confirm your configuration by entering the **show configuration** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

`user@host>` **show configuration**

```
version ;
groups {
    node0 {
        system {
            host-name SRX58001;
            backup-router 10.157.64.1 destination 0.0.0.0/0;

        }
        interfaces {
            fxp0 {
                unit 0 {
                    family inet {
                        address 10.157.90.24/9;
```

```
                    }
                }
            }
        }
    }
    node1 {
        system {
            host-name SRX58002;
            backup-router 10.157.64.1 destination 0.0.0.0/0;

        }
        interfaces {
            fxp0 {
                unit 0 {
                    family inet {
                        address 10.157.90.23/19;
                    }
                }
            }
        }
    }
}
apply-groups "${node}";
chassis {
    cluster {
        control-link-recovery;
        reth-count 5;
        control-ports {
            fpc 0 port 0;
            fpc 6 port 0;
        }
        redundancy-group 0 {
            node 0 priority 200;
            node 1 priority 100;
        }
        redundancy-group 1 {
            node 0 priority 200;
            node 1 priority 100;
        }
    }
}
interfaces {
    ge-1/0/0 {
        gigether–options {
```

```
        redundant-parent reth0;
    }
}
ge-1/0/1 {
    gigether-options {
        redundant-parent reth1;
    }
}
ge-1/0/2 {
    gigether-options {
        redundant-parent reth2;
    }
}
ge-1/0/3 {
    gigether-options {
        redundant-parent reth3;
    }
}
ge-7/0/0 {
    gigether-options {
        redundant-parent reth0;
    }
}
ge-7/0/1 {
    gigether-options {
        redundant-parent reth1;
    }
}
ge-7/0/2 {
    gigether-options {
        redundant-parent reth2;
    }
}
ge-7/0/3 {
    gigether-options {
        redundant-parent reth3;
    }
}
fab0 {
    fabric-options {
        member-interfaces {
            ge-1/1/0;
        }
    }
```

```
    }
    fab1 {
        fabric–options {
            member–interfaces {
                ge-7/1/0;
            }
        }
    }
    reth0 {
        redundant–ether–options {
            redundancy–group 1;
        }
        unit 0 {
            family inet {
                address 95.99.99.1/8;
            }
        }
    }
    reth1 {
        redundant–ether–options {
            redundancy–group 1;
        }
    }
    reth2 {
        redundant–ether–options {
            redundancy–group 1;
        }
    }
    reth3 {
        redundant–ether–options {
            redundancy–group 1;
        }
    }
}
```

Logical System Configuration (Master Administrator)

CLI Quick Configuration

To quickly create logical systems and user logical system administrators and configure the master and interconnect logical systems, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

NOTE: You are prompted to enter and then reenter plain-text passwords.

On {primary:node0}

```
set logical-systems LSYS1
set logical-systems LSYS2
set logical-systems LSYS0
set system login class lsys1 logical-system LSYS1
set system login class lsys1 permissions all
set system login user lsys1admin full-name lsys1-admin
set system login user lsys1admin class lsys1
set user lsys1admin authentication plain-text-password
set system login class lsys2 logical-system LSYS2
set system login class lsys2 permissions all
set system login user lsys2admin full-name lsys2-admin
set system login user lsys2admin class lsys2
set system login user lsys2admin authentication plain-text-password
set system security-profile SP-root policy maximum 200
set system security-profile SP-root policy reserved 100
set system security-profile SP-root zone maximum 200
set system security-profile SP-root zone reserved 100
set system security-profile SP-root flow-session maximum 200
set system security-profile SP-root flow-session reserved 100
set system security-profile SP-root root-logical-system
set system security-profile SP0 logical-system LSYS0
set system security-profile SP1 policy maximum 100
set system security-profile SP1 policy reserved 50
set system security-profile SP1 zone maximum 100
set system security-profile SP1 zone reserved 50
set system security-profile SP1 flow-session maximum 100
set system security-profile SP1 flow-session reserved 50
set system security-profile SP1 logical-system LSYS1
set system security-profile SP2 policy maximum 100
set system security-profile SP2 policy reserved 50
set system security-profile SP2 zone maximum 100
set system security-profile SP2 zone reserved 50
set system security-profile SP2 flow-session maximum 100
set system security-profile SP2 flow-session reserved 50
set system security-profile SP2 logical-system LSYS2
set interfaces lt-0/0/0 unit 1 encapsulation ethernet
set interfaces lt-0/0/0 unit 1 peer-unit 0
set interfaces lt-0/0/0 unit 1 family inet address 2.1.1.1/24
```

```
set routing-instances vr0 instance-type virtual-router
set routing-instances vr0 interface lt-0/0/0.1
set routing-instances vr0 interface reth0.0
set routing-instances vr0 routing-options static route 85.0.0.0/8 next-hop 2.1.1.3
set routing-instances vr0 routing-options static route 75.0.0.0/8 next-hop 2.1.1.3
set routing-instances vr0 routing-options static route 65.0.0.0/8 next-hop 2.1.1.5
set security zones security-zone root-trust host-inbound-traffic system-services all
set security zones security-zone root-trust host-inbound-traffic protocols all
set security zones security-zone root-trust interfaces reth0.0
set security zones security-zone root-untrust host-inbound-traffic system-services all
set security zones security-zone root-untrust host-inbound-traffic protocols all
set security zones security-zone root-untrust interfaces lt-0/0/0.1
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust match
    source-address any
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust match
    destination-address any
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust match
    application any
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust then permit
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust match
    source-address any
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust match
    destination-address any
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust match
    application any
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust then permit
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust match
    source-address any
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust match
    destination-address any
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust match
    application any
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust then
    permit
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust match source-address
    any
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust match
    destination-address any
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust match application
    any
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust then permit
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 peer-unit 1
set logical-systems LSYS0 interfaces lt-0/0/0 unit 2 encapsulation ethernet-vpls
```

```
set logical-systems LSYS0 interfaces lt-0/0/0 unit 2 peer-unit 3
set logical-systems LSYS0 interfaces lt-0/0/0 unit 4 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 4 peer-unit 5
set logical-systems LSYS0 routing-instances vr instance-type vpls
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.0
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.2
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.4
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 encapsulation ethernet
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 peer-unit 2
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 family inet address 2.1.1.3/24
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 encapsulation ethernet
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 peer-unit 4
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 family inet address 2.1.1.5/24
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see Using the *CLI Editor in Configuration Mode*.

To create logical systems and user logical system administrators and configure the master and interconnect logical systems:

1. Create the interconnect and user logical systems.

```
[edit logical-systems]
user@host# set LSYS0
user@host# set LSYS1
user@host# set LSYS2
```

2. Configure user logical system administrators.

   a. Configure the user logical system administrator for LSYS1.

```
[edit system login]
user@host# set class lsys1 logical-system LSYS1
user@host# set class lsys1 permissions all
user@host# set user lsys1admin full-name lsys1-admin
user@host# set user lsys1admin class lsys1
user@host# set user lsys1admin authentication plain-text-password
```

   b. Configure the user logical system administrator for LSYS2.

```
[edit system login]
```

```
user@host# set class lsys2 logical-system LSYS2
user@host# set class lsys2 permissions all
user@host# set user lsys2admin full-name lsys2-admin
user@host# set user lsys2admin class lsys2
user@host# set user lsys2admin authentication plain-text-password
```

3. Configure security profiles and assign them to logical systems.

   a. Configure a security profile and assign it to the root logical system.

```
[edit system security-profile]
user@host# set SP-root policy maximum 200
user@host# set SP-root policy reserved 100
user@host# set SP-root zone maximum 200
user@host# set SP-root zone reserved 100
user@host# set SP-root flow-session maximum 200
user@host# set SP-root flow-session reserved 100
user@host# set SP-root root-logical-system
```

   b. Assign a dummy security profile containing no resources to the interconnect logical system LSYS0.

```
[edit system security-profile]
user@host# set SP0 logical-system LSYS0
```

   c. Configure a security profile and assign it to LSYS1.

```
[edit system security-profile]
user@host# set SP1 policy maximum 100
user@host# set SP1 policy reserved 50
user@host# set SP1 zone maximum 100
user@host# set SP1 zone reserved 50
user@host# set SP1 flow-session maximum 100
user@host# set SP1 flow-session reserved 50
user@host# set SP1 logical-system LSYS1
```

   d. Configure a security profile and assign it to LSYS2.

```
[edit system security-profile]
user@host# set SP2 policy maximum 100
user@host# set SP2 policy reserved 50
```

```
user@host# set SP2 zone maximum 100
user@host# set SP2 zone reserved 50
user@host# set SP2 flow-session maximum 100
user@host# set SP2 flow-session reserved 50
user@host# set SP2 logical-system LSYS2
```

4. Configure the master logical system.

   a. Configure logical tunnel interfaces.

```
[edit interfaces]
user@host# set lt-0/0/0 unit 1 encapsulation ethernet
user@host# set lt-0/0/0 unit 1 peer-unit 0
user@host# set lt-0/0/0 unit 1 family inet address 2.1.1.1/24
```

   b. Configure a routing instance.

```
[edit routing-instances]
user@host# set vr0 instance-type virtual-router
user@host# set vr0 interface lt-0/0/0.1
user@host# set vr0 interface reth0.0
user@host# set vr0 routing-options static route 85.0.0.0/8 next-hop 2.1.1.3
user@host# set vr0 routing-options static route 75.0.0.0/8 next-hop 2.1.1.3
user@host# set vr0 routing-options static route 65.0.0.0/8 next-hop 2.1.1.5
```

   c. Configure zones.

```
[edit security zones]
user@host# set security-zone root-trust host-inbound-traffic system-services all
user@host# set security-zone root-trust host-inbound-traffic protocols all
user@host# set security-zone root-trust interfaces reth0.0
user@host# set security-zone root-untrust host-inbound-traffic system-services all
user@host# set security-zone root-untrust host-inbound-traffic protocols all
user@host# set security-zone root-untrust interfaces lt-0/0/0.1
```

   d. Configure security policies.

```
[edit security policies from-zone root-trust to-zone root-untrust]
user@host# set policy root-Trust_to_root-Untrust match source-address any
user@host# set policy root-Trust_to_root-Untrust match destination-address any
```

```
user@host# set policy root-Trust_to_root-Untrust match application any
user@host# set policy root-Trust_to_root-Untrust then permit
```

```
[edit security policies from-zone root-untrust to-zone root-trust]
user@host# set policy root-Untrust_to_root-Trust match source-address any
user@host# set policy root-Untrust_to_root-Trust match destination-address any
user@host# set policy root-Untrust_to_root-Trust match application any
user@host# set policy root-Untrust_to_root-Trust then permit
```

```
[edit security policies from-zone root-untrust to-zone root-untrust]
user@host# set policy root-Untrust_to_root-Untrust match source-address any
user@host# set policy root-Untrust_to_root-Untrust match destination-address any
user@host# set policy root-Untrust_to_root-Untrust match application any
user@host# set policy root-Untrust_to_root-Untrust then permit
```

```
[edit security policies from-zone root-trust to-zone root-trust]
user@host# set policy root-Trust_to_root-Trust match source-address any
user@host# set policy root-Trust_to_root-Trust match destination-address any
user@host# set policy root-Trust_to_root-Trust match application any
user@host# set policy root-Trust_to_root-Trust then permit
```

5. Configure the interconnect logical system.

   a. Configure logical tunnel interfaces.

```
[edit logical-systems LSYS0 interfaces]
user@host# set lt-0/0/0 unit 0 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 0 peer-unit 1
user@host# set lt-0/0/0 unit 2 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 2 peer-unit 3
user@host# set lt-0/0/0 unit 4 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 4 peer-unit 5
```

   b. Configure the VPLS routing instance.

```
[edit logical-systems LSYS0 routing-instances]
user@host# set vr instance-type vpls
user@host# set vr interface lt-0/0/0.0
user@host# set vr interface lt-0/0/0.2
```

```
user@host# set vr interface lt-0/0/0.4
```

6. Configure logical tunnel interfaces for the user logical systems.

   a. Configure logical tunnel interfaces for LSYS1.

```
[edit logical-systems LSYS1 interfaces ]
user@host# set lt-0/0/0 unit 3 encapsulation ethernet
user@host# set lt-0/0/0 unit 3 peer-unit 2
user@host# set lt-0/0/0 unit 3 family inet address 2.1.1.3/24
```

   b. Configure logical tunnel interfaces for LSYS2.

```
[edit logical-systems LSYS2 interfaces ]
user@host# set lt-0/0/0 unit 5 encapsulation ethernet
user@host# set lt-0/0/0 unit 5 peer-unit 4
user@host# set lt-0/0/0 unit 5 family inet address 2.1.1.5/24
```

Results

From configuration mode, confirm the configuration for LSYS0 by entering the **show logical-systems LSYS0** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS0
interfaces {
    lt-0/0/0 {
        unit 0 {
            encapsulation ethernet-vpls;
            peer-unit 1;
        }
        unit 2 {
            encapsulation ethernet-vpls;
            peer-unit 3;
        }
        unit 4 {
            encapsulation ethernet-vpls;
            peer-unit 5;
        }
    }
```

```
}
    routing-instances {
        vr {
            instance-type vpls;
            interface lt-0/0/0.0;
            interface lt-0/0/0.2;
            interface lt-0/0/0.4;
        }
    }
```

From configuration mode, confirm the configuration for the master logical system by entering the **show interfaces**, **show routing-instances**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show interfaces
lt-0/0/0 {
    unit 1 {
        encapsulation ethernet;
        peer-unit 0;
        family inet {
            address 2.1.1.1/24;
        }
    }
}
    ge-1/0/0 {
        gigether-options {
            redundant-parent reth0;
        }
    }
    ge-1/0/1 {
        gigether-options {
            redundant-parent reth1;
        }
    }
    ge-1/0/2 {
        gigether-options {
            redundant-parent reth2;
        }
    }
    ge-1/0/3 {
        gigether-options {
            redundant-parent reth3;
        }
```

```
}
ge-7/0/0 {
    gigether-options {
        redundant-parent reth0;
    }
}
ge-7/0/1 {
    gigether-options {
        redundant-parent reth1;
    }
}
ge-7/0/2 {
    gigether-options {
        redundant-parent reth2;
    }
}
ge-7/0/3 {
    gigether-options {
        redundant-parent reth3;
    }
}
fab0 {
    fabric-options {
        member-interfaces {
            ge-1/1/0;
        }
    }
}
fab1 {
    fabric-options {
        member-interfaces {
            ge-7/1/0;
        }
    }
}
reth0 {
    redundant-ether-options {
        redundancy-group 1;
    }
    unit 0 {
        family inet {
            address 95.99.99.1/8;
        }
    }
```

```
    }
    reth1 {
        redundant-ether-options {
            redundancy-group 1;
        }
    }
    reth2 {
        redundant-ether-options {
            redundancy-group 1;
        }
    }
    reth3 {
        redundant-ether-options {
            redundancy-group 1;
        }
    }
[edit]
user@host# show routing-instances
vr0 {
    instance-type virtual-router;
    interface lt-0/0/0.1;
    interface reth0.0;
    routing-options {
        static {
            route 85.0.0.0/8 next-hop 2.1.1.3;
            route 75.0.0.0/8 next-hop 2.1.1.3;
            route 65.0.0.0/8 next-hop 2.1.1.5;
        }
    }
}
[edit]
user@host# show security
policies {
    from-zone root-trust to-zone root-untrust {
        policy root-Trust_to_root-Untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
```

```
    }
    from-zone root-untrust to-zone root-trust {
        policy root-Untrust_to_root-Trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone root-untrust to-zone root-untrust {
        policy root-Untrust_to_root-Untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone root-trust to-zone root-trust {
        policy root-Trust_to_root-Trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
}
    zones {
        security-zone root-trust {
            host-inbound-traffic {
                system-services {
                    all;
                }
```

```
            protocols {
                all;
            }
        }
        interfaces {
            reth0.0;
        }
    }
    security-zone root-untrust {
        host-inbound-traffic {
            system-services {
                all;
            }
            protocols {
                all;
            }
        }
        interfaces {
            lt-0/0/0.1;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

User Logical System Configuration (User Logical System Administrator)

CLI Quick Configuration

To quickly configure user logical systems, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

Enter the following commands while logged in as the user logical system administrator for LSYS1:

```
set interfaces reth1 unit 0 family inet address 85.88.88.1/8
set interfaces reth2 unit 0 family inet address 75.77.77.1/8
set routing-instances vr11 instance-type virtual-router
set routing-instances vr11 interface lt-0/0/0.3
set routing-instances vr11 interface reth1.0
set routing-instances vr11 routing-options static route 65.0.0.0/8 next-hop 2.1.1.5
set routing-instances vr11 routing-options static route 95.0.0.0/8 next-hop 2.1.1.1
set routing-instances vr12 instance-type virtual-router
set routing-instances vr12 interface reth2.0
set routing-instances vr12 routing-options interface-routes rib-group inet vr11vr12v4
```

```
set routing-instances vr12 routing-options static route 85.0.0.0/8 next-table vr11.inet.0
set routing-instances vr12 routing-options static route 95.0.0.0/8 next-table vr11.inet.0
set routing-instances vr12 routing-options static route 65.0.0.0/8 next-table vr11.inet.0
set routing-instances vr12 routing-options static route 2.1.1.0/24 next-table vr11.inet.0
set routing-options rib-groups vr11vr12v4 import-rib vr11.inet.0
set routing-options rib-groups vr11vr12v4 import-rib vr12.inet.0
set security zones security-zone lsys1-trust host-inbound-traffic system-services all
set security zones security-zone lsys1-trust host-inbound-traffic protocols all
set security zones security-zone lsys1-trust interfaces reth1.0
set security zones security-zone lsys1-trust interfaces lt-0/0/0.3
set security zones security-zone lsys1-untrust host-inbound-traffic system-services all
set security zones security-zone lsys1-untrust host-inbound-traffic protocols all
set security zones security-zone lsys1-untrust interfaces reth2.0
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust match
    source-address any
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust match
    destination-address any
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust match
    application any
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust then permit
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust match
    source-address any
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust match
    destination-address any
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust match
    application any
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust then permit
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust match
    source-address any
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust match
    destination-address any
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust match
    application any
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust then
    permit
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust match source-address
    any
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust match
    destination-address any
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust match application
    any
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust then permit
```

Enter the following commands while logged in as the user logical system administrator for LSYS2:

```
set interfaces reth3 unit 0 family inet address 65.66.66.1/8
set routing-instances vr2 instance-type virtual-router
set routing-instances vr2 interface lt-0/0/0.5
set routing-instances vr2 interface reth3.0
set routing-instances vr2 routing-options static route 75.0.0.0/8 next-hop 2.1.1.3
set routing-instances vr2 routing-options static route 85.0.0.0/8 next-hop 2.1.1.3
set routing-instances vr2 routing-options static route 95.0.0.0/8 next-hop 2.1.1.1
set security zones security-zone lsys2-trust host-inbound-traffic system-services all
set security zones security-zone lsys2-trust host-inbound-traffic protocols all
set security zones security-zone lsys2-trust interfaces reth3.0
set security zones security-zone lsys2-untrust host-inbound-traffic system-services all
set security zones security-zone lsys2-untrust host-inbound-traffic protocols all
set security zones security-zone lsys2-untrust interfaces lt-0/0/0.5
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust match
    source-address any
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust match
    destination-address any
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust match
    application any
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust then permit
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust match
    source-address any
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust match
    destination-address any
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust match
    application any
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust then permit
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust match
    source-address any
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust match
    destination-address any
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust match
    application any
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust then
    permit
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust match source-address
    any
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust match
    destination-address any
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust match application
    any
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust then permit
```

Step-by-Step Procedure

NOTE: The user logical system administrator performs the following configuration while logged in to his or her user logical system. The master administrator can also configure a user logical system at the [**edit logical-systems *logical-system***] hierarchy level.

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure the LSYS1 user logical system:

1. Configure interfaces.

```
[edit interfaces]
lsys1-admin@host:LSYS1# set reth1 unit 0 family inet address 85.88.88.1/8
lsys1-admin@host:LSYS1# set reth2 unit 0 family inet address 75.77.77.1/8
```

2. Configure routing.

```
[edit routing-instances]
lsys1-admin@host:LSYS1# set vr11 instance-type virtual-router
lsys1-admin@host:LSYS1# set vr11 interface lt-0/0/0.3
lsys1-admin@host:LSYS1# set vr11 interface reth1.0
lsys1-admin@host:LSYS1# set vr11 routing-options static route 65.0.0.0/8 next-hop 2.1.1.5
lsys1-admin@host:LSYS1# set vr11 routing-options static route 95.0.0.0/8 next-hop 2.1.1.1
lsys1-admin@host:LSYS1# set vr12 instance-type virtual-router
lsys1-admin@host:LSYS1# set vr12 interface reth2.0
lsys1-admin@host:LSYS1# set vr12 routing-options interface-routes rib-group inet vr11vr12v4
lsys1-admin@host:LSYS1# set vr12 routing-options static route 85.0.0.0/8 next-table vr11.inet.0
lsys1-admin@host:LSYS1# set vr12 routing-options static route 95.0.0.0/8 next-table vr11.inet.0
lsys1-admin@host:LSYS1# set vr12 routing-options static route 65.0.0.0/8 next-table vr11.inet.0
lsys1-admin@host:LSYS1# set vr12 routing-options static route 2.1.1.0/24 next-table vr11.inet.0
```

```
[edit routing-options]
lsys1-admin@host:LSYS1# set rib-groups vr11vr12v4 import-rib vr11.inet.0
lsys1-admin@host:LSYS1# set rib-groups vr11vr12v4 import-rib vr12.inet.0
```

3. Configure zones and security policies.

```
[edit security zones]
lsys1-admin@host:LSYS1# set security-zone lsys1-trust host-inbound-traffic system-services all
lsys1-admin@host:LSYS1# set security-zone lsys1-trust host-inbound-traffic protocols all
```

```
lsys1-admin@host:LSYS1# set security-zone lsys1-trust interfaces reth1.0
lsys1-admin@host:LSYS1# set security-zone lsys1-trust interfaces lt-0/0/0.3
lsys1-admin@host:LSYS1# set security-zone lsys1-untrust host-inbound-traffic system-services all
lsys1-admin@host:LSYS1# set security-zone lsys1-untrust host-inbound-traffic protocols all
lsys1-admin@host:LSYS1# set security-zone lsys1-untrust interfaces reth2.0
```

```
[edit security policies from-zone lsys1-trust to-zone lsys1-untrust]
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust match application any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust then permit
```

```
[edit security policies from-zone lsys1-untrust to-zone lsys1-trust]
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust match application any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust then permit
```

```
[edit security policies from-zone lsys1-untrust to-zone lsys1-untrust]
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust match application any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust then permit
```

```
[edit security policies from-zone lsys1-trust to-zone lsys1-trust]
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust match application any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust then permit
```

Step-by-Step Procedure

To configure the LSYS2 user logical system:

1. Configure interfaces.

```
[edit interfaces]
lsys2-admin@host:LSYS2# set reth3 unit 0 family inet address 65.66.66.1/8
```

2. Configure routing.

```
[edit routing-instances]
lsys2-admin@host:LSYS2# set vr2 instance-type virtual-router
lsys2-admin@host:LSYS2# set vr2 interface lt-0/0/0.5
lsys2-admin@host:LSYS2# set vr2 interface reth3.0
lsys2-admin@host:LSYS2# set vr2 routing-options static route 75.0.0.0/8 next-hop 2.1.1.3
lsys2-admin@host:LSYS2# set vr2 routing-options static route 85.0.0.0/8 next-hop 2.1.1.3
lsys2-admin@host:LSYS2# set vr2 routing-options static route 95.0.0.0/8 next-hop 2.1.1.1
```

3. Configure zones and security policies.

```
[edit security zones]
lsys2-admin@host:LSYS2# set security-zone lsys2-trust host-inbound-traffic system-services all
lsys2-admin@host:LSYS2# set security-zone lsys2-trust host-inbound-traffic protocols all
lsys2-admin@host:LSYS2# set security-zone lsys2-trust interfaces reth3.0
lsys2-admin@host:LSYS2# set security zones security-zone lsys2-untrust host-inbound-traffic system-services
   all
lsys2-admin@host:LSYS2# set security-zone lsys2-untrust host-inbound-traffic protocols all
lsys2-admin@host:LSYS2# set security-zone lsys2-untrust interfaces lt-0/0/0.5
```

```
[edit security policies from-zone lsys2-trust to-zone lsys2-untrust]
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust match application any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust then permit
```

```
[edit security policies from-zone from-zone lsys2-untrust to-zone lsys2-trust]
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust match application any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust then permit
```

```
[edit security policies from-zone lsys2-untrust to-zone lsys2-untrust]
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust match application any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust then permit
```

```
[edit security policies from-zone lsys2-trust to-zone lsys2-trust]
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust match destination-address any
```

```
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust match application any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust then permit
```

Results

From configuration mode, confirm the configuration for LSYS1 by entering the **show interfaces**, **show routing-instances**, **show routing-options**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
lsys1-admin@host:LSYS1# show interfaces
interfaces {
    lt-0/0/0 {
        unit 3 {
            encapsulation ethernet;
            peer-unit 2;
            family inet {
                address 2.1.1.3/24;
            }
        }
    }
    reth1 {
        unit 0 {
            family inet {
                address 85.88.88.1/8;
            }
        }
    }
    reth2 {
        unit 0 {
            family inet {
                address 75.77.77.1/8;
            }
        }
    }
}
[edit]
lsys1-admin@host:LSYS1# show routing-instances
routing-instances {
    vr11 {
        instance-type virtual-router;
        interface lt-0/0/0.3;
        interface reth1.0;
        routing-options {
```

```
            static {
                route 65.0.0.0/8 next-hop 2.1.1.5;
                route 95.0.0.0/8 next-hop 2.1.1.1;
            }
        }
    }
    vr12 {
        instance-type virtual-router;
        interface reth2.0;
        routing-options {
            interface-routes {
                rib-group inet vr11vr12v4;
            }
            static {
                route 85.0.0.0/8 next-table vr11.inet.0;
                route 95.0.0.0/8 next-table vr11.inet.0;
                route 65.0.0.0/8 next-table vr11.inet.0;
                route 2.1.1.0/24 next-table vr11.inet.0;
            }
        }
    }
}
[edit]
lsys1-admin@host:LSYS1# show routing-options
rib-groups {
    vr11vr12v4 {
        import-rib [ vr11.inet.0 vr12.inet.0 ];
    }
}
[edit]
lsys1-admin@host:LSYS1# show security
security {
    policies {
        from-zone lsys1-trust to-zone lsys1-untrust {
            policy lsys1trust-to-lsys1untrust {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
                then {
                    permit;
                }
            }
```

```
    }
    from-zone lsys1-untrust to-zone lsys1-trust {
        policy lsys1untrust-to-lsys1trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone lsys1-untrust to-zone lsys1-untrust {
        policy lsys1untrust-to-lsys1untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone lsys1-trust to-zone lsys1-trust {
        policy lsys1trust-to-lsys1trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
}
zones {
    security-zone lsys1-trust {
        host-inbound-traffic {
            system-services {
                all;
            }
```

```
            protocols {
                all;
            }
        }
        interfaces {
            reth1.0;
            lt-0/0/0.3;
        }
    }
    security-zone lsys1-untrust {
        host-inbound-traffic {
            system-services {
                all;
            }
            protocols {
                all;
            }
        }
        interfaces {
            reth2.0;
        }
    }
  }
}
```

From configuration mode, confirm the configuration for LSYS2 by entering the **show interfaces**, **show routing-instances**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
lsys2-admin@host:LSYS2# show interfaces
[edit]
  interfaces {
  lt-0/0/0 {
      unit 5 {
          encapsulation ethernet;
          peer-unit 4;
          family inet {
              address 2.1.1.5/24;
          }
      }
  }
  reth3 {
      unit 0 {
          family inet {
```

```
            address 65.66.66.1/8;
          }
        }
    }
}
[edit]
lsys2-admin@host:LSYS2# show routing-instances
routing-instances {
    vr2 {
        instance-type virtual-router;
        interface lt-0/0/0.5;
        interface reth3.0;
        routing-options {
            static {
                route 75.0.0.0/8 next-hop 2.1.1.3;
                route 85.0.0.0/8 next-hop 2.1.1.3;
                route 95.0.0.0/8 next-hop 2.1.1.1;
            }
        }
    }
}
[edit]
lsys2-admin@host:LSYS2# show security
security {
    policies {
        from-zone lsys2-trust to-zone lsys2-untrust {
            policy lsys2trust-to-lsys2untrust {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
                then {
                    permit;
                }
            }
        }
        from-zone lsys2-untrust to-zone lsys2-trust {
            policy lsys2untrust-to-lsys2trust {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
```

```
            then {
                permit;
            }
        }
    }
    from-zone lsys2-untrust to-zone lsys2-untrust {
        policy lsys2untrust-to-lsys2untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone lsys2-trust to-zone lsys2-trust {
        policy lsys2trust-to-lsys2trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
}
zones {
    security-zone lsys2-trust {
        host-inbound-traffic {
            system-services {
                all;
            }
            protocols {
                all;
            }
        }
        interfaces {
            reth3.0;
        }
    }
```

```
        security-zone lsys2-untrust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.5;
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

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Confirm that the configuration is working properly.

Verifying Chassis Cluster Status

Purpose

Verify the chassis cluster status, failover status, and redundancy group information.

Action

From operational mode, enter the **show chassis cluster status** command.

```
{primary:node0}
```

show chassis cluster status

```
Cluster ID: 1
Node                  Priority          Status    Preempt  Manual failover

Redundancy group: 0 , Failover count: 1
    node0                   200         primary        no       no
    node1                   100         secondary      no       no

Redundancy group: 1 , Failover count: 1
    node0                   200         primary        no       no
    node1                   100         secondary      no       no
```

Troubleshooting Chassis Cluster with Logs

Purpose

Identify any chassis cluster issues by looking at the logs on both nodes.

Action

From operational mode, enter these **show log** commands.

```
user@host> show log jsrpd

user@host> show log chassisd

user@host> show log messages

user@host> show log dcd

user@host> show traceoptions
```

Verifying Logical System Licenses

Purpose

Verify information about logical system licenses.

Action

From operational mode, enter the **show system license status logical-system all** command.

```
{primary:node0}

user@host> show system license status logical-system all
```

```
node0:
--------------------------------------------------------------------------
Logical system license status:

logical system name                license status
root-logical-system                enabled
LSYS0                              enabled
LSYS1                              enabled
LSYS2                              enabled
```

Verifying Logical System License Usage

Purpose

Verify information about logical system license usage.

> **NOTE:** The actual number of licenses used is only displayed on the primary node.

Action

From operational mode, enter the **show system license** command.

```
{primary:node0}
```

```
user@host> show system license
```

```
License usage:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  logical-system                        4           25           0    permanent

Licenses installed:
  License identifier: JUNOS305013
  License version: 2
  Valid for device: JN110B54BAGB
  Features:
    logical-system-25 - Logical System Capacity
      permanent
```

Verifying Intra-Logical System Traffic on a Logical System

Purpose

Verify information about currently active security sessions within a logical system.

Action

From operational mode, enter the **show security flow session logical-system LSYS1** command.

```
{primary:node0}
```

```
user@host> show security flow session logical-system LSYS1
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:

Session ID: 90000114, Policy name: lsys1trust-to-lsys1untrust/8, State: Active,
Timeout: 1782, Valid
  In: 85.88.88.2/34538 --> 75.77.77.2/23;tcp, If: reth1.0, Pkts: 33, Bytes: 1881
  Out: 75.77.77.2/23 --> 85.88.88.2/34538;tcp, If: reth2.0, Pkts: 28, Bytes: 2329
Total sessions: 1

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:

Session ID: 90000001, Policy name: lsys1trust-to-lsys1untrust/8, State: Backup,
Timeout: 14388, Valid
  In: 85.88.88.2/34538 --> 75.77.77.2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
  Out: 75.77.77.2/23 --> 85.88.88.2/34538;tcp, If: reth2.0, Pkts: 0, Bytes: 0
Total sessions: 1
```

Verifying Intra-Logical System Traffic Within All Logical Systems

Purpose

Verify information about currently active security sessions on all logical systems.

Action

From operational mode, enter the **show security flow session logical-system all** command.

```
{primary:node0}
```

```
user@host> show security flow session logical-system all
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:

Session ID: 90000114, Policy name: lsys1trust-to-lsys1untrust/8, State: Active,
Timeout: 1776, Valid
Logical system: LSYS1
  In: 85.88.88.2/34538 --> 75.77.77.2/23;tcp, If: reth1.0, Pkts: 33, Bytes: 1881
  Out: 75.77.77.2/23 --> 85.88.88.2/34538;tcp, If: reth2.0, Pkts: 28, Bytes: 2329
Total sessions: 1

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:

Session ID: 90000001, Policy name: lsys1trust-to-lsys1untrust/8, State: Backup,
Timeout: 14382, Valid
Logical system: LSYS1
  In: 85.88.88.2/34538 --> 75.77.77.2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
```

```
  Out: 75.77.77.2/23 --> 85.88.88.2/34538;tcp, If: reth2.0, Pkts: 0, Bytes: 0
Total sessions: 1
```

Verifying Traffic Between User Logical Systems

Purpose

Verify information about currently active security sessions between logical systems.

Action

From operational mode, enter the **show security flow session logical-system *logical-system-name*** command.

```
{primary:node0}
```

```
user@host> show security flow session logical-system LSYS1
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:

Session ID: 10000094, Policy name: root-Untrust_to_root-Trust/5, State: Active,
Timeout: 1768, Valid
  In: 75.77.77.2/34590 --> 95.99.99.2/23;tcp, If: lt-0/0/0.1, Pkts: 23, Bytes:
1351
  Out: 95.99.99.2/23 --> 75.77.77.2/34590;tcp, If: reth0.0, Pkts: 22, Bytes: 1880
Total sessions: 1

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:

Session ID: 10000002, Policy name: root-Untrust_to_root-Trust/5, State: Backup,
Timeout: 14384, Valid
  In: 75.77.77.2/34590 --> 95.99.99.2/23;tcp, If: lt-0/0/0.1, Pkts: 0, Bytes: 0
  Out: 95.99.99.2/23 --> 75.77.77.2/34590;tcp, If: reth0.0, Pkts: 0, Bytes: 0
```

```
Total sessions: 1

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

```
{primary:node0}
```

```
user@host> show security flow session logical-system LSYS2
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000089, Policy name: lsys2untrust-to-lsys2trust/13, State: Active,
Timeout: 1790, Valid
  In: 85.88.88.2/34539 --> 65.66.66.2/23;tcp, If: lt-0/0/0.5, Pkts: 40, Bytes:
2252
  Out: 65.66.66.2/23 --> 85.88.88.2/34539;tcp, If: reth3.0, Pkts: 32, Bytes: 2114
Total sessions: 1

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000002, Policy name: lsys2untrust-to-lsys2trust/13, State: Backup,
Timeout: 14398, Valid
  In: 85.88.88.2/34539 --> 65.66.66.2/23;tcp, If: lt-0/0/0.5, Pkts: 0, Bytes: 0
  Out: 65.66.66.2/23 --> 85.88.88.2/34539;tcp, If: reth3.0, Pkts: 0, Bytes: 0
```

```
Total sessions: 1

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

```
{primary:node0}
```

```
user@host> show security flow session logical-system all
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000088, Policy name: lsys1trust-to-lsys1trust/11, State: Active,
Timeout: 1782, Valid
Logical system: LSYS1
  In: 85.88.88.2/34539 --> 65.66.66.2/23;tcp, If: reth1.0, Pkts: 40, Bytes: 2252
  Out: 65.66.66.2/23 --> 85.88.88.2/34539;tcp, If: lt-0/0/0.3, Pkts: 32, Bytes:
2114

Session ID: 80000089, Policy name: lsys2untrust-to-lsys2trust/13, State: Active,
Timeout: 1782, Valid
Logical system: LSYS2
  In: 85.88.88.2/34539 --> 65.66.66.2/23;tcp, If: lt-0/0/0.5, Pkts: 40, Bytes:
2252
  Out: 65.66.66.2/23 --> 85.88.88.2/34539;tcp, If: reth3.0, Pkts: 32, Bytes: 2114
Total sessions: 2

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:
```

```
Session ID: 80000001, Policy name: lsys1trust-to-lsys1trust/11, State: Backup,
Timeout: 14382, Valid
Logical system: LSYS1
  In: 85.88.88.2/34539 --> 65.66.66.2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
  Out: 65.66.66.2/23 --> 85.88.88.2/34539;tcp, If: lt-0/0/0.3, Pkts: 0, Bytes: 0

Session ID: 80000002, Policy name: lsys2untrust-to-lsys2trust/13, State: Backup,
Timeout: 14390, Valid
Logical system: LSYS2
  In: 85.88.88.2/34539 --> 65.66.66.2/23;tcp, If: lt-0/0/0.5, Pkts: 0, Bytes: 0
  Out: 65.66.66.2/23 --> 85.88.88.2/34539;tcp, If: reth3.0, Pkts: 0, Bytes: 0
Total sessions: 2

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

SEE ALSO

Understanding Logical Systems in the Context of Chassis Cluster | 382

Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (IPv6) (Master Administrators Only) | 424

Example: Configuring an Active/Passive Chassis Cluster on SRX5800 Devices

Chassis Cluster Overview

Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (IPv6) (Master Administrators Only)

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This example shows how to configure logical systems in a basic active/passive chassis cluster with IPv6 addresses.

> **NOTE:** The master administrator configures the chassis cluster and creates logical systems (including an optional interconnect logical system), administrators, and security profiles. Either the master administrator or the user logical system administrator configures a user logical system. The configuration is synchronized between nodes in the cluster.

Requirements

Before you begin:

- Obtain two SRX Series Services Gateways with identical hardware configurations. See *Example: Configuring an Active/Passive Chassis Cluster on SRX5800 Devices*. This chassis cluster deployment scenario includes the configuration of the SRX Series device for connections to an MX240 edge router and an EX8208 Ethernet Switch.
- Physically connect the two devices (back-to-back for the fabric and control ports) and ensure that they are the same models. You can configure both the fabric and control ports on the SRX5000 line. For the SRX1400 or SRX1500 devices or the SRX3000 line, you can configure the fabric ports only. (Platform support depends on the Junos OS release in your installation.)
- Set the chassis cluster ID and node ID on each device and reboot the devices to enable clustering. See *Example: Setting the Node ID and Cluster ID for Security Devices in a Chassis Cluster* .

> **NOTE:** For this example, chassis cluster and logical system configuration is performed on the primary (node 0) device at the root level by the master administrator. Log in to the device as the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

> **NOTE:** When you use SRX Series devices running logical systems in a chassis cluster, you must purchase and install the same number of logical system licenses for each node in the chassis cluster. Logical system licenses pertain to a single chassis or node within a chassis cluster and not to the cluster collectively.

Overview

In this example, the basic active/passive chassis cluster consists of two devices:

- One device actively provides logical systems, along with maintaining control of the chassis cluster.
- The other device passively maintains its state for cluster failover capabilities should the active device become inactive.

> **NOTE:** Logical systems in an active/active chassis cluster are configured in a similar manner as for logical systems in an active/passive chassis cluster. For active/active chassis clusters, there can be multiple redundancy groups that can be primary on different nodes.

The master administrator configures the following logical systems on the primary device (node 0):

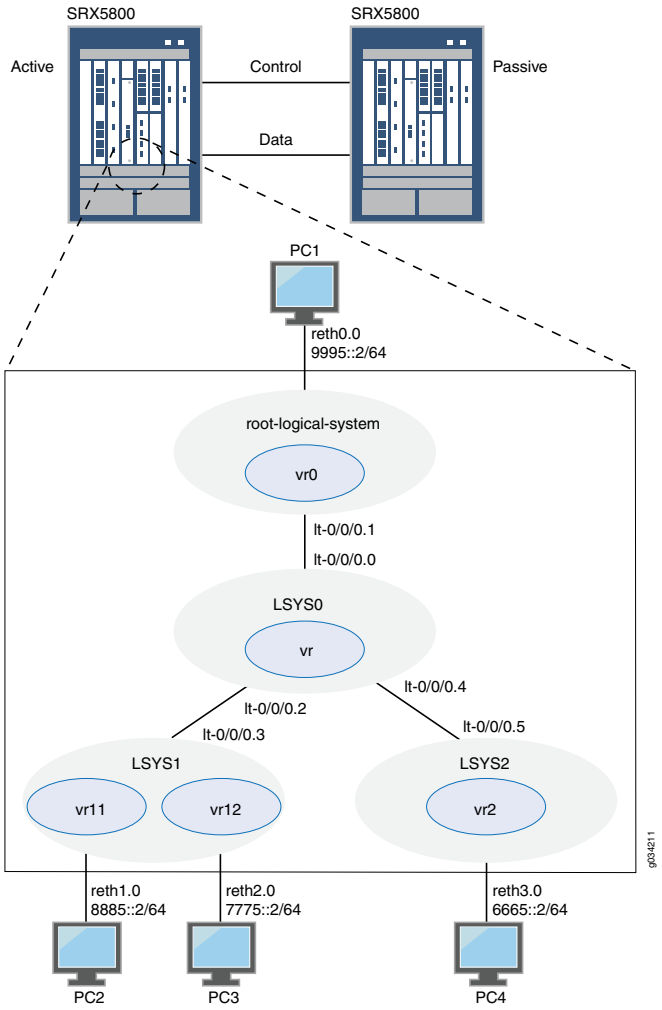
- Master logical system—The master administrator configures a security profile to provision portions of the system's security resources to the master logical system and configures the resources of the master logical system.
- User logical systems LSYS1 and LSYS2 and their administrators—The master administrator also configures security profiles to provision portions of the system's security resources to user logical systems. The user logical system administrator can then configure interfaces, routing, and security resources allocated to his or her logical system.
- Interconnect logical system LSYS0 that connects logical systems on the device—The master administrator configures logical tunnel interfaces between the interconnect logical system and each logical system. These peer interfaces effectively allow for the establishment of tunnels.

> **NOTE:** This example does not describe configuring features such as NAT, IDP, or VPNs for a logical system. See "SRX Series Logical Systems Master Administrator Configuration Tasks Overview" on page 47 and "User Logical Systems Configuration Overview" on page 71 for more information about features that can be configured for logical systems.
>
> If you are performing proxy ARP in a chassis cluster configuration, you must apply the proxy ARP configuration to the reth interfaces rather than the member interfaces because the reth interfaces contain the logical configurations. See *Configuring Proxy ARP for NAT (CLI Procedure)*.

Topology

Figure 11 on page 427 shows the topology used in this example.

Figure 11: Logical Systems in a Chassis Cluster (IPv6)



Configuration

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- Logical System Configuration with IPv6 Addresses (Master Administrator) | **433**
- User Logical System Configuration with IPv6 (User Logical System Administrator) | **445**

Chassis Cluster Configuration with IPv6 Addresses (Master Administrator)

CLI Quick Configuration

To quickly create logical systems and user logical system administrators and configure the master and interconnect logical systems, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

On {primary:node0}

```
set chassis cluster control-ports fpc 0 port 0
set chassis cluster control-ports fpc 6 port 0
set interfaces fab0 fabric-options member-interfaces ge-1/1/0
set interfaces fab1 fabric-options member-interfaces ge-7/1/0
set groups node0 system host-name SRX5800-1
set groups node0 interfaces fxp0 unit 0 family inet address 10.157.90.24/9
set groups node0 system backup-router 10.157.64.1 destination 0.0.0.0/0
set groups node1 system host-name SRX5800-2
set groups node1 interfaces fxp0 unit 0 family inet address 10.157.90.23/19
set groups node1 system backup-router 10.157.64.1 destination 0.0.0.0/0
set apply-groups “${node}”
set chassis cluster reth-count 5
set chassis cluster redundancy-group 0 node 0 priority 200
set chassis cluster redundancy-group 0 node 1 priority 100
set chassis cluster redundancy-group 1 node 0 priority 200
set chassis cluster redundancy-group 1 node 1 priority 100
set interfaces ge-1/0/0 gigether-options redundant-parent reth0
set interfaces ge-1/0/1 gigether-options redundant-parent reth1
set interfaces ge-1/0/2 gigether-options redundant-parent reth2
set interfaces ge-1/0/3 gigether-options redundant-parent reth3
set interfaces ge-7/0/0 gigether-options redundant-parent reth0
set interfaces ge-7/0/1 gigether-options redundant-parent reth1
set interfaces ge-7/0/2 gigether-options redundant-parent reth2
set interfaces ge-7/0/3 gigether-options redundant-parent reth3
set interfaces reth0 redundant-ether-options redundancy-group 1
set interfaces reth0 unit 0 family inet6 address 9995::1/64
set interfaces reth1 redundant-ether-options redundancy-group 1
set interfaces reth2 redundant-ether-options redundancy-group 1
set interfaces reth3 redundant-ether-options redundancy-group 1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a chassis cluster:

> **NOTE:** Perform the following steps on the primary device (node 0). They are automatically copied over to the secondary device (node 1) when you execute a **commit** command.

1. Configure control ports for the clusters.

```
[edit chassis cluster]
user@host# set control-ports fpc 0 port 0
user@host# set control-ports fpc 6 port 0
```

2. Configure the fabric (data) ports of the cluster that are used to pass RTOs in active/passive mode.

```
[edit interfaces]
user@host# set fab0 fabric-options member-interfaces ge-1/1/0
user@host# set fab1 fabric-options member-interfaces ge-7/1/0
```

3. Assign some elements of the configuration to a specific member. Configure out-of-band management on the fxp0 interface of the SRX Services Gateway using separate IP addresses for the individual control planes of the cluster.

```
[edit]
user@host# set groups node0 system host-name SRX5800-1
user@host# set groups node0 interfaces fxp0 unit 0 family inet address 10.157.90.24/9
user@host# set groups node0 system backup-router 10.157.64.1 destination 0.0.0.0/0
user@host# set groups node1 system host-name SRX5800-2
user@host# set groups node1 interfaces fxp0 unit 0 family inet address 10.157.90.23/19
user@host# set groups node1 system backup-router 10.157.64.1 destination 0.0.0.0/0
user@host# set apply-groups “${node}”
```

4. Configure redundancy groups for chassis clustering.

```
[edit chassis cluster]
user@host# set reth-count 5
user@host# set redundancy-group 0 node 0 priority 200
user@host# set redundancy-group 0 node 1 priority 100
```

```
user@host# set redundancy-group 1 node 0 priority 200
user@host# set redundancy-group 1 node 1 priority 100
```

5. Configure the data interfaces on the platform so that in the event of a data plane failover, the other chassis cluster member can take over the connection seamlessly.

```
[edit interfaces]
user@host# set ge-1/0/0 gigether-options redundant-parent reth0
user@host# set ge-1/0/1 gigether-options redundant-parent reth1
user@host# set ge-1/0/2 gigether-options redundant-parent reth2
user@host# set ge-1/0/3 gigether-options redundant-parent reth3
user@host# set ge-7/0/0 gigether-options redundant-parent reth0
user@host# set ge-7/0/1 gigether-options redundant-parent reth1
user@host# set ge-7/0/2 gigether-options redundant-parent reth2
user@host# set ge-7/0/3 gigether-options redundant-parent reth3
user@host# set reth0 redundant-ether-options redundancy-group 1
user@host# set reth0 unit 0 family inet6 address 9995::1/64
user@host# set reth1 redundant-ether-options redundancy-group 1
user@host# set reth2 redundant-ether-options redundancy-group 1
user@host# set reth3 redundant-ether-options redundancy-group 1
```

Results

From operational mode, confirm your configuration by entering the **show configuration** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

`user@host>` **show configuration**

```
version ;
groups {
    node0 {
        system {
            host-name SRX58001;
            backup-router 10.157.64.1 destination 0.0.0.0/0;

        }
        interfaces {
            fxp0 {
                unit 0 {
                    family inet {
                        address 10.157.90.24/9;
```

```
                    }
                }
            }
        }
    }
    node1 {
        system {
            host-name SRX58002;
            backup-router 10.157.64.1 destination 0.0.0.0/0;

        }
        interfaces {
            fxp0 {
                unit 0 {
                    family inet {
                        address 10.157.90.23/19;
                    }
                }
            }
        }
    }
}
apply-groups "${node}";
chassis {
    cluster {
        control-link-recovery;
        reth-count 5;
        control-ports {
            fpc 0 port 0;
            fpc 6 port 0;
        }
        redundancy-group 0 {
            node 0 priority 200;
            node 1 priority 100;
        }
        redundancy-group 1 {
            node 0 priority 200;
            node 1 priority 100;
        }
    }
}
interfaces {
    ge-1/0/0 {
        gigether–options {
```

```
            redundant-parent reth0;
        }
    }
    ge-1/0/1 {
        gigether-options {
            redundant-parent reth1;
        }
    }
    ge-1/0/2 {
        gigether-options {
            redundant-parent reth2;
        }
    }
    ge-1/0/3 {
        gigether-options {
            redundant-parent reth3;
        }
    }
    ge-7/0/0 {
        gigether-options {
            redundant-parent reth0;
        }
    }
    ge-7/0/1 {
        gigether-options {
            redundant-parent reth1;
        }
    }
    ge-7/0/2 {
        gigether-options {
            redundant-parent reth2;
        }
    }
    ge-7/0/3 {
        gigether-options {
            redundant-parent reth3;
        }
    }
    fab0 {
        fabric-options {
            member-interfaces {
                ge-1/1/0;
            }
        }
```

```
    }
    fab1 {
        fabric–options {
            member–interfaces {
                ge-7/1/0;
            }
        }
    }
    reth0 {
        redundant–ether–options {
            redundancy–group 1;
        }
        unit 0 {
            family inet6 {
                address 9995::1/64;
            }
        }
    }
    reth1 {
        redundant–ether–options {
            redundancy–group 1;
        }
    }
    reth2 {
        redundant–ether–options {
            redundancy–group 1;
        }
    }
    reth3 {
        redundant–ether–options {
            redundancy–group 1;
        }
    }
}
```

Logical System Configuration with IPv6 Addresses (Master Administrator)

CLI Quick Configuration

To quickly create logical systems and user logical system administrators and configure the master and interconnect logical systems, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

NOTE: You are prompted to enter and then reenter plain-text passwords.

On {primary:node0}

```
set logical-systems LSYS1
set logical-systems LSYS2
set logical-systems LSYS0
set system login class lsys1 logical-system LSYS1
set system login class lsys1 permissions all
set system login user lsys1admin full-name lsys1-admin
set system login user lsys1admin class lsys1
set user lsys1admin authentication plain-text-password
set system login class lsys2 logical-system LSYS2
set system login class lsys2 permissions all
set system login user lsys2admin full-name lsys2-admin
set system login user lsys2admin class lsys2
set system login user lsys2admin authentication plain-text-password
set system security-profile SP-root policy maximum 200
set system security-profile SP-root policy reserved 100
set system security-profile SP-root zone maximum 200
set system security-profile SP-root zone reserved 100
set system security-profile SP-root flow-session maximum 200
set system security-profile SP-root flow-session reserved 100
set system security-profile SP-root root-logical-system
set system security-profile SP0 logical-system LSYS0
set system security-profile SP1 policy maximum 100
set system security-profile SP1 policy reserved 50
set system security-profile SP1 zone maximum 100
set system security-profile SP1 zone reserved 50
set system security-profile SP1 flow-session maximum 100
set system security-profile SP1 flow-session reserved 50
set system security-profile SP1 logical-system LSYS1
set system security-profile SP2 policy maximum 100
set system security-profile SP2 policy reserved 50
set system security-profile SP2 zone maximum 100
set system security-profile SP2 zone reserved 50
set system security-profile SP2 flow-session maximum 100
set system security-profile SP2 flow-session reserved 50
set system security-profile SP2 logical-system LSYS2
set interfaces lt-0/0/0 unit 1 encapsulation ethernet
set interfaces lt-0/0/0 unit 1 peer-unit 0
set interfaces lt-0/0/0 unit 1 family inet6 address 2111::1/64
```

```
set routing-instances vr0 instance-type virtual-router
set routing-instances vr0 interface lt-0/0/0.1
set routing-instances vr0 interface reth0.0
set routing-instances vr0 routing-options rib vr0.inet6.0 static route 8885::/64 next-hop 2111::3
set routing-instances vr0 routing-options rib vr0.inet6.0 static route 7775::/64 next-hop 2111::3
set routing-instances vr0 routing-options rib vr0.inet6.0 static route 6665::/64 next-hop 2111::5
set security zones security-zone root-trust host-inbound-traffic system-services all
set security zones security-zone root-trust host-inbound-traffic protocols all
set security zones security-zone root-trust interfaces reth0.0
set security zones security-zone root-untrust host-inbound-traffic system-services all
set security zones security-zone root-untrust host-inbound-traffic protocols all
set security zones security-zone root-untrust interfaces lt-0/0/0.1
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust match
    source-address any
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust match
    destination-address any
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust match
    application any
set security policies from-zone root-trust to-zone root-untrust policy root-Trust_to_root-Untrust then permit
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust match
    source-address any
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust match
    destination-address any
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust match
    application any
set security policies from-zone root-untrust to-zone root-trust policy root-Untrust_to_root-Trust then permit
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust match
    source-address any
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust match
    destination-address any
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust match
    application any
set security policies from-zone root-untrust to-zone root-untrust policy root-Untrust_to_root-Untrust then
    permit
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust match source-address
    any
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust match
    destination-address any
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust match application
    any
set security policies from-zone root-trust to-zone root-trust policy root-Trust_to_root-Trust then permit
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 0 peer-unit 1
set logical-systems LSYS0 interfaces lt-0/0/0 unit 2 encapsulation ethernet-vpls
```

```
set logical-systems LSYS0 interfaces lt-0/0/0 unit 2 peer-unit 3
set logical-systems LSYS0 interfaces lt-0/0/0 unit 4 encapsulation ethernet-vpls
set logical-systems LSYS0 interfaces lt-0/0/0 unit 4 peer-unit 5
set logical-systems LSYS0 routing-instances vr instance-type vpls
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.0
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.2
set logical-systems LSYS0 routing-instances vr interface lt-0/0/0.4
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 encapsulation ethernet
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 peer-unit 2
set logical-systems LSYS1 interfaces lt-0/0/0 unit 3 family inet6 address 2111::3/64
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 encapsulation ethernet
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 peer-unit 4
set logical-systems LSYS2 interfaces lt-0/0/0 unit 5 family inet6 address 2111::5/64
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To create logical systems and user logical system administrators and configure the master and interconnect logical systems:

1. Create the interconnect and user logical systems.

```
[edit logical-systems]
user@host# set LSYS0
user@host# set LSYS1
user@host# set LSYS2
```

2. Configure user logical system administrators.

   a. Configure the user logical system administrator for LSYS1.

```
[edit system login]
user@host# set class lsys1 logical-system LSYS1
user@host# set class lsys1 permissions all
user@host# set user lsys1admin full-name lsys1-admin
user@host# set user lsys1admin class lsys1
user@host# set user lsys1admin authentication plain-text-password
```

   b. Configure the user logical system administrator for LSYS2.

```
[edit system login]
```

```
user@host# set class lsys2 logical-system LSYS2
user@host# set class lsys2 permissions all
user@host# set user lsys2admin full-name lsys2-admin
user@host# set user lsys2admin class lsys2
user@host# set user lsys2admin authentication plain-text-password
```

3. Configure security profiles and assign them to logical systems.

   a. Configure a security profile and assign it to the root logical system.

```
[edit system security-profile]
user@host# set SP-root policy maximum 200
user@host# set SP-root policy reserved 100
user@host# set SP-root zone maximum 200
user@host# set SP-root zone reserved 100
user@host# set SP-root flow-session maximum 200
user@host# set SP-root flow-session reserved 100
user@host# set SP-root root-logical-system
```

   b. Assign a dummy security profile containing no resources to the interconnect logical system LSYS0.

```
[edit system security-profile]
user@host# set SP0 logical-system LSYS0
```

   c. Configure a security profile and assign it to LSYS1.

```
[edit system security-profile]
user@host# set SP1 policy maximum 100
user@host# set SP1 policy reserved 50
user@host# set SP1 zone maximum 100
user@host# set SP1 zone reserved 50
user@host# set SP1 flow-session maximum 100
user@host# set SP1 flow-session reserved 50
user@host# set SP1 logical-system LSYS1
```

   d. Configure a security profile and assign it to LSYS2.

```
[edit system security-profile]
user@host# set SP2 policy maximum 100
user@host# set SP2 policy reserved 50
```

```
user@host# set SP2 zone maximum 100
user@host# set SP2 zone reserved 50
user@host# set SP2 flow-session maximum 100
user@host# set SP2 flow-session reserved 50
user@host# set SP2 logical-system LSYS2
```

4. Configure the master logical system.

   a. Configure logical tunnel interfaces.

```
[edit interfaces]
user@host# set lt-0/0/0 unit 1 encapsulation ethernet
user@host# set lt-0/0/0 unit 1 peer-unit 0
user@host# set lt-0/0/0 unit 1 family inet6 address 2111::1/64
```

   b. Configure a routing instance.

```
[edit routing-instances]
user@host# set vr0 instance-type virtual-router
user@host# set vr0 interface lt-0/0/0.1
user@host# set vr0 interface reth0.0
user@host# set vr0 routing-options rib vr0.inet6.0 static route 8885::/64 next-hop 2111::3
user@host# set vr0 routing-options rib vr0.inet6.0 static route 7775::/64 next-hop 2111::3
user@host# set vr0 routing-options rib vr0.inet6.0 static route 6665::/64 next-hop 2111::5
```

   c. Configure zones.

```
[edit security zones]
user@host# set security-zone root-trust host-inbound-traffic system-services all
user@host# set security-zone root-trust host-inbound-traffic protocols all
user@host# set security-zone root-trust interfaces reth0.0
user@host# set security-zone root-untrust host-inbound-traffic system-services all
user@host# set security-zone root-untrust host-inbound-traffic protocols all
user@host# set security-zone root-untrust interfaces lt-0/0/0.1
```

   d. Configure security policies.

```
[edit security policies from-zone root-trust to-zone root-untrust]
user@host# set policy root-Trust_to_root-Untrust match source-address any
user@host# set policy root-Trust_to_root-Untrust match destination-address any
```

```
user@host# set policy root-Trust_to_root-Untrust match application any
user@host# set policy root-Trust_to_root-Untrust then permit
```

```
[edit security policies from-zone root-untrust to-zone root-trust]
user@host# set policy root-Untrust_to_root-Trust match source-address any
user@host# set policy root-Untrust_to_root-Trust match destination-address any
user@host# set policy root-Untrust_to_root-Trust match application any
user@host# set policy root-Untrust_to_root-Trust then permit
```

```
[edit security policies from-zone root-untrust to-zone root-untrust]
user@host# set policy root-Untrust_to_root-Untrust match source-address any
user@host# set policy root-Untrust_to_root-Untrust match destination-address any
user@host# set policy root-Untrust_to_root-Untrust match application any
user@host# set policy root-Untrust_to_root-Untrust then permit
```

```
[edit security policies from-zone root-trust to-zone root-trust]
user@host# set policy root-Trust_to_root-Trust match source-address any
user@host# set policy root-Trust_to_root-Trust match destination-address any
user@host# set policy root-Trust_to_root-Trust match application any
user@host# set policy root-Trust_to_root-Trust then permit
```

5. Configure the interconnect logical system.

   a. Configure logical tunnel interfaces.

```
[edit logical-systems LSYS0 interfaces]
user@host# set lt-0/0/0 unit 0 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 0 peer-unit 1
user@host# set lt-0/0/0 unit 2 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 2 peer-unit 3
user@host# set lt-0/0/0 unit 4 encapsulation ethernet-vpls
user@host# set lt-0/0/0 unit 4 peer-unit 5
```

   b. Configure the VPLS routing instance.

```
[edit logical-systems LSYS0 routing-instances]
user@host# set vr instance-type vpls
user@host# set vr interface lt-0/0/0.0
user@host# set vr interface lt-0/0/0.2
```

```
user@host# set vr interface lt-0/0/0.4
```

6. Configure logical tunnel interfaces for the user logical systems.

   a. Configure logical tunnel interfaces for LSYS1.

```
[edit logical-systems LSYS1 interfaces ]
user@host# set lt-0/0/0 unit 3 encapsulation ethernet
user@host# set lt-0/0/0 unit 3 peer-unit 2
user@host# set lt-0/0/0 unit 3 family inet6 address 2111::3/64
```

   b. Configure logical tunnel interfaces for LSYS2.

```
[edit logical-systems LSYS2 interfaces ]
user@host# set lt-0/0/0 unit 5 encapsulation ethernet
user@host# set lt-0/0/0 unit 5 peer-unit 4
user@host# set lt-0/0/0 unit 5 family inet6 address 2111::5/64
```

Results

From configuration mode, confirm the configuration for LSYS0 by entering the **show logical-systems LSYS0** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS0
interfaces {
    lt-0/0/0 {
        unit 0 {
            encapsulation ethernet-vpls;
            peer-unit 1;
        }
        unit 2 {
            encapsulation ethernet-vpls;
            peer-unit 3;
        }
        unit 4 {
            encapsulation ethernet-vpls;
            peer-unit 5;
        }
    }
```

```
}
    routing-instances {
        vr {
            instance-type vpls;
            interface lt-0/0/0.0;
            interface lt-0/0/0.2;
            interface lt-0/0/0.4;
        }
    }
```

From configuration mode, confirm the configuration for the master logical system by entering the **show interfaces**, **show routing-instances**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show interfaces
lt-0/0/0 {
    unit 1 {
        encapsulation ethernet;
        peer-unit 0;
        family inet6 {
            address 2111::1/64;
        }
    }
}
    ge-1/0/0 {
        gigether-options {
            redundant-parent reth0;
        }
    }
    ge-1/0/1 {
        gigether-options {
            redundant-parent reth1;
        }
    }
    ge-1/0/2 {
        gigether-options {
            redundant-parent reth2;
        }
    }
    ge-1/0/3 {
        gigether-options {
            redundant-parent reth3;
        }
```

```
}
ge-7/0/0 {
    gigether-options {
        redundant-parent reth0;
    }
}
ge-7/0/1 {
    gigether-options {
        redundant-parent reth1;
    }
}
ge-7/0/2 {
    gigether-options {
        redundant-parent reth2;
    }
}
ge-7/0/3 {
    gigether-options {
        redundant-parent reth3;
    }
}
fab0 {
    fabric-options {
        member-interfaces {
            ge-1/1/0;
        }
    }
}
fab1 {
    fabric-options {
        member-interfaces {
            ge-7/1/0;
        }
    }
}
reth0 {
    redundant-ether-options {
        redundancy-group 1;
    }
    unit 0 {
        family inet6 {
            address 9995::1/64;
        }
    }
```

```
    }
    reth1 {
        redundant-ether-options {
            redundancy-group 1;
        }
    }
    reth2 {
        redundant-ether-options {
            redundancy-group 1;
        }
    }
    reth3 {
        redundant-ether-options {
            redundancy-group 1;
        }
    }
[edit]
user@host# show routing-instances
vr0 {
    instance-type virtual-router;
    interface lt-0/0/0.1;
    interface reth0.0;
    routing-options {
        rib vr0.inet6.0 {
            static {
                route 8885::/64 next-hop 2111::3;
                route 7775::/64 next-hop 2111::3;
                route 6665::/64 next-hop 2111::5;
            }
        }
    }
}
[edit]
user@host# show security
policies {
    from-zone root-trust to-zone root-untrust {
        policy root-Trust_to_root-Untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
```

```
            }
        }
    }
    from-zone root-untrust to-zone root-trust {
        policy root-Untrust_to_root-Trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone root-untrust to-zone root-untrust {
        policy root-Untrust_to_root-Untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone root-trust to-zone root-trust {
        policy root-Trust_to_root-Trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
}
    zones {
        security-zone root-trust {
            host-inbound-traffic {
                system-services {
```

```
            all;
        }
        protocols {
            all;
        }
    }
    interfaces {
        reth0.0;
    }
}
security-zone root-untrust {
    host-inbound-traffic {
        system-services {
            all;
        }
        protocols {
            all;
        }
    }
    interfaces {
        lt-0/0/0.1;
    }
}
}
```

If you are done configuring the device, enter **commit** from configuration mode.

User Logical System Configuration with IPv6 (User Logical System Administrator)

CLI Quick Configuration

To quickly configure user logical systems, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

Enter the following commands while logged in as the user logical system administrator for LSYS1:

```
set interfaces reth1 unit 0 family inet6 address 8885::1/64
set interfaces reth2 unit 0 family inet6 address 7775::1/64
set routing-instances vr11 instance-type virtual-router
set routing-instances vr11 interface lt-0/0/0.3
set routing-instances vr11 interface reth1.0
set routing-instances vr11 routing-options rib vr11.inet6.0 static route 6665::/64 next-hop 2111::5
set routing-instances vr11 routing-options rib vr11.inet6.0 static route 9995::/64 next-hop 2111::1
set routing-instances vr12 instance-type virtual-router
```

```
set routing-instances vr12 interface reth2.0
set routing-instances vr12 routing-options interface-routes rib-group inet6 vr11vr12v6
set routing-instances vr12 rrouting-options rib vr12.inet6.0 static route 8885::/64 next-table vr11.inet6.0
set routing-instances vr12 routing-options rib vr12.inet6.0 static route 9995::/64 next-table vr11.inet6.0
set routing-instances vr12 routing-options rib vr12.inet6.0 static route 6665::/64 next-table vr11.inet6.0
set routing-instances vr12 routing-options rib vr12.inet6.0 static route 2111::/64 next-table vr11.inet6.0
set routing-options rib-groups vr11vr12v6 import-rib vr11.inet6.0
set routing-options rib-groups vr11vr12v6 import-rib vr12.inet6.0
set security zones security-zone lsys1-trust host-inbound-traffic system-services all
set security zones security-zone lsys1-trust host-inbound-traffic protocols all
set security zones security-zone lsys1-trust interfaces reth1.0
set security zones security-zone lsys1-trust interfaces lt-0/0/0.3
set security zones security-zone lsys1-untrust host-inbound-traffic system-services all
set security zones security-zone lsys1-untrust host-inbound-traffic protocols all
set security zones security-zone lsys1-untrust interfaces reth2.0
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust match
    source-address any
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust match
    destination-address any
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust match
    application any
set security policies from-zone lsys1-trust to-zone lsys1-untrust policy lsys1trust-to-lsys1untrust then permit
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust match
    source-address any
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust match
    destination-address any
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust match
    application any
set security policies from-zone lsys1-untrust to-zone lsys1-trust policy lsys1untrust-to-lsys1trust then permit
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust match
    source-address any
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust match
    destination-address any
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust match
    application any
set security policies from-zone lsys1-untrust to-zone lsys1-untrust policy lsys1untrust-to-lsys1untrust then
    permit
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust match source-address
    any
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust match
    destination-address any
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust match application
    any
set security policies from-zone lsys1-trust to-zone lsys1-trust policy lsys1trust-to-lsys1trust then permit
```

Enter the following commands while logged in as the user logical system administrator for LSYS2:

```
set interfaces reth3 unit 0 family inet6 address 6665::1/64
set routing-instances vr2 instance-type virtual-router
set routing-instances vr2 interface lt-0/0/0.5
set routing-instances vr2 interface reth3.0
set routing-instances vr2 routing-options rib vr2.inet6.0 static route 7775::/64 next-hop 2111::3
set routing-instances vr2 routing-options rib vr2.inet6.0 static route 8885::/64 next-hop 2111::3
set routing-instances vr2 routing-options rib vr2.inet6.0 static route 9995::/64 next-hop 2111::1
set security zones security-zone lsys2-trust host-inbound-traffic system-services all
set security zones security-zone lsys2-trust host-inbound-traffic protocols all
set security zones security-zone lsys2-trust interfaces reth3.0
set security zones security-zone lsys2-untrust host-inbound-traffic system-services all
set security zones security-zone lsys2-untrust host-inbound-traffic protocols all
set security zones security-zone lsys2-untrust interfaces lt-0/0/0.5
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust match
    source-address any
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust match
    destination-address any
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust match
    application any
set security policies from-zone lsys2-trust to-zone lsys2-untrust policy lsys2trust-to-lsys2untrust then permit
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust match
    source-address any
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust match
    destination-address any
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust match
    application any
set security policies from-zone lsys2-untrust to-zone lsys2-trust policy lsys2untrust-to-lsys2trust then permit
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust match
    source-address any
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust match
    destination-address any
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust match
    application any
set security policies from-zone lsys2-untrust to-zone lsys2-untrust policy lsys2untrust-to-lsys2untrust then
    permit
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust match source-address
    any
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust match
    destination-address any
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust match application
    any
set security policies from-zone lsys2-trust to-zone lsys2-trust policy lsys2trust-to-lsys2trust then permit
```

Step-by-Step Procedure

> **NOTE:** The user logical system administrator performs the following configuration while logged in to his or her user logical system. The master administrator can also configure a user logical system at the [**edit logical-systems *logical-system***] hierarchy level.

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

To configure the LSYS1 user logical system:

1. Configure interfaces.

```
[edit interfaces]
lsys1-admin@host:LSYS1# set reth1 unit 0 family inet6 address 8885::1/64
lsys1-admin@host:LSYS1# set reth2 unit 0 family inet6 address 7775::1/64
```

2. Configure routing.

```
[edit routing-instances]
lsys1-admin@host:LSYS1# set vr11 instance-type virtual-router
lsys1-admin@host:LSYS1# set vr11 interface lt-0/0/0.3
lsys1-admin@host:LSYS1# set vr11 interface reth1.0
lsys1-admin@host:LSYS1# set vr11 routing-options rib vr11.inet6.0 static route 6665::/64 next-hop 2111::5
lsys1-admin@host:LSYS1# set vr11 routing-options rib vr11.inet6.0 static route 9995::/64 next-hop 2111::1
lsys1-admin@host:LSYS1# set vr12 instance-type virtual-router
lsys1-admin@host:LSYS1# set vr12 interface reth2.0
lsys1-admin@host:LSYS1# set vr12 routing-options interface-routes rib-group inet6 vr11vr12v6
lsys1-admin@host:LSYS1# set vr12 routing-options rib vr12.inet6.0 static route 8885::/64 next-table
  vr11.inet6.0
lsys1-admin@host:LSYS1# set vr12 routing-options rib vr12.inet6.0 static route 9995::/64 next-table
  vr11.inet6.0
lsys1-admin@host:LSYS1# set vr12 routing-options rib vr12.inet6.0 static route 6665::/64 next-table
  vr11.inet6.0
lsys1-admin@host:LSYS1# set vr12 routing-options rib vr12.inet6.0 static route 2111::/64 next-table
  vr11.inet6.0
```

```
[edit routing-options]
lsys1-admin@host:LSYS1# set rib-groups vr11vr12v6 import-rib vr11.inet6.0
lsys1-admin@host:LSYS1# set rib-groups vr11vr12v6 import-rib vr12.inet6.0
```

3. Configure zones and security policies.

```
[edit security zones]
lsys1-admin@host:LSYS1# set security-zone lsys1-trust host-inbound-traffic system-services all
lsys1-admin@host:LSYS1# set security-zone lsys1-trust host-inbound-traffic protocols all
lsys1-admin@host:LSYS1# set security-zone lsys1-trust interfaces reth1.0
lsys1-admin@host:LSYS1# set security-zone lsys1-trust interfaces lt-0/0/0.3
lsys1-admin@host:LSYS1# set security-zone lsys1-untrust host-inbound-traffic system-services all
lsys1-admin@host:LSYS1# set security-zone lsys1-untrust host-inbound-traffic protocols all
lsys1-admin@host:LSYS1# set security-zone lsys1-untrust interfaces reth2.0
```

```
[edit security policies from-zone lsys1-trust to-zone lsys1-untrust]
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust match application any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1untrust then permit
```

```
[edit security policies from-zone lsys1-untrust to-zone lsys1-trust]
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust match application any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1trust then permit
```

```
[edit security policies from-zone lsys1-untrust to-zone lsys1-untrust]
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust match application any
lsys1-admin@host:LSYS1# set policy lsys1untrust-to-lsys1untrust then permit
```

```
[edit security policies from-zone lsys1-trust to-zone lsys1-trust]
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust match source-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust match destination-address any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust match application any
lsys1-admin@host:LSYS1# set policy lsys1trust-to-lsys1trust then permit
```

Step-by-Step Procedure

To configure the LSYS2 user logical system:

1. Configure interfaces.

```
[edit interfaces]
lsys2-admin@host:LSYS2# set reth3 unit 0 family inet6 address 6665::1/64
```

2. Configure routing.

```
[edit routing-instances]
lsys2-admin@host:LSYS2# set vr2 instance-type virtual-router
lsys2-admin@host:LSYS2# set vr2 interface lt-0/0/0.5
lsys2-admin@host:LSYS2# set vr2 interface reth3.0
lsys2-admin@host:LSYS2# set vr2 routing-options rib vr2.inet6.0 static route 7775::/64 next-hop 2111::3
lsys2-admin@host:LSYS2# set vr2 routing-options rib vr2.inet6.0 static route 8885::/64 next-hop 2111::3
lsys2-admin@host:LSYS2# set vr2 routing-options rib vr2.inet6.0 static route 9995::/64 next-hop 2111::1
```

3. Configure zones and security policies.

```
[edit security zones]
lsys2-admin@host:LSYS2# set security-zone lsys2-trust host-inbound-traffic system-services all
lsys2-admin@host:LSYS2# set security-zone lsys2-trust host-inbound-traffic protocols all
lsys2-admin@host:LSYS2# set security-zone lsys2-trust interfaces reth3.0
lsys2-admin@host:LSYS2# set security zones security-zone lsys2-untrust host-inbound-traffic system-services
   all
lsys2-admin@host:LSYS2# set security-zone lsys2-untrust host-inbound-traffic protocols all
lsys2-admin@host:LSYS2# set security-zone lsys2-untrust interfaces lt-0/0/0.5
```

```
[edit security policies from-zone lsys2-trust to-zone lsys2-untrust]
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust match application any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2untrust then permit
```

```
[edit security policies from-zone from-zone lsys2-untrust to-zone lsys2-trust]
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust match application any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2trust then permit
```

```
[edit security policies from-zone lsys2-untrust to-zone lsys2-untrust]
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust match application any
```

```
lsys2-admin@host:LSYS2# set policy lsys2untrust-to-lsys2untrust then permit
```

```
[edit security policies from-zone lsys2-trust to-zone lsys2-trust]
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust match source-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust match destination-address any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust match application any
lsys2-admin@host:LSYS2# set policy lsys2trust-to-lsys2trust then permit
```

Results

From configuration mode, confirm the configuration for LSYS1 by entering the **show interfaces**, **show routing-instances**, **show routing-options**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
lsys1-admin@host:LSYS1# show interfaces
interfaces {
    lt-0/0/0 {
        unit 3 {
            encapsulation ethernet;
            peer-unit 2;
            family inet6 {
                address 2111::3/64;
            }
        }
    }
    reth1 {
        unit 0 {
            family inet6 {
                address 8885::1/64;
            }
        }
    }
    reth2 {
        unit 0 {
            family inet6 {
                address 7775::1/64;
            }
        }
    }
}
[edit]
lsys1-admin@host:LSYS1# show routing-instances
```

```
routing-instances {
    vr11 {
        instance-type virtual-router;
        interface lt-0/0/0.3;
        interface reth1.0;
        routing-options {
            rib vr11.inet6.0 {
                static {
                    route 6665::/64 next-hop 2111::5;
                    route 9995::/64 next-hop 2111::1;
                }
            }
        }
    }
    vr12 {
        instance-type virtual-router;
        interface reth2.0;
        routing-options {
            interface-routes {
                rib-group inet6 vr11vr12v6;
            }
            rib vr12.inet6.0 {
                static {
                    route 8885::/64 next-table vr11.inet6.0;
                    route 9995::/64 next-table vr11.inet6.0;
                    route 6665::/64 next-table vr11.inet6.0;
                    route 2111::/64 next-table vr11.inet6.0;
                }
            }
        }
    }
}
[edit]
lsys1-admin@host:LSYS1# show routing-options
rib-groups {
    vr11vr12v6 {
        import-rib [ vr11.inet6.0 vr12.inet6.0 ];
    }
}
[edit]
lsys1-admin@host:LSYS1# show security
security {
    policies {
        from-zone lsys1-trust to-zone lsys1-untrust {
```

```
    policy lsys1trust-to-lsys1untrust {
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit;
        }
    }
}
from-zone lsys1-untrust to-zone lsys1-trust {
    policy lsys1untrust-to-lsys1trust {
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit;
        }
    }
}
from-zone lsys1-untrust to-zone lsys1-untrust {
    policy lsys1untrust-to-lsys1untrust {
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit;
        }
    }
}
from-zone lsys1-trust to-zone lsys1-trust {
    policy lsys1trust-to-lsys1trust {
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit;
```

```
            }
          }
        }
    }
    zones {
        security-zone lsys1-trust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                reth1.0;
                lt-0/0/0.3;
            }
        }
        security-zone lsys1-untrust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                reth2.0;
            }
        }
    }
}
```

From configuration mode, confirm the configuration for LSYS2 by entering the **show interfaces**, **show routing-instances**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
lsys2-admin@host:LSYS2# show interfaces
interfaces {
    lt-0/0/0 {
        unit 5 {
```

```
            encapsulation ethernet;
            peer-unit 4;
            family inet6 {
                address 2111::5/64;
            }
        }
    }
    reth3 {
        unit 0 {
            family inet6 {
                address 6665::1/64;
            }
        }
    }
}
[edit]
lsys2-admin@host:LSYS2# show routing-instances
routing-instances {
    vr2 {
        instance-type virtual-router;
        interface lt-0/0/0.5;
        interface reth3.0;
        routing-options {
            rib vr2.inet6.0 {
                static {
                    route 7775::/64 next-hop 2111::3;
                    route 8885::/64 next-hop 2111::3;
                    route 9995::/64 next-hop 2111::1;
                }
            }
        }
    }
}
[edit]
lsys2-admin@host:LSYS2# show security
security {
    policies {
        from-zone lsys2-trust to-zone lsys2-untrust {
            policy lsys2trust-to-lsys2untrust {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
```

```
            then {
                permit;
            }
        }
    }
    from-zone lsys2-untrust to-zone lsys2-trust {
        policy lsys2untrust-to-lsys2trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone lsys2-untrust to-zone lsys2-untrust {
        policy lsys2untrust-to-lsys2untrust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
    from-zone lsys2-trust to-zone lsys2-trust {
        policy lsys2trust-to-lsys2trust {
            match {
                source-address any;
                destination-address any;
                application any;
            }
            then {
                permit;
            }
        }
    }
}
zones {
    security-zone lsys2-trust {
```

```
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                reth3.0;
            }
        }
        security-zone lsys2-untrust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.5;
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Chassis Cluster Status (IPv6) | **458**
- Troubleshooting Chassis Cluster with Logs (IPv6) | **458**
- Verifying Logical System Licenses (IPv6) | **458**
- Verifying Logical System License Usage (IPv6) | **459**
- Verifying Intra-Logical System Traffic on a Logical System (IPv6) | **460**
- Verifying Intra-Logical System Traffic Within All Logical Systems (IPv6) | **461**
- Verifying Traffic Between User Logical Systems (IPv6) | **462**

Confirm that the configuration is working properly.

Verifying Chassis Cluster Status (IPv6)

Purpose

Verify the chassis cluster status, failover status, and redundancy group information.

Action

From operational mode, enter the **show chassis cluster status** command.

```
{primary:node0}
```

show chassis cluster status

```
Cluster ID: 1
Node                  Priority          Status    Preempt  Manual failover

Redundancy group: 0 , Failover count: 1
    node0                   200         primary        no       no
    node1                   100         secondary      no       no

Redundancy group: 1 , Failover count: 1
    node0                   200         primary        no       no
    node1                   100         secondary      no       no
```

Troubleshooting Chassis Cluster with Logs (IPv6)

Purpose

Use these logs to identify any chassis cluster issues. You should run these logs on both nodes.

Action

From operational mode, enter these **show log** commands.

```
user@host> show log jsrpd

user@host> show log chassisd

user@host> show log messages

user@host> show log dcd

user@host> show traceoptions
```

Verifying Logical System Licenses (IPv6)

Purpose

Verify information about logical system licenses.

Action

From operational mode, enter the **show system license status logical-system all** command.

```
{primary:node0}
```

```
user@host> show system license status logical-system all
```

```
node0:
--------------------------------------------------------------------------
Logical system license status:

logical system name                license status
root-logical-system                enabled
LSYS0                              enabled
LSYS1                              enabled
LSYS2                              enabled
```

Verifying Logical System License Usage (IPv6)

Purpose

Verify information about logical system license usage.

> **NOTE:** The actual number of licenses used is only displayed on the primary node.

Action

From operational mode, enter the **show system license** command.

```
{primary:node0}
```

```
user@host> show system license
```

```
License usage:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  logical-system                        4           25           0    permanent

Licenses installed:
  License identifier: JUNOS305013
  License version: 2
```

```
  Valid for device: JN110B54BAGB
  Features:
    logical-system-25 - Logical System Capacity
      permanent
```

Verifying Intra-Logical System Traffic on a Logical System (IPv6)

Purpose

Verify information about currently active security sessions within a logical system.

Action

From operational mode, enter the **show security flow session logical-system LSYS1** command.

```
{primary:node0}
```

```
user@host> show security flow session logical-system LSYS1
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:

Session ID: 10000115, Policy name: lsys1trust-to-lsys1untrust/8, State: Active,
Timeout: 1784, Valid
  In: 8885::2/34564 --> 7775::2/23;tcp, If: reth1.0, Pkts: 22, Bytes: 1745
  Out: 7775::2/23 --> 8885::2/34564;tcp, If: reth2.0, Pkts: 19, Bytes: 2108
Total sessions: 1

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:

Session ID: 10000006, Policy name: lsys1trust-to-lsys1untrust/8, State: Backup,
Timeout: 14392, Valid
  In: 8885::2/34564 --> 7775::2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
  Out: 7775::2/23 --> 8885::2/34564;tcp, If: reth2.0, Pkts: 0, Bytes: 0
```

```
Total sessions: 1

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

Verifying Intra-Logical System Traffic Within All Logical Systems (IPv6)

Purpose

Verify information about currently active security sessions on all logical systems.

Action

From operational mode, enter the **show security flow session logical-system all** command.

```
{primary:node0}
```

```
user@host> show security flow session logical-system all
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:

Session ID: 10000115, Policy name: lsys1trust-to-lsys1untrust/8, State: Active,
Timeout: 1776, Valid
Logical system: LSYS1
  In: 8885::2/34564 --> 7775::2/23;tcp, If: reth1.0, Pkts: 22, Bytes: 1745
  Out: 7775::2/23 --> 8885::2/34564;tcp, If: reth2.0, Pkts: 19, Bytes: 2108
Total sessions: 1

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
```

```
Session ID: 10000006, Policy name: lsys1trust-to-lsys1untrust/8, State: Backup,
Timeout: 14384, Valid
Logical system: LSYS1
  In: 8885::2/34564 --> 7775::2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
  Out: 7775::2/23 --> 8885::2/34564;tcp, If: reth2.0, Pkts: 0, Bytes: 0
Total sessions: 1

Flow Sessions on FPC2 PIC0:
Total sessions: 0

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

Verifying Traffic Between User Logical Systems (IPv6)

Purpose

Verify information about currently active security sessions between logical systems.

Action

From operational mode, enter the **show security flow session logical-system *logical-system-name*** command.

```
{primary:node0}
```

```
user@host> show security flow session logical-system LSYS1
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000118, Policy name: lsys1trust-to-lsys1trust/11, State: Active,
Timeout: 1792, Valid
  In: 8885::2/34565 --> 6665::2/23;tcp, If: reth1.0, Pkts: 91, Bytes: 6802
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: lt-0/0/0.3, Pkts: 65, Bytes: 6701
Total sessions: 1

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

```
node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000010, Policy name: lsys1trust-to-lsys1trust/11, State: Backup,
Timeout: 14388, Valid
  In: 8885::2/34565 --> 6665::2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: lt-0/0/0.3, Pkts: 0, Bytes: 0
Total sessions: 1

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

```
{primary:node0}
```

```
user@host> show security flow session logical-system LSYS2
```

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000119, Policy name: lsys2untrust-to-lsys2trust/13, State: Active,
Timeout: 1788, Valid
  In: 8885::2/34565 --> 6665::2/23;tcp, If: lt-0/0/0.5, Pkts: 91, Bytes: 6802
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: reth3.0, Pkts: 65, Bytes: 6701
Total sessions: 1

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
```

```
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000011, Policy name: lsys2untrust-to-lsys2trust/13, State: Backup,
Timeout: 14380, Valid
  In: 8885::2/34565 --> 6665::2/23;tcp, If: lt-0/0/0.5, Pkts: 0, Bytes: 0
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: reth3.0, Pkts: 0, Bytes: 0
Total sessions: 1

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

{primary:node0}

user@host> **show security flow session logical-system all**

```
node0:
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000118, Policy name: lsys1trust-to-lsys1trust/11, State: Active,
Timeout: 1784, Valid
Logical system: LSYS1
  In: 8885::2/34565 --> 6665::2/23;tcp, If: reth1.0, Pkts: 91, Bytes: 6802
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: lt-0/0/0.3, Pkts: 65, Bytes: 6701

Session ID: 80000119, Policy name: lsys2untrust-to-lsys2trust/13, State: Active,
Timeout: 1784, Valid
Logical system: LSYS2
  In: 8885::2/34565 --> 6665::2/23;tcp, If: lt-0/0/0.5, Pkts: 91, Bytes: 6802
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: reth3.0, Pkts: 65, Bytes: 6701
Total sessions: 2

Flow Sessions on FPC2 PIC1:
Total sessions: 0

node1:
```

```
--------------------------------------------------------------------------

Flow Sessions on FPC0 PIC1:
Total sessions: 0

Flow Sessions on FPC2 PIC0:

Session ID: 80000010, Policy name: lsys1trust-to-lsys1trust/11, State: Backup,
Timeout: 14378, Valid
Logical system: LSYS1
  In: 8885::2/34565 --> 6665::2/23;tcp, If: reth1.0, Pkts: 0, Bytes: 0
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: lt-0/0/0.3, Pkts: 0, Bytes: 0

Session ID: 80000011, Policy name: lsys2untrust-to-lsys2trust/13, State: Backup,
Timeout: 14376, Valid
Logical system: LSYS2
  In: 8885::2/34565 --> 6665::2/23;tcp, If: lt-0/0/0.5, Pkts: 0, Bytes: 0
  Out: 6665::2/23 --> 8885::2/34565;tcp, If: reth3.0, Pkts: 0, Bytes: 0
Total sessions: 2

Flow Sessions on FPC2 PIC1:
Total sessions: 0
```

SEE ALSO

Understanding Logical Systems in the Context of Chassis Cluster | 382

Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (Master Administrators Only) | 383

Example: Configuring an Active/Passive Chassis Cluster on SRX5800 Devices

Chassis Cluster Overview

Flow Trace for Logical Systems

IN THIS SECTION

- Flow Trace Support for Logical Systems Overview | 466
- Configure Flow Trace Support for Logical Systems | 466

Flow trace also called traceoptions, allows you to monitor traffic flow into and out of an SRX Series device. You can use tracoptions as debugging tool to trace the packets as they traverse the SRX Series device. Traceoptions help you to get details of actions by your security device.

Flow Trace Support for Logical Systems Overview

For an SRX Series device configured with logical systems, by default the traceoptions are configured at the root level only. In this case, all the system traces including root and logical systems are logged in one single trace file. This generated large amounts of information in a single file.

Starting in Junos OS Release 19.4R1, you can enable tracing operations per logical system level. When you configure the traceoptions at the logical system level, then the traces for that specific logical systems are logged in the respective trace file. You can generate an output file for the specified logical system, and you can find the required traffic information easily in the trace file.

When you enable traceoptions, you specify the name of the file and the type of information you want to trace.

All flow trace sent to one log file in root, if you enable the traceoptions under root context. Traces for a logical system only sent to the respective trace file, if you enable the traceoptions for the specific logical system.

Configure Flow Trace Support for Logical Systems

Configuring traceoptions for a logical system includes configuring both a target file and a flag. The target file determines where the trace output is recorded. The flag defines what type of data to be collected. If you configure traceoptions for a logical system, the respective trace file sent to the specific logical system log file only.

To configure traceoptions for a logical system:

1. Create logical system **LSYS1** and setup the basic configurations. See "Setting Up a Logical System" on page 74

2. Configure target file to save the trace information for the logical system.

```
[edit]
user@host# set logical-systems LSYS1 security flow traceoptions file flow_lsys1.log
user@host# set logical-systems LSYS1 security flow traceoptions file size 1g
```

3. Configure traceoptions flag for the logical system.

```
[edit]
user@host# set logical-systems LSYS1 security flow traceoptions flag all
```

After you commit the traceoptions configuration, you can view the traceoptions debug files for the logical system using **show log *tracefilename*** operational command.

`user@host:LSYS1>` **show log *flow_lsys1.log***

```
Nov  7 07:34:09 07:34:09.491800:CID-0:THREAD_ID-00:LSYS_ID-01:RT:got route table
lock

Nov  7 07:34:09 07:34:09.491809:CID-0:THREAD_ID-00:LSYS_ID-01:RT:released route
table lock

Nov  7 07:34:09 07:34:09.491840:CID-0:THREAD_ID-00:LSYS_ID-01:RT:got route table
lock

Nov  7 07:34:09 07:34:09.491841:CID-0:THREAD_ID-00:LSYS_ID-01:RT:released route
table lock

Nov  7 07:34:09 07:34:09.491854:CID-0:THREAD_ID-00:LSYS_ID-01:RT:cache final sw_nh
 0x0

Nov  7 07:34:09 07:34:09.491868:CID-0:THREAD_ID-00:LSYS_ID-01:RT:got route table
lock

Nov  7 07:34:09 07:34:09.491869:CID-0:THREAD_ID-00:LSYS_ID-01:RT:released route
table lock
```

```
Nov  7 07:34:09 07:34:09.491881:CID-0:THREAD_ID-00:LSYS_ID-01:RT:cache final sw_nh
 0x0
```

Example: Deleting a Logical System

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- Configuration | 469
- Verification | 471

This example shows how to delete a logical system configured for an SRX Series Services Gateway device running logical systems. Only the master administrator can delete a logical system.

Requirements

The example uses an SRX5600 device running Junos OS with Logical Systems.

Alternatively, follow those instructions substituting your own configuration values.

Overview

This example shows how to delete a logical system, which you can do at any time. However, if you have configured the device to include the maximum number of logical systems that are supported you must first delete an existing logical system before you can add another one.

Deletion of a logical system is a simple procedure that includes these tasks:

- Remove from the logical system the security profile that is bound to it.

Note that in this step you are not deleting the security profile–it might be used for other logical systems–but simply detaching it from the logical system that you intend to delete.

- Detach from the logical system any login classes that are associated with it.

  Removing them from the logical system does not delete the login classes.

- Delete the logical system.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
delete system security-profile ls-design-profile logical-system ls-product-design
delete system login class ls-design-admin logical-system ls-product-design
delete system login class ls-design-user logical-system ls-product-design
delete logical-system ls-product-design
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To delete a logical system:

1. Determine that the logical system that you want to delete exists.

   ```
   [edit]
   user@host# show logical-systems ?
   interconnect-logical-system Logical system name
   ls-accounting-dept Logical system name
   ls-marketing-dept Logical system name
   ls-product-design Logical system name
   ```

2. Delete the security profile.

   a. Verify that security profile that you intend to detach from the logical system is bound to it.

      ```
      [edit]
      user@host# show system security-profile ls-design-profile
      ```

```
logical-system [ ls-product-design ];
```

b. Detach the security profile from the logical system.

```
[edit]
user@host# delete system security-profile ls-design-profile logical-system ls-product-design
```

3. Delete the login classes.

a. Display the login class and login user configurations for the user logical system administrator.

```
user@host> show configuration system login class ls-design-admin
logical-system ls-product-design;
permissions all;
user@host> show configuration system login user lsdesignadmin1
full-name lsdesignadmin1;
uid 2006;
class ls-design-admin;
authentication {
    encrypted-password "$ABC123"; ## SECRET-DATA
    }
```

b. Detach the login class for the administrator from the logical system.

```
[edit]
user@host# delete system login class ls-design-admin logical-system ls-product-design
```

c. Display the login class and login user configurations for the user.

```
user@host> show configuration system login class ls-design-user
logical-system ls-product-design;
permissions view;
user@host> show configuration system login user lsdesignuser1
full-name lsdesignuser1
uid 2007;
class ls-design-user;
authentication {
    encrypted-password "$ABC123"; ## SECRET-DATA
    }
```

d. Detach the login class for the user from the logical system.

```
user@host# delete system login class ls-design-user logical-system ls-product-design
```

4. Delete the logical system.

```
[edit]
user@host# delete logical-system ls-product-design
```

Results

From configuration mode, confirm your configuration by entering the **show logical-systems** command. In this case, the logical system that you deleted should not be included in displayed list of logical systems configured for the device. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show logical-systems
interconnect-logical-system Logical system name
ls-accounting-dept Logical system name
interconnect-logical-system Logical system name
ls-marketing-dept Logical system name
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying That the Correct Logical System and Its Profile and Attached Class Were Deleted | **471**

To confirm that the configuration is working properly, perform these tasks:

Verifying That the Correct Logical System and Its Profile and Attached Class Were Deleted

Purpose

Verify if the logical system has been deleted using the show command described previously.

RELATED DOCUMENTATION

Understanding User Logical Systems and the User Logical System Administrator Role | 73

Understanding Logical Systems for SRX Series Services Gateways | 29

Troubleshooting Logical Systems

IN THIS SECTION

- Understanding Security Logs and Logical Systems | 472
- Configuring On-Box Reporting for logical Systems | 474
- Example: Configure Security Log for Logical Systems | 475
- Configuring On-Box Binary Security Log Files for Logical System | 480
- Configuring Off-Box Binary Security Log Files for Logical System | 483
- Understanding Data Path Debugging for Logical Systems | 484
- Performing Tracing for Logical Systems (Master Administrators Only) | 485
- Troubleshooting DNS Name Resolution in Logical System Security Policies (Master Administrators Only) | 491

Use the following features to monitor logical systems and troubleshoot the software issues. For more information, see the following topics:

Understanding Security Logs and Logical Systems

Security logs are system log messages that include security events. If a device is configured for logical systems, security logs generated within the context of a logical system use the name ***logname*_LS** (for example, **IDP_ATTACK_LOG_EVENT_LS**). The logical system version of a log has the same set of attributes as the log for devices that are not configured for logical systems. The logical system log includes logical-system-name as the first attribute.

The following security log shows the attributes for the IDP_ATTACK_LOG_EVENT log for a device that is *not* configured for logical systems:

```
IDP_ATTACK_LOG_EVENT {
help "IDP attack log";
description "IDP Attack log generated for attack";
type event;
args timestamp message-type source-address source-port destination-address
destination-port protocol-name service-name application-name rule-name rulebase-name
 policy-name repeat-count action threat-severity attack-name nat-source-address
nat-source-port nat-destination-address nat-destination-port elapsed-time
inbound-bytes outbound-bytes inbound-packets outbound-packets source-zone-name
source-interface-name destination-zone-name destination-interface-name packet-log-id
 message;
severity LOG_INFO;
flag auditable;
edit "2010/10/01 mvr created";
}
```

The following security log shows the attributes for the IDP_ATTACK_LOG_EVENT_LS log for a device that is configured for logical systems (note that logical-system-name is the first attribute):

```
IDP_ATTACK_LOG_EVENT_LS {
help "IDP attack log";
description "IDP Attack log generated for attack";
type event;
args logical-system-name timestamp message-type source-address source-port
destination-address destination-port protocol-name service-name application-name
rule-name rulebase-name policy-name repeat-count action threat-severity attack-name
 nat-source-address nat-source-port nat-destination-address nat-destination-port
elapsed-time inbound-bytes outbound-bytes inbound-packets outbound-packets
source-zone-name source-interface-name destination-zone-name
destination-interface-name packet-log-id message;
severity LOG_INFO;
flag auditable;
edit "2010/10/01 mvr created";
}
```

If a device is configured for logical systems, log parsing scripts might need to be modified because the log name includes the **_LS** suffix and the logical-system-name attribute can be used to segregate logs by logical system.

If a device is not configured for logical systems, the security logs remain unchanged and scripts built to parse logs do not need any modification.

> **NOTE:** Only the master administrator can configure logging at the [**edit security log**] hierarchy level. User logical system administrators cannot configure logging for their logical systems.

Stream mode is a set of logging services that includes:

- Off-box logging (SRX Series)
- On-box logging and reporting (SRX300, SRX320, SRX340, SRX345, SRX380, SRX550M, SRX1500, SRX4100, SRX4200, and SRX4600 Series)

Per logical system configuration is supported for the off-box logging and logs are handled based on these configurations. Previously the user logical system logs were generated from root logical system. For off-box logging, the logical system logs can only be generated from logical system interface.

Limitations

Each SPU can only support a maximum of 1000 connections for standalone and 500 connections for cluster on the SRX5400, SRX5600, and SRX5800 devices in the Junos OS 18.2R1 release. If all the connections are used up, some connections for user logical systems might not be established.

> **NOTE:** The error message will be captured in the System Log Explorer.

Configuring On-Box Reporting for logical Systems

SRX Series devices supports different types of reports for logical system users.

Reports are stored locally on the SRX Series device and there is no requirement for separate devices or tools for logs and reports storage. The on-box reports provides a simple and easy-to-use interface for viewing the security logs.

Before you begin:

- Understand how to configure security log for logical systems. See Example: Configure Security Log for logical Systems

To configure on-box reporting for logical system:

1. Define the logical system name as LSYS1.

```
user@host# set logical-systems LSYS1
```

2. Create report within security log per tenant system.

```
user@host# set logical-systems LSYS1 security log report
```

3. Confirm your configuration by entering the **show logical-systems LSYS1** command.

```
user@host# show logical-systems LSYS1
security {
    log {
        report;
    }
}
```

NOTE: By default the **report** option is disabled. The **set logical-systems LSYS1 security log mode stream** command is enabled by default.

Example: Configure Security Log for Logical Systems

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- Verification | 479

This example shows how to configure security logs for a logical system.

Requirements

This example uses the following hardware and software components:

- An SRX Series device.
- Junos OS Release 18.3R1 and later releases.

Before you begin:

- Understand how to configure a logical system.
- Understand how to create security profiles for the master logical system. See “Understanding Logical Systems Security Profiles (Master Administrators Only)” on page 88.

Overview

SRX Series devices have two types of log: system logs and security logs. System logs record control plane events, for example, admin login to the device. Security logs, also known as traffic logs, record data plane events regarding specific traffic handling, for example when a security policy denies certain traffic due to some violation of the policy.

The two types of logs can be collected and saved either on-box or off-box. The procedure below explains how to configure security logs in binary format for off-box (stream-mode) logging.

For off-box logging, security logs for a logical system are sent from a logical system interface. If the logical system interface is already configured in a routing instance, then configure **routing-instance routing-instance-name** at **edit logical-systems logical-system-name security log stream log-stream-name host** hierarchy. If the interface is not configured in routing instance, then no routing instance should be configured at **edit logical-systems logical-system-name security log stream log-stream-name host** hierarchy.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set logical-systems LSYS1 security log mode stream
set logical-systems LSYS1 security log stream LSYS1_s format binary host 1.3.54.22
set logical-systems LSYS1 security log source-address 2.3.45.66
set logical-systems LSYS1 security log transport protocol tls
set logical-systems LSYS1 routing-instances LSYS1_ri instance-type virtual-router
set logical-systems LSYS1 routing-instances LSYS_ri interface ge-0/0/3
set logical-systems LSYS1 security log stream LSYS1_s host routing-instance LSYS1_ri
```

```
set system security-profile p1 security-log-stream-number reserved 1
set system security-profile p1 security-log-stream-number maximum 2
set system security-profile LSYS1_profile logical-system LSYS1
```

Step-by-Step Procedure

The following procedure specifies how to configure security logs for a logical system.

1. Specify the logging mode and the format for the log file. For off-box, stream-mode logging.

```
[edit ]
user@host# set logical-systems LSYS1 security log mode stream
user@host# set logical-systems LSYS1 security log stream LSYS1_s format binary host 1.3.54.22
```

2. For off-box security logging, specify the source address, which identifies the SRX Series device that generated the log messages. The source address is required.

```
[edit ]
user@host# set logical-systems LSYS1 security log source-address 2.3.45.66
```

3. Specify the routing instance and define the interface.

```
[edit ]
user@host# set logical-systems LSYS1 routing-instances LSYS1_ri instance-type virtual-router
user@host# set logical-systems LSYS1 routing-instances LSYS_ri interface ge-0/0/3
```

4. Define routing instance for a logical system.

```
[edit ]
user@host# set logical-systems LSYS1 security log stream LSYS1_s host routing-instance LSYS1_ri
```

5. Specify the security log transport protocol for the device.

```
[edit ]
user@host# set logical-systems LSYS1 security log transport protocol tls
```

Step-by-Step Procedure

The following procedure specifies how to configure a security profile for a logical system.

1. Configure a security profile and specify the number of maximum and reserved policies.

```
[edit ]
user@host# set system security-profile p1 security-log-stream-number reserved 1
user@host# set system security-profile p1 security-log-stream-number maximum 2
```

2. Assign the configured security profile to TSYS1.

```
[edit ]
user@host# set system security-profile LSYS1_profile logical-system LSYS1
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile**, **show logical-systems LSYS1 security log**, and **show logical-systems LSYS1 routing-instances** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show system security-profile
LSYS1_profile {
    logical-system LSYS1;
}
p1 {
    security-log-stream-number {
        maximum 2;
        reserved 1;
    }
}
```

```
[edit]
user@host# show logical-systems LSYS1 security log
mode stream;
source-address 2.3.45.66;
transport {
    protocol tls;
}
stream LSYS1_s {
    format binary;
    host {
        1.3.54.22;
    }
}
```

```
[edit]
user@host# show logical-systems LSYS1 routing-instances
LSYS1_ri {
    instance-type virtual-router;
    interface ge-0/0/3.0;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying Detailed Output for Security Log

Purpose

Verify that the output displays the resource information for all logical systems.

Action

From operational mode, enter the **show system security-profile security-log-stream-number tenant all** command.

```
logical-system name  security profile name  usage    reserved    maximum

root-logical-system         Default-Profile           0          0
```

Meaning

The output displays the resource information for logical systems.

Configuring On-Box Binary Security Log Files for Logical System

SRX Series devices support two types of log: system logs and security logs.

The two types of log are collected and saved either on-box or off-box. The following procedure explains how to configure security logs in binary format for on-box (event-mode) logging for logical system.

The following procedure specifies binary format for event-mode security logging, and defines the log filename, path, and log file characteristics for logical system.

1. Specify the logging mode and the format for the log file. For on-box, event-mode logging:

```
[edit]
user@host# set logical-systems LSYS1 security log mode event
user@host# set logical-systems LSYS1 security log format binary
```

2. (Optional) Specify a log filename.

```
[edit]
user@host# set logical-systems LSYS1 security log file name security-binary-log
```

> **NOTE:** Security log filename is not mandatory. If security log filename is not configured, by default the file bin_messages is created in the /var/log directory.

3. Confirm your configuration by entering the **show logical-systems LSYS1** command.

```
[edit]
user@host# show logical-systems LSYS1
security {
    log {
        mode event;
        format binary;
        file {
            name security-binary-log;
        }
    }
}
```

The following procedure specifies binary format for stream-mode security logging, and defines the log filename and log file characteristics for logical system.

1. Specify the logging mode and the format for the log file. For on-box, stream-mode logging:

```
[edit]
user@host# set logical-systems LSYS1 security log mode stream
user@host# set logical-systems LSYS1 security log stream s1 format binary
```

2. (Optional) Specify a log filename.

```
[edit]
user@host# set logical-systems LSYS1 security log stream s1 file name f1.bin
```

3. Confirm your configuration by entering the **show logical-systems LSYS1** command.

```
[edit]
user@host# show logical-systems LSYS1
security {
    log {
        mode stream;
        stream s1 {
            format binary;
            file {
                name f1.bin;
            }
        }
    }
}
```

Configuring Off-Box Binary Security Log Files for Logical System

SRX Series devices support two types of log: system logs and security logs.

The two types of log can be collected and saved either on-box or off-box. The procedure below explains how to configure security logs in binary format for off-box (stream-mode) logging.

The following procedure specifies binary format for stream-mode security logging, and defines the logging mode, source address, and host name characteristics for logical system.

1. Specify the logging mode and the format for the log file. For off-box, stream-mode logging:

```
[edit]
user@host# set logical-systems LSYS1 security log mode stream s1 format binary
```

2. Specify the source address for off-box security logging.

```
[edit]
user@host# set logical-systems LSYS1 security log source-address 100.0.0.1
```

3. Specify the host name.

```
[edit]
user@host# set logical-systems LSYS1 security log stream s1 host 100.0.0.2
```

4. Confirm your configuration by entering the **show logical-systems LSYS1** command.

```
[edit]
user@host#show logical-systems LSYS1
security {
    log {
        mode stream;
        source-address 100.0.0.1;
        stream s1 {
            format binary;
            host {
                100.0.0.2;
            }
        }
    }
}
```

Understanding Data Path Debugging for Logical Systems

Data path debugging provides tracing and debugging at multiple processing units along the packet-processing path. Data path debugging can also be performed on traffic between logical systems.

> **NOTE:** Only the master administrator can configure data path debugging for logical systems at the [**edit security datapath-debug**] level. User logical system administrators cannot configure data path debugging for their logical systems.

End-to-end event tracing traces the path of a packet from when it enters the device to when it leaves the device. When the master administrator configures end-to-end event tracing, the trace output contains logical system information.

The master administrator can also configure tracing for traffic between logical systems. The trace output shows traffic entering and leaving the logical tunnel between logical systems. When the **preserve-trace-order** option is configured, the trace message is sorted chronologically. In addition to the trace action, other actions such as packet-dump and packet-summary may be configured for traffic between logical systems.

Data path debugging is supported on SRX1400, SRX3400, SRX3600, SRX5400, SRX5600, and SRX5800.

SEE ALSO

Performing Tracing for Logical Systems (Master Administrators Only) | 485

Performing Tracing for Logical Systems (Master Administrators Only)

> **NOTE:** Only the master administrator can configure data path debugging for logical systems at the root level.

To configure an action profile for a trace or packet capture:

1. Specify event types and trace actions. You can specify any combination of event types and trace actions. For example, the following statements configure multiple trace actions for each event type:

```
[edit security datapath-debug]
user@host# set action-profile p1 event lbt trace
```

```
user@host# set action-profile p1 event lbt count
user@host# set action-profile p1 event lbt packet-summary
user@host# set action-profile p1 event lbt packet-dump
user@host# set action-profile p1 event pot trace
user@host# set action-profile p1 event pot count
user@host# set action-profile p1 event pot packet-summary
user@host# set action-profile p1 event pot packet-dump
user@host# set action-profile p1 event np-ingress trace
user@host# set action-profile p1 event np-ingress count
user@host# set action-profile p1 event np-ingress packet-summary
user@host# set action-profile p1 event np-ingress packet-dump
user@host# set action-profile p1 event np-egress trace
user@host# set action-profile p1 event np-egress count
user@host# set action-profile p1 event np-egress packet-summary
user@host# set action-profile p1 event np-egress packet-dump
user@host# set action-profile p1 event jexec trace
user@host# set action-profile p1 event jexec count
user@host# set action-profile p1 event jexec packet-summary
user@host# set action-profile p1 event jexec packet-dump
user@host# set action-profile p1 event lt-enter trace
user@host# set action-profile p1 event lt-enter count
user@host# set action-profile p1 event lt-enter packet-summary
user@host# set action-profile p1 event lt-enter packet-dump
user@host# set action-profile p1 event lt-leave trace
user@host# set action-profile p1 event lt-leave count
user@host# set action-profile p1 event lt-leave packet-summary
user@host# set action-profile p1 event lt-leave packet-dump
```

2. Specify action profile options.

```
[edit security datapath-debug]
user@host# set action-profile p1 record-pic-history
user@host# set action-profile p1 preserve-trace-order
```

3. Configure packet filter options.

```
[edit security datapath-debug]
user@host# set packet-filter 1 action-profile p1
user@host# set packet-filter 1 protocol udp
```

To capture trace messages for logical systems:

1. Configure the trace capture file.

```
[edit security datapath-debug]
user@host# set traceoptions file e2e.trace
user@host# set traceoptions file size 10m
```

2. Display the captured trace in operational mode.

```
user@host> show log e2e.trace
Jul  7 09:49:56
09:49:56.417578:CID-00:FPC-01:PIC-00:THREAD_ID-00:FINDEX:0:IIF:75:SEQ:0:TC:0
PIC History: ->C0/F1/P0
NP ingress channel 0 packet
Meta: Src: F1/P0 Dst: F0/P0
IP: saddr 10.1.1.2 daddr 30.1.1.2 proto 6 len 500

Jul  7 09:49:56
09:49:55.1414031:CID-00:FPC-00:PIC-00:THREAD_ID-04:FINDEX:0:IIF:75:SEQ:0:TC:1
PIC History: ->C0/F1/P0->C0/F0/P0
LBT pkt, payload: DATA
Meta: Src: F1/P0 Dst: F0/P0
IP: saddr 10.1.1.2 daddr 30.1.1.2 proto 6 len 500

...
(Some trace information omitted)
...

.Jul  7 09:49:56
09:49:55.1415649:CID-00:FPC-00:PIC-00:THREAD_ID-05:FINDEX:0:IIF:75:SEQ:0:TC:16
PIC History: ->C0/F1/P0->C0/F0/P0->C0/F0/P0->C0/F0/P0->C0/F0/P0
POT pkt, action: POT_SEND payload: DATA
Meta: Src: F0/P0 Dst: F1/P0
IP: saddr 10.1.1.2 daddr 30.1.1.2 proto 6 len 500

Jul  7 09:49:56
09:49:56.419274:CID-00:FPC-01:PIC-00:THREAD_ID-00:FINDEX:0:IIF:75:SEQ:0:TC:17
PIC History: ->C0/F1/P0->C0/F0/P0->C0/F0/P0->C0/F0/P0->C0/F0/P0->C0/F1/P0
NP egress channel 0 packet
Meta: Src: F0/P0 Dst: F1/P0
IP: saddr 10.1.1.2 daddr 30.1.1.2 proto 6 len 500
```

3. Clear the log.

```
user@host> clear log e2e.trace
```

To perform packet capture for logical systems:

1. Configure the packet capture file.

```
[edit security datapath-debug]
user@host# set capture-file e2e.pcap
user@host# set capture-file format pcap
user@host# set capture-file size 10m
user@host# set capture-file world-readable
user@host# set capture-file maximum-capture-size 1500
```

2. Enter operational mode to start and then stop the packet capture.

```
user@host> request security datapath-debug capture start
user@host> request security datapath-debug capture stop
```

> **NOTE:** Packet capture files can be opened and analyzed offline with tcpdump or any packet analyzer that recognizes the libpcap format. You can also use FTP or the Session Control Protocol (SCP) to transfer the packet capture files to an external device.

3. Disable packet capture from configuration mode.

> **NOTE:** Disable packet capture before opening the file for analysis or transferring the file to an external device with FTP or SCP. Disabling packet capture ensures that the internal file buffer is flushed and all the captured packets are written to the file.

```
[edit forwarding-options]
user@host# set packet-capture disable
```

4. Display the packet capture.

   - To display the packet capture with the tcpdump utility:

```
user@host# tcpdump -nr /var/log/e2e.pcap
09:49:55.1413990 C0/F0/P0 event:11(lbt) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1414154 C0/F0/P0 event:11(lbt) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415062 C0/F0/P0 event:11(lbt) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415184 C0/F0/P0 event:11(lbt) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1414093 C0/F0/P0 event:12(pot) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1414638 C0/F0/P0 event:12(pot) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415011 C0/F0/P0 event:12(pot) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415129 C0/F0/P0 event:12(pot) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415511 C0/F0/P0 event:12(pot) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415649 C0/F0/P0 event:12(pot) SEQ:0 IP 10.1.1.2.23451 > 30.1.1.2.12345:
 S 0:460(460) win 0
09:49:55.1415249 C0/F0/P0 event:18(jexec) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:55.1415558 C0/F0/P0 event:18(jexec) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:55.1414226 C0/F0/P0 event:18(jexec) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:55.1414696 C0/F0/P0 event:18(jexec) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:55.1414828 C0/F0/P0 event:16(lt-enter) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:55.1414919 C0/F0/P0 event:15(lt-leave) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:56.417560 C0/F1/P0 event:1(np-ingress) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
09:49:56.419263 C0/F1/P0 event:2(np-egress) SEQ:0 IP 10.1.1.2.23451 >
30.1.1.2.12345: S 0:460(460) win 0
```

- To display the packet capture from CLI operational mode:

```
user@host> show security datapath-debug capture
Packet 1, len 568: (C0/F0/P0/SEQ:0:lbt)
00 00 00 00 00 00 50 c5 8d 0c 99 4a 00 00 0a 01
01 02 08 00 45 60 01 f4 00 00 00 00 40 06 4e 9f
```

```
0a 01 01 02 1e 01 01 02 5b 9b 30 39 00 00 00 00
00 00 00 00 50 02 00 00 f8 3c 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 ac 7a 00 04
00 00 00 00 b3 e3 15 4e 66 93 15 00 04 22 38 02
38 02 00 00 00 01 00 03 0b 00 00 00 50 d0 1a 08
30 de be bf e4 f3 19 08
Packet 2, len 624: (C0/F0/P0/SEQ:0:lbt)
aa 35 00 00 00 00 00 00 00 00 00 00 03 00 00
00 0a 00 00 00 00 00 00 05 bd 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 50 c5
8d 0c 99 4a 00 00 0a 01 01 02 08 00 45 60 01 f4
00 00 00 00 40 06 4e 9f 0a 01 01 02 ac 7a 00 04
00 00 00 00 b3 e3 15 4e 0a 94 15 00 04 5a 70 02
70 02 00 00 00 03 00 03 0b 00 00 00 50 d0 1a 08
30 de be bf e4 f3 19 08

...
(Packets 3 through 17 omitted)
...

Packet 18, len 568: (C0/F1/P0/SEQ:0:np-egress)
00 00 00 04 00 00 00 00 1e 01 01 02 50 c5 8d 0c
99 4b 08 00 45 60 01 f4 00 00 00 00 3e 06 50 9f
0a 01 01 02 1e 01 01 02 5b 9b 30 39 00 00 00 00
00 00 00 00 50 02 00 00 f8 3c 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 ac 7a 04 00
00 00 00 00 b4 e3 15 4e bf 65 06 00 04 22 38 02
38 02 00 00 00 11 00 03 02 00 00 00 50 d0 1a 08
30 de be bf e4 f3 19 08
```

user@host> **show security datapath-debug counters**

```
Datapath debug counters
Packet Filter 1:
lt-enter
Chassis 0 FPC 0 PIC 1: 0
lt-enter
Chassis 0 FPC 0 PIC 0: 1
lt-leave
Chassis 0 FPC 0 PIC 1: 0
lt-leave
Chassis 0 FPC 0 PIC 0: 1
```

```
np-egress
Chassis 0 FPC 1 PIC 3: 0
np-egress
Chassis 0 FPC 1 PIC 1: 0
np-egress
Chassis 0 FPC 1 PIC 2: 0
np-egress
Chassis 0 FPC 1 PIC 0: 1
pot
Chassis 0 FPC 0 PIC 1: 0
pot
Chassis 0 FPC 0 PIC 0: 6
np-ingress
Chassis 0 FPC 1 PIC 3: 0
np-ingress
Chassis 0 FPC 1 PIC 1: 0
np-ingress
Chassis 0 FPC 1 PIC 2: 0
np-ingress
Chassis 0 FPC 1 PIC 0: 1
lbt
Chassis 0 FPC 0 PIC 1: 0
lbt
Chassis 0 FPC 0 PIC 0: 4
jexec
Chassis 0 FPC 0 PIC 1: 0
jexec
Chassis 0 FPC 0 PIC 0: 4
```

SEE ALSO

Understanding Data Path Debugging for Logical Systems | 484

Troubleshooting DNS Name Resolution in Logical System Security Policies (Master Administrators Only)

Problem

Description: The address of a hostname in an address book entry that is used in a security policy might fail to resolve correctly.

Cause

Normally, address book entries that contain dynamic hostnames refresh automatically for SRX Series devices. The TTL field associated with a DNS entry indicates the time after which the entry should be refreshed in the policy cache. Once the TTL value expires, the SRX Series device automatically refreshes the DNS entry for an address book entry.

However, if the SRX Series device is unable to obtain a response from the DNS server (for example, the DNS request or response packet is lost in the network or the DNS server cannot send a response), the address of a hostname in an address book entry might fail to resolve correctly. This can cause traffic to drop as no security policy or session match is found.

Solution

The master administrator can use the **show security dns-cache** command to display DNS cache information on the SRX Series device. If the DNS cache information needs to be refreshed, the master administrator can use the **clear security dns-cache** command.

> **NOTE:** These commands are only available to the master administrator on devices that are configured for logical systems. This command is not available in user logical systems or on devices that are not configured for logical systems.

SEE ALSO

Understanding Logical Systems Security Policies | 210

RELATED DOCUMENTATION

Security Profiles for Logical Systems | 87

3

CHAPTER

Tenant Systems

Tenant Systems Overview | **495**

Security Zones for Tenant Systems | **544**

Flow for Tenant Systems | **549**

Flow Trace for Tenant Systems | **581**

Firewall Authentication for Tenant Systems | **584**

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UTM for Tenant Systems | **641**

IDP for Tenant Systems | **648**

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Tenant Systems Overview

IN THIS SECTION

- Understanding Tenant Systems | **496**
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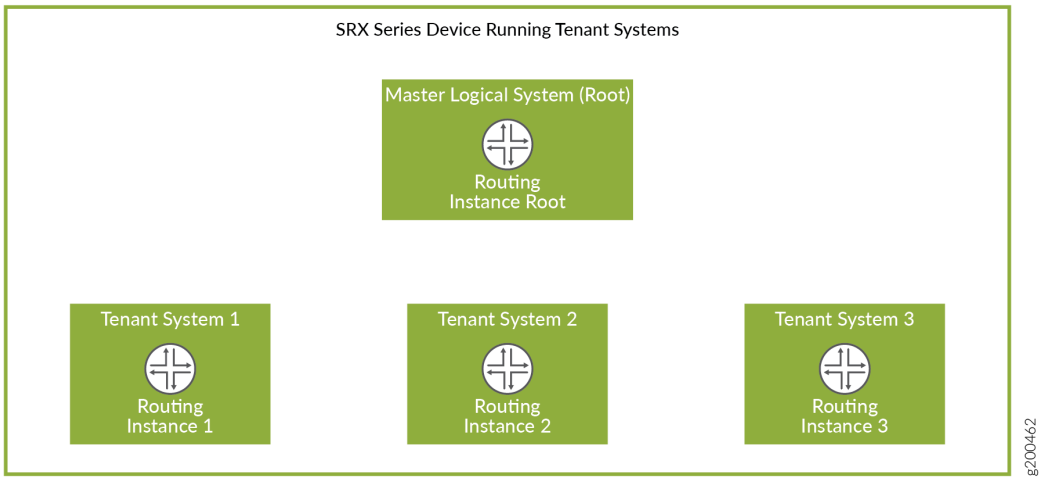
- Example: Creating Tenant Systems, Tenant System Administrators, and an Interconnect VPLS Switch | **502**
- Configuring a Routing Instance for a Tenant System | **515**
- Example: Configuring Tenant Systems | **516**
- Understanding Routing and Interfaces for Tenant Systems | **521**
- Understanding Tenant System Security Profiles (Master Administrators Only) | **527**
- Example: Configuring Tenant Systems Security Profiles (Master Administrators Only) | **532**

A tenant system supports routing, services and security features.

Understanding Tenant Systems

A tenant system logically partitions the physical firewall into separate and isolated logical firewall. Although similar to logical systems, tenant systems have much higher scalability and fewer routing features. Each tenant system on a device allows you to control a discrete administrative domain for security services. By transforming your device into a multitenant system, you can provide various departments, organizations, customers, and partners—depending on your environment—private and logically separated use of system resources and tenant-specific views of security configuration and KPIs. A master administrator creates and manages all the tenant systems. "Tenant Systems" on page 493 shows a single device with a master logical system and discrete tenant systems.

Figure 12: Tenant Systems



Differences Between Logical Systems and Tenant Systems

Table 29 on page 496 describes the key differences between logical systems and tenant systems.

Table 29: Differences Between Logical Systems and Tenant Systems

Functionality	Logical Systems	Tenant Systems
Feature support	Supports all the routing features to provide optimal data routing paths.	Supports routing features and high-scale security virtualization to isolate customer environments.
Scalability	A maximum of 32 logical systems can be configured on a physical SRX Series device.	A maximum of 500 tenant systems can be configured on a physical SRX Series device to provide high scalability.

Table 29: Differences Between Logical Systems and Tenant Systems *(continued)*

Functionality	Logical Systems	Tenant Systems
Routing protocol process	Every logical system needs an individual copy of the routing protocol process to logically separate the resources on a device.	The master logical system has a single routing protocol process, which is shared by the tenant systems. Routing instances supported by this single routing protocol process achieve the security resource separation on the firewall.
Routing instance	A default routing instance is automatically created for every logical system.	Starting in Junos OS Release 19.2R1, the virtual-router configured in a tenant system is passed as the default routing-instance to **ping**, **telnet**, **ssh**, **traceroute**, **show arp**, **clear arp**, **show ipv6 neighbors**, and **clear ipv6 neighbors** commands.
Logical interface configuration	The master administrator assigns the logical interfaces and the logical system administrator can configure the interface attributes.	A tenant system administrator cannot configure the logical interfaces. The master administrator assigns the logical interfaces to a tenant system.

Use Cases for Logical Systems and Tenant Systems

A logical system is used when more than one virtual router is required. For example, you have multiple connections to the external network and they cannot co-exist in the same virtual router. Tenant systems are used when you need to separate departments, organization, or customers and each of them can be limited to one virtual router. The main difference between a logical system and a tenant system is that a logical system supports advanced routing functionality using multiple routing instances. In comparison, a tenant system supports only one routing instance, but supports the deployment of significantly more tenants per system.

Deployment Scenarios for Multitenant Systems

You can deploy an SRX Series device running a multitenant system in many environments such as a managed security service provider (MSSP), an enterprise network, or a branch office segment. Table 30 on page 498 describes the various deployment scenarios and the roles played by the tenant systems in such scenarios.

Table 30: Deployment Scenarios with Respect to Tenant Systems

Deployment Scenarios	Roles of a Tenant System
Managed security service provider (MSSP)	• In a managed security service provider (MSSP), each customer can be isolated from other customer to protect data privacy. Customers that require defined service level agreements (SLAs) can be be allocated memory and system resources to meet these SLAs. • The customer can configure distinct security policies for compliance and control per tenant system.
Enterprise network	• A tenant system can be assigned to a workgroup, department, or other organizational construct within an enterprise. • A tenant system can define the distinct security policies for the enterprise workgroup, department, or other organizational construct of the enterprise.
Branch office segment	• In a branch office, a tenant system can individually manage and segregate corporate and guest traffic. • Advanced security policies can be configured per tenant system; this approach allows granular control of the security policies. • A tenant system provides ease of management and troubleshooting.

Benefits of Tenant Systems

- Curtail cost by reducing the number of physical devices required for your organization. You can consolidate services for various groups of users on a single device and reduce the hardware costs, power expenditure, and rack space.
- Provide isolation and logical separation at the tenant system level. Provides the ability to separate tenant systems with administrative separation at large scale in which each tenant system can define its own security controls and restrictions without impacting other tenant systems.

Roles and Responsibilities of Master Administrator and Tenant System Administrator

A master administrator creates and manages all the tenant systems. A master logical system is created at the root level and is allocated a single routing protocol process. Although this routing protocol process is shared, tenant systems enable logical resource separation on the firewall. By default, all system resources are assigned to the master logical system, and the master administrator allocates them to the tenant system administrators.

NOTE: In Junos OS command-line reference, master logical system is referred as root logical system.

A tenant system is created that is subtended by the master logical system. Although all the tenants under the master logical system share a single routing process, each tenant system has a single routing instance. Table 31 on page 499 describes the roles and responsibilities of the master administrator and tenant system administrator.

Table 31: Roles and Responsibilities With Respect to Tenant Systems

Roles	Definition	Responsibilities
Master administrator	A user account with superuser configuration and verification privileges for all logical systems and tenant systems.	• View and access all logical systems and tenant systems. • Create login accounts for all the tenant systems and assign the login accounts to the appropriate tenant system. • Create and allocate the resources to the tenant systems. • Create one custom routing instance under the tenant system which acts as the default routing instance for the tenant system. • Create a virtual router under the tenant system and assign it to the tenant system. • Create logical interfaces to assign to the tenant systems. • Manage the tenant systems in the master logical system. • Ensure duplicate names for tenant system, logs, and trace file do not exist.
Tenant system administrator	A tenant system account with all configuration and verification privileges. **NOTE:** The configuration and verification privileges of a tenant system administrator depends on the permission assigned to them by the master administrator while creating the tenant system administrator. Multiple tenant system administrators can be created for a tenant system with different permission levels based on your requirement.	• Access and view the resources of the tenant system. • Configure the resources allocated and routing protocols. • Configure schedulers, security profiles, and security features. The following privileges are not supported by the tenant system administrator: • Define access restrictions and the default routing instance for the tenant system. • Access and view the resources of other tenant systems. • Modify the number of allocated resources for a tenant system. • Create logical interfaces, virtual router, and policy options.

Tenant System Capacity

The maximum number of tenant systems that can be created on the device are listed in Table 32 on page 500.

Table 32: Tenant Systems Capacity

Platform	Logical Systems Capacity	Tenant Systems Capacity for Junos OS Release 18.3R1	Tenant Systems Capacity for Junos OS Release 18.4R1
SRX1500	32	18	50
SRX4100 and SRX4200	32	168	200
SRX4600	32	268	300
SRX5400, SRX5600, and SRX5800 Series devices with SPC2 cards	32	32	100
SRX5400, SRX5600, and SRX5800 Series devices with SPC3 cards	32	0	500
SRX5400, SRX5600, and SRX5800 Series devices with SPC2 and SPC3 cards	32	NA	100

Starting in Junos OS Release 18.4R1, tenant systems can be supported on an SRX5000 series security services gateway equipped with a combination of third generation service processing cards (SRX5K-SPC3) and second generation service processing cards (SRX5K-SPC-4-15-320). Prior to Junos OS Release 18.4R1, tenant systems was supported on SPC2 only.

SEE ALSO

Master Logical Systems Overview | 45

Tenant System Configuration Overview

The master administrator creates a tenant system and assigns an administrator for managing the tenant system. A tenant system can have multiple administrators. The roles and responsibilities of a tenant system administrator are explained in “Understanding Tenant Systems” on page 496.

The master administrator configures the logical interfaces and assigns those interfaces to the tenant system. Configure one routing instance and the routing protocols, and add options for the routing instance. See “Configuring a Routing Instance for a Tenant System” on page 515.

Tenant systems have their own configuration database. After successful configuration, the changes are merged to the master database for each tenant systems. Multiple tenant systems can perform configuration changes at a time. You can commit the changes for only one tenant at a time. If the master administrator and a tenant system administrator performs configuration changes simultaneously, the configuration changes performed by the master administrator override the configuration changes performed by the tenant system administrator.

The following steps explain the tasks that the tenant system administrator performs to configure the security features in a tenant system:

1. Use the SSH service to access the device, and then log in to the tenant system with the login ID and password provided by the master administrator.

   ```
   login: <tenant_name>
   password: <password>
   ```

   After you are authenticated, the presence of the “**>**” prompt indicates that you accessed to the CLI operational mode. The prompt is preceded by a string that contains the username, the hostname of the device, and the name of the tenant system. When the CLI starts, you are at the top level in operational mode.

   ```
   TSYS1_admin1@host:TSYS1>
   ```

2. Access the configuration mode by entering the **configure** command.

   ```
   TSYS1_admin1@host:TSYS1> configure
   TSYS1_admin1@host:TSYS1#
   ```

3. Enter the **quit** command to exit the configuration mode and return to the CLI operational mode.

   ```
   TSYS1_admin1@host:TSYS1# quit
   TSYS1_admin1@host:TSYS1>
   ```

4. Configure the following security features in the tenant system as necessary:

- Create zones for the tenant system and bind the logical interfaces to the zones. Create address books and use them in the security policies. See "Example: Configuring Zones in the Tenant System" on page 545.
- Configure screen options at the zone level. See "Example: Configuring Screen Options for a Tenant System" on page 626.
- Configure security policies between zones in the tenant system. See "Example: Configuring Security Policies in a Tenant System" on page 176.

  Custom applications or application sets can be created for specific types of traffic. To create a custom application, use the **application** configuration statement at the [**edit applications**] hierarchy level. To create an application set, use the **application-set** configuration statement at the [**edit applications**] hierarchy level.
- Configure firewall authentication to the tenant system. The master administrator creates access profiles in the master logical system. The tenant system administrator then configures a security policy that specifies firewall authentication for matching traffic and configures the type of authentication (pass-through or Web authentication), default access profile, and success banner. See "Configuring Firewall Authentication for a Tenant System" on page 587.
- Configure Network Address Translation (NAT) for the tenant system. See "Example: Configuring Network Address Translation for the Tenant Systems" on page 634.
- Configure Application Layer Gateway (ALG) for the tenant system. See "Example: Configuring ALG in Tenant System" on page 675.
- Configure Intrusion Detection and Prevention (IDP) policies and attacks for the tenant system. See "Example: Configuring IDP Policies and Attacks for Tenant Systems" on page 652.

Example: Creating Tenant Systems, Tenant System Administrators, and an Interconnect VPLS Switch

IN THIS SECTION

- Requirements | **503**
- Overview | **503**
- Configuration | **504**
- Verification | **513**

This example shows how to create tenant systems, tenant system administrators, and an interconnect VPLS switch. Only the master administrator can create user login accounts for tenant system administrators and interconnect VPLS switch.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with tenant systems.
- Junos OS Release 18.3R1 and later releases.
- Before you begin creating the tenant systems, tenant system administrators, and an interconnect VPLS switch, read “Tenant Systems Overview” on page 495 to understand how this task fits into the overall configuration process.

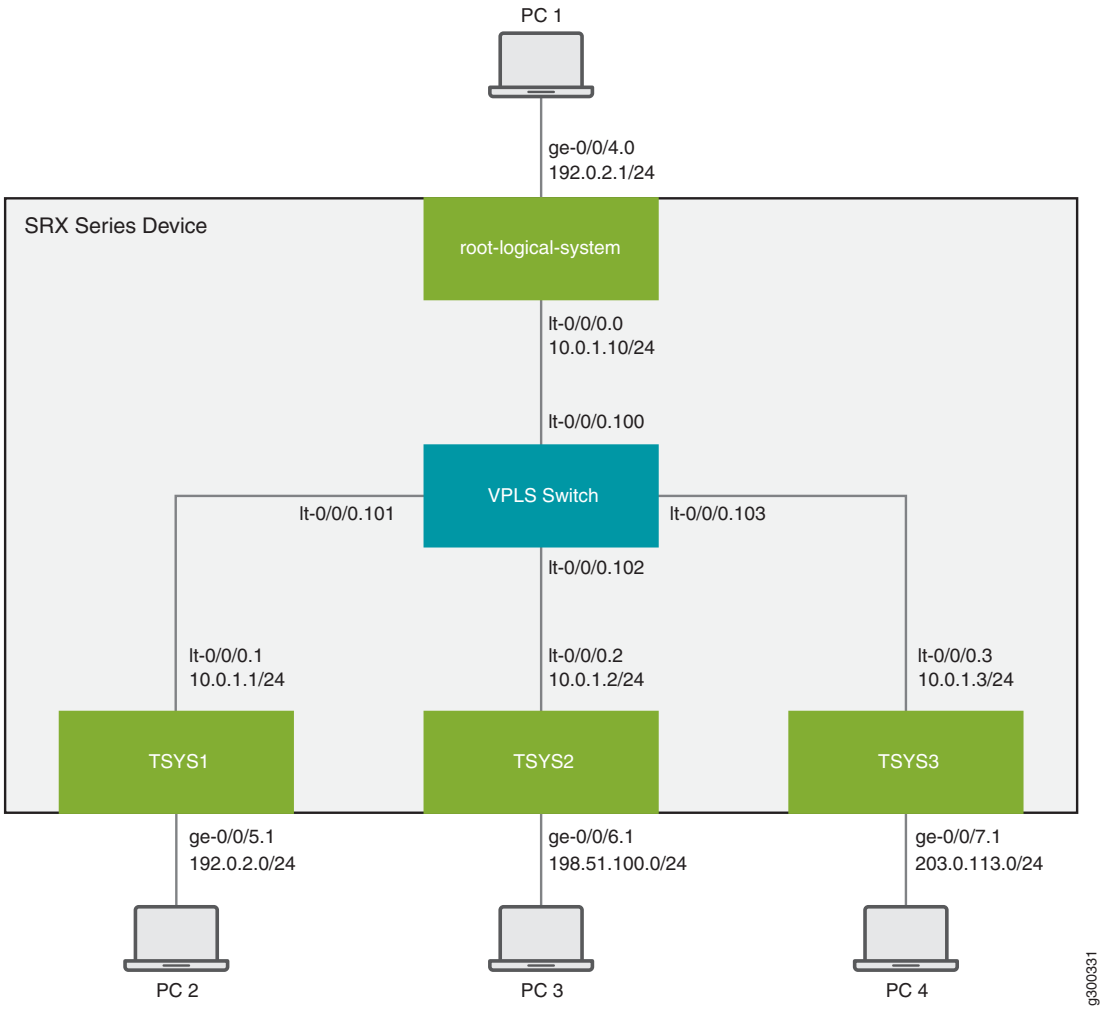
Overview

This example shows how to create the tenant systems **TSYS1**, **TSYS2**, and **TSYS3**, and the tenant system administrators for them. You can create multiple tenant system administrators for a tenant system with different permission levels based on your requirements.

This topic also covers the interconnect virtual private LAN service (VPLS) switch connecting one tenant system to another on the same device. The VPLS switch enables both transit traffic and traffic terminated at a tenant system to pass between tenant systems. To allow traffic to pass between tenant systems, logical tunnel (lt-0/0/0) interfaces should be configured in the same subnet.

The Figure 13 on page 504 shows an SRX Series device deployed and configured for tenant systems. The configuration examples reflect this deployment.

Figure 13: Creating Tenant Systems and Interconnect VPLS Switch



Configuration

IN THIS SECTION

- Configuring Tenant Systems, Tenant System Administrators, and Interconnect VPLS Switch | **504**

Configuring Tenant Systems, Tenant System Administrators, and Interconnect VPLS Switch

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TSYS1
set system login class TSYS1admin1 tenant TSYS1
set system login class TSYS1admin1 permissions all
set system login user TSYS1admin1 full-name TSYS1admin1
set system login user TSYS1admin1 class TSYS1admin1
set system login user TSYS1admin1 authentication plain-text-password "$ABC123"
set system login class TSYS1admin2 tenant TSYS1
set system login class TSYS1admin2 permissions view
set system login user TSYS1admin2 full-name TSYS1admin2
set system login user TSYS1admin2 class TSYS1admin2
set system login user TSYS1admin2 authentication plain-text-password "$ABC123"
set tenants TSYS2
set system login class TSYS2admin1 tenant TSYS2
set system login class TSYS2admin1 permissions all
set system login user TSYS2admin1 full-name TSYS2admin1
set system login user TSYS2admin1 class TSYS2admin1
set system login user TSYS2admin1 authentication plain-text-password "$ABC123"
set system login class TSYS2admin2 tenant TSYS2
set system login class TSYS2admin2 permissions view
set system login user TSYS2admin2 full-name TSYS2admin2
set system login user TSYS2admin2 class TSYS2admin2
set system login user TSYS2admin2 authentication plain-text-password "$ABC123"
set tenants TSYS3
set system login class TSYS3admin1 tenant TSYS3
set system login class TSYS3admin1 permissions all
set system login user TSYS3admin1 full-name TSYS3admin1
set system login user TSYS3admin1 class TSYS3admin1
set system login user TSYS3admin1 authentication plain-text-password "$ABC123"
set system login class TSYS3admin2 tenant TSYS3
set system login class TSYS3admin2 permissions view
set system login user TSYS3admin2 full-name TSYS3admin2
set system login user TSYS3admin2 class TSYS3admin2
set system login user TSYS3admin2 authentication plain-text-password "$ABC123"
set interfaces lt-0/0/0 unit 100 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 101encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 102 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 103 encapsulation ethernet-vplss
set routing-instances vr0 instance-type vpls
set routing-instances vr0 interface lt-0/0/0.100
set routing-instances vr0 interface lt-0/0/0.101
set routing-instances vr0 interface lt-0/0/0.102
```

```
set routing-instances vr0 interface lt-0/0/0.103
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

1. Create the first tenant system **TSYS1** and define its first administrator.

   a. Create the tenant system **TSYS1**.

   ```
   [edit]
   user@host# set tenants TSYS1
   ```

   b. Assign the user login class to the tenant system.

   ```
   [edit system]
   user@host# set login class TSYS1admin1 tenant TSYS1
   ```

   c. Assign **all** level permission to the login class, which allows full access to the tenant system administrator.

   ```
   [edit system]
   user@host# set login class TSYS1admin1 permissions all
   ```

   d. Create a tenant system administrator and assign a full name to the tenant system administrator.

   ```
   [edit system]
   user@host# set login user TSYS1admin1 full-name TSYS1admin1
   ```

   e. Associate the administrator login class with the tenant system administrator to allow the administrator to log in to the tenant system.

   ```
   [edit system]
   user@host# set login user TSYS1admin1 class TSYS1admin1
   ```

   f. Create a user login password for the first tenant system administrator.

   ```
   [edit system]
   ```

```
user@host# set login user TSYS1admin1 authentication plain-text-password
New password: "$ABC123"
Retype new password: "$ABC123"
```

2. Configure second tenant system administrator for the first tenant system.

   a. Configure the user login class and assign it to the tenant system.

   ```
   [edit system]
   user@host# set login class TSYS1admin2 tenant TSYS1
   ```

   b. Assign the **view** level permission to the login class, which allows the login class to view the tenant system resources and settings but not change them.

   ```
   [edit system]
   user@host# set login class TSYS1admin2 permissions view
   ```

   c. Create second tenant system administrator and assign a full name to the tenant system administrator.

   ```
   [edit system]
   user@host# set login user TSYS1admin2 full-name TSYS1admin2
   ```

   d. Associate the login class with the tenant system administrator to allow the tenant system administrator to log in to the tenant system.

   ```
   [edit system]
   user@host# set login user TSYS1admin2 class TSYS1admin2
   ```

   e. Create a user login password for the second tenant system administrator.

   ```
   [edit system]
   user@host# set login user TSYS1admin2 authentication plain-text-password
   New password: "$ABC123"
   Retype new password: "$ABC123"
   ```

3. Create the second tenant system **TSYS2** and define its first administrator.

   a. Create the tenant system **TSYS2**.

```
[edit]
user@host# set tenants TSYS2
```

b. Assign the user login class to the tenant system.

```
[edit system]
user@host# set login class TSYS2admin1 tenant TSYS2
```

c. Assign **all** level permission to the login class, which allows full access to the tenant system administrator.

```
[edit system]
user@host# set login class TSYS2admin1 permissions all
```

d. Create a tenant system administrator and assign a full name to the tenant system administrator.

```
[edit system]
user@host# set login user TSYS2admin1 full-name TSYS2admin1
```

e. Associate the administrator login class with the tenant system administrator to allow the administrator to log in to the tenant system.

```
[edit system]
user@host# set login user TSYS2admin1 class TSYS2admin1
```

f. Create a user login password for the first tenant system administrator.

```
[edit system]
user@host# set login user TSYS2admin1 authentication plain-text-password
New password: "$ABC123"
Retype new password: "$ABC123"
```

4. Configure the second tenant system administrator for the second tenant system.

   a. Configure the user login class and assign it to the second tenant system.

```
[edit system]
user@host# set login class TSYS2admin2 tenant TSYS2
```

b. Assign the **view** level permission to the login class, which allows the login class to view the tenant system resources and settings but not change them.

```
[edit system]
user@host# set login class TSYS2admin2 permissions view
```

c. Create second tenant system administrator and assign a full name to the tenant system administrator.

```
[edit system]
user@host# set login user TSYS2admin2 full-name TSYS2admin2
```

d. Associate the login class with the tenant system administrator to allow the tenant system administrator to log in to the tenant system.

```
[edit system]
user@host# set login user TSYS2admin2 class TSYS2admin2
```

e. Create a user login password for the second tenant system administrator.

```
[edit system]
user@host# set login user TSYS2admin2 authentication plain-text-password
New password: "$ABC123"
Retype new password: "$ABC123"
```

5. Create the third tenant system **TSYS3** and define its first administrator.

a. Create the tenant system **TSYS3**.

```
[edit]
user@host# set tenants TSYS3
```

b. Assign the user login class to the tenant system.

```
[edit system]
user@host# set login class TSYS3admin1 tenant TSYS3
```

c. Assign **all** level permission to the login class, which allows full access to the tenant system administrator.

```
[edit system]
user@host# set login class TSYS3admin1 permissions all
```

d. Create a tenant system administrator and assign a full name to the tenant system administrator.

```
[edit system]
user@host# set login user TSYS3admin1 full-name TSYS3admin1
```

e. Associate the administrator login class with the tenant system administrator to allow the administrator to log in to the tenant system.

```
[edit system]
user@host# set login user TSYS3admin1 class TSYS3admin1
```

f. Create a user login password for the first tenant system administrator.

```
[edit system]
user@host# set login user TSYS3admin1 authentication plain-text-password
New password: "$ABC123"
Retype new password: "$ABC123"
```

6. Configure second tenant system administrator for the third tenant system.

a. Configure the user login class and assign it to the tenant system.

```
[edit system]
user@host# set login class TSYS3admin2 tenant TSYS3
```

b. Assign the **view** level permission to the login class, which allows the login class to view the tenant system resources and settings but not change them.

```
[edit system]
user@host# set login class TSYS3admin2 permissions view
```

c. Create second tenant system administrator and assign a full name to the tenant system administrator.

```
[edit system]
user@host# set login user TSYS3admin2 full-name TSYS3admin2
```

d. Associate the login class with the tenant system administrator to allow the tenant system administrator to log in to the tenant system.

```
[edit system]
user@host# set login user TSYS3admin2 class TSYS3admin2
```

e. Create a user login password for the second tenant system administrator.

```
[edit system]
user@host# set login user TSYS3admin2 authentication plain-text-password
New password: "$ABC123"
Retype new password: "$ABC123"
```

7. Configure an interfaces for VPLS switch.

```
user@host# set interfaces lt-0/0/0 unit 100 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 101 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 102 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 103 encapsulation ethernet-vpls
```

8. Configure a routing instance for VPLS switch and assign logical tunnel interfaces.

```
user@host# set routing-instances vr0 instance-type vpls
user@host# set routing-instances vr0 interface lt-0/0/0.100
user@host# set routing-instances vr0 interface lt-0/0/0.101
user@host# set routing-instances vr0 interface lt-0/0/0.102
user@host# set routing-instances vr0 interface lt-0/0/0.103
```

Results

From configuration mode, confirm your configuration by entering the **show tenants** command to verify that the tenant system is created. Enter the **show system login class** command to view the permission level for each class that you defined. To ensure that the tenant system administrators are created, enter the **show system login user** command. To ensure that the **lt-0/0/0** interfaces for interconnect VPLS switch are created, enter the **show interfaces lt-0/0/0** command.

```
user@host# show tenants
```

```
TSYS1;
TSYS2;
TSYS3;
```

```
user@host# show system login class TSYS1admin1
```

```
permissions all;
```

```
user@host# show system login class TSYS1admin2
```

```
permissions view;
```

```
user@host# show system login user ?
```

```
  TSYS1admin1          TSYS1admin1
  TSYS1admin2          TSYS1admin2
  TSYS2admin1          TSYS2admin1
  TSYS2admin2          TSYS2admin2
  TSYS3admin1          TSYS3admin1
  TSYS3admin2          TSYS3admin2
```

```
user@host# show interfaces lt-0/0/0
```

```
unit 100 {
    encapsulation ethernet-vpls;
    peer-unit 0;
}
unit 101 {
    encapsulation ethernet-vpls;
    peer-unit 1;
}
unit 102 {
    encapsulation ethernet-vpls;
    peer-unit 2;
}
unit 103 {
    encapsulation ethernet-vpls;
    peer-unit 3;
}
```

If the output does not display the intended configuration, repeat the configuration instructions in these examples to correct it. If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Tenant Systems and Login Configurations Using Master Administrator | **513**
- Verifying Tenant Systems and Login Configurations Using SSH | **514**

Confirm that the configuration is working properly.

Verifying Tenant Systems and Login Configurations Using Master Administrator

Purpose

Verify that the tenant systems exist and you can enter them from root as the master administrator. Return from the tenant system to the root.

Action

From operational mode, use the following command to enter the tenant systems **TSYS1**:

```
root@host> set cli tenant TSYS1
```

```
Tenant: TSYS1
```

```
root@host:TSYS1>
```

Now you are entered to the tenant systems **TSYS1**. Use the following command to exit from tenant systems **TSYS1** to the root:

```
root@host:TSYS1> clear cli tenant
```

```
Cleared default tenants
```

```
root@host>
```

Meaning

Tenant system exists and you can enter to the tenant system from the root as the master administrator.

Verifying Tenant Systems and Login Configurations Using SSH

Purpose

Verify that the tenant systems you created exist, and that the administrator login IDs and passwords that you created are correct.

Action

Use SSH to log in to each user tenant system administrator.

1. Run SSH specifying the IP address of your SRX Series device.

2. Enter the login ID and password for the tenant systems administrator that you created. After you log in, the prompt shows the tenant systems administrator name. Notice how this result differs from the result produced when you log in to the tenant system from the master logical system at root. Repeat this procedure for all of your tenant systems.

```
login: TSYS1admin1
Password: "$ABC123"
TSYS1admin1@host: TSYS1>
```

Meaning

Tenant system administrator **TSYS1admin1** exists and you can login as the tenant system administrator.

SEE ALSO

Session Creation for Devices Running Tenant Systems | 550

Configuring tenant systems Interconnect with Logical Tunnel Interface point-to-point connection | 565

Configuring a Routing Instance for a Tenant System

A routing instance is a collection of routing tables, interfaces, and routing protocol parameters. A set of interfaces that belong to the routing instance and the routing protocol parameters control the information in the routing instance. A tenant system can configure the assigned routing instance and the interfaces that belong to the routing instance within a tenant system.

> **NOTE:** Only one routing instance can be created for a tenant system.

The following procedure describes the steps to configure a routing instance and interfaces in a routing table for a tenant system:

1. Create a tenant system named **TSYS1**.

```
[edit]
user@host# set tenants TSYS1
```

2. Create a routing instance **r1** and assign the routing instance type for the tenant system.

```
[edit]
user@host# set tenants TSYS1 routing-instances r1 instance-type virtual-router
```

3. Specify the interface name for the routing instance.

```
[edit]
user@host# set tenants TSYS1 routing-instances r1 interface lt-0/0/0.101
user@host# set tenants TSYS1 routing-instances r1 interface xe-0/0/0.0
user@host# set tenants TSYS1 routing-instances r1 interface xe-0/0/1.0
```

4. Specify the routing option for the routing instance.

```
[edit]
user@host# set tenants TSYS1 routing-instances r1 routing-options router-id 1.1.1.101
```

5. Commit the configuration.

```
[edit]
```

```
user@host# commit
```

To view the configuration for the tenant system **TSYS1**, run the **show tenants TSYS1** command.

```
routing-instances {
    r1 {
        instance-type virtual-router;
        interface lt-0/0/0.101;
        interface xe-0/0/0.0;
        interface xe-0/0/1.0;
        routing-options {
            router-id 1.1.1.101;
        }
    }
}
```

The **show tenants TSYS1** command displays all the routing instance parameters configured for the tenant system **TSYS1**.

Example: Configuring Tenant Systems

IN THIS SECTION

- Requirements | **517**
- Overview | **517**
- Configuration | **518**
- Verification | **520**

This example shows how to configure the logical interfaces, routing instance, zones, and the default security policies for a tenant system.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with the tenant system.
- Junos OS Release 18.3R1 and later releases.

Before you begin:

- Log in to the tenant system as the tenant system administrator. See "Tenant System Configuration Overview" on page 500.
- Be sure you know which logical interfaces, logical tunnel interfaces, and corresponding IP addresses are assigned to the tenant system by the master administrator. See "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.
- Understand how to create a tenant system. See "Example: Creating User Logical Systems, Their Administrators, Their Users, and an Interconnect Logical System" on page 76

Overview

A routing instance is a collection of routing tables, interfaces, and routing protocol parameters. Logical interfaces on a device are allocated among the tenant systems by the master administrator. The master administrator can configure the interface and its attributes for the tenant system interfaces. This example shows how the TSYS1 tenant system administrator configures the routing instance, security policies, and security zones for the TSYS1 tenant system.

Table 33 on page 517 provides the parameters used in this example.

Table 33: Tenant System Configuration

Feature	Name	Configuration Parameters
Routing instance	VR1	• Instance type: virtual router • Includes interfaces ge-0/0/2.0 and ge-0/0/4.0 • Static routes: ◦ 192.0.2.1/24 next-hop 198.51.100.0/24
Zones	trust	Bind to interface ge-0/0/2.0
	untrust	Bind to interface ge-0/0/4.0
Policies	default-policy	Permit all traffic

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set routing-instances VR1 instance-type virtual-router
set routing-instances VR1 interface ge-0/0/2.0
set routing-instances VR1 interface ge-0/0/4.0
set routing-instances VR1 routing-options static route 192.0.2.1/24 next-hop 198.51.100.0/24
set security policies default-policy permit-all
set security zones security-zone trust host-inbound-traffic system-services all
set security zones security-zone trust host-inbound-traffic protocols all
set security zones security-zone trust interfaces ge-0/0/2.0
set security zones security-zone untrust host-inbound-traffic system-services all
set security zones security-zone untrust host-inbound-traffic protocols all
set security zones security-zone untrust interfaces ge-0/0/4.0
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *Junos OS CLI User Guide*.

To configure a tenant system:

1. Log in to the tenant system as the administrator for tenant system and enter configuration mode.

   ```
   TSYS1_admin1@host:TSYS1> configure
   TSYS1_admin1@host:TSYS1#
   ```

2. Configure the routing instance and assign interfaces.

   ```
   [edit routing-instances]
   TSYS1_admin1@host:TSYS1# set VR1 instance-type virtual-router
   TSYS1_admin1@host:TSYS1# set VR1 interface ge-0/0/2.0
   TSYS1_admin1@host:TSYS1# set VR1 interface ge-0/0/4.0
   ```

3. Configure static routes.

   ```
   [edit routing-instances]
   TSYS1_admin1@host:TSYS1# set VR1 routing-options static route 192.0.2.1/24 next-hop 198.51.100.0/24
   ```

4. Configure security policies.

```
[edit security policies]
TSYS1_admin1@host:TSYS1# set default-policy permit-all
```

5. Configure security zones and assign interfaces to each zone.

```
[edit security zones]
TSYS1_admin1@host:TSYS1# set security-zone trust host-inbound-traffic system-services all
TSYS1_admin1@host:TSYS1# set security-zone trust host-inbound-traffic protocols all
TSYS1_admin1@host:TSYS1# set security-zone trust interfaces ge-0/0/2.0
TSYS1_admin1@host:TSYS1# set security-zone untrust host-inbound-traffic system-services all
TSYS1_admin1@host:TSYS1# set security-zone untrust host-inbound-traffic protocols all
TSYS1_admin1@host:TSYS1# set security-zone untrust interfaces ge-0/0/4.0
```

Results

From configuration mode, confirm your configuration by entering the **show routing-instances** and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
TSYS1_admin1@host:TSYS1# show routing-instances
    VR1 {
        instance-type virtual-router;
        interface ge-0/0/2.0;
        interface ge-0/0/4.0;
        routing-options {
            static {
                route 192.0.2.1/24 next-hop 198.51.100.0/24;
            }
        }
    }
TSYS1_admin1@host:TSYS1# show security
    policies {
        default-policy {
            permit-all;
        }
    }
    zones {
        security-zone trust {
            host-inbound-traffic {
                system-services {
                    all;
```

```
            }
            protocols {
                all;
            }
        }
        interfaces {
            ge-0/0/2.0;
        }
    }
    security-zone untrust {
        host-inbound-traffic {
            system-services {
                all;
            }
            protocols {
                all;
            }
        }
        interfaces {
            ge-0/0/4.0;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying Policy Configuration

Purpose

Verify the security policy details of the TSYS1 tenant system.

Action

From operational mode, enter the **show security policies detail** command to view the details of all the security policies configured for the TSYS1 tenant system.

`TSYS1_admin1@host:TSYS1>` **show security policies detail**

```
Default policy: permit-all
Pre ID default policy: permit-all
```

Meaning

The output displays the security policy details of the TSYS1 tenant system.

SEE ALSO

Understanding Tenant Systems | 496

Understanding Routing and Interfaces for Tenant Systems

A routing instance is a collection of routing tables, interfaces, and routing protocol parameters. The interfaces are used for forwarding data for the routing instance, and to learn the routing information from other peers (SRX devices) using routing protocols.

A Logical interface (IFL) can be defined at either one of the following levels:

- Global level (root logical system)
- User logical system level
- Tenant system level (Starting from Release Junos OS 18.4R1)

The IFL defined at the global level can be used either in root logical system or in one of the tenant systems. The IFL defined in a tenant system can be used in that tenant system only.

Default routing instance is not available for tenant systems. So, when a custom routing instance is created for a tenant system, all the interfaces defined in that tenant system should be added to that routing instance.

Example: Configuring Routing and Interfaces for Tenant Systems

IN THIS SECTION

- Requirements | 522
- Overview | 522
- Configuration | 522

This example shows how to configure interfaces and routing instances for a tenant system.

Requirements

Before you begin:

- Determine which logical interfaces and, optionally, which logical tunnel interfaces are allocated. See "Tenant System Configuration Overview" on page 500.

Overview

The following procedure describes the steps to configure a routing instance and interfaces in a routing table within a tenant system.

This example configures the interfaces and routing instances described in Table 34 on page 522.

Table 34: User Tenant System Interface and Routing Instance Configuration

Feature	Name	Configuration Parameters
Interface	ge-0/0/2.1 ge-0/0/2.2 ge-0/0/2.3	• IP address 10.0.0.1/24 • IP address 10.0.0.2/24 • IP address 10.0.0.3/24
Routing instance	r1 r2	• Instance type: virtual router • Includes interfaces ge-0/0/2.1, ge-0/0/2.3, and ge-0/0/2.2

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces ge-0/0/2 vlan-tagging
set interfaces ge-0/0/2.3 vlan-id 103
set interfaces ge-0/0/2.3 family inet address 10.0.0.3/24
set tenants TSYS1
set tenants TSYS1 interfaces ge-0/0/2.1 vlan-id 101
set tenants TSYS1 interfaces ge-0/0/2.1 family inet address 10.0.0.1/24
set tenants TSYS1 routing-instances r1 instance-type virtual-router
set tenants TSYS1 routing-instances r1 interface ge-0/0/2.1
set tenants TSYS1 routing-instances r1 interface ge-0/0/2.3
set tenants TSYS2
set tenants TSYS2 interfaces ge-0/0/2.2 vlan-id 102
set tenants TSYS2 interfaces ge-0/0/2.2 family inet address 10.0.0.2/24
set tenants TSYS2 routing-instances r2 instance-type virtual-router
```

```
set tenants TSYS2 routing-instances r2 interface ge-0/0/2.2
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure an interface and a routing instance in a user logical system:

1. Configure the interfaces to support VLAN tagging.

```
[edit]
user@host# set interfaces ge-0/0/2 vlan-tagging
```

2. Configure the IFL at the root level.

```
[edit]
set interfaces ge-0/0/2.3 vlan-id 103
set interfaces ge-0/0/2.3 family inet address 10.0.0.3/24
```

3. Create a tenant system named **TSYS1**.

```
[edit]
user@host# set tenants TSYS1
```

4. Define the Interface in the tenant system TSYS1.

```
[edit]
user@host# set tenants TSYS1 interfaces ge-0/0/2.1 vlan-id 101
user@host# set tenants TSYS1 interfaces ge-0/0/2.1 family inet address 10.0.0.1/24
user@host# set tenants TSYS1 routing-instances r1 interface ge-0/0/2.3
```

5. Create a routing instance **r1** and assign the routing instance type for the tenant system.

```
[edit]
user@host# set tenants TSYS1 routing-instances r1 instance-type virtual-router
```

6. Specify the interface name for the routing instance.

```
[edit]
user@host# set tenants TSYS1 routing-instances r1 interface ge-0/0/2.1
```

7. Create a tenant system named **TSYS2**.

```
[edit]
user@host# set tenants TSYS2
```

8. Define the Interface in the tenant system TSYS2.

```
[edit]
user@host# set tenants TSYS2 interfaces ge-0/0/2.2 vlan-id 102
user@host# set tenants TSYS2 interfaces ge-0/0/2.2 family inet address 10.0.0.2/24
```

9. Create a routing instance **r2** and assign the routing instance type for the tenant system.

```
[edit]
user@host# set tenants TSYS2 routing-instances r2 instance-type virtual-router
```

10. Specify the interface name for the routing instance.

```
[edit]
user@host# set tenants TSYS2 routing-instances r2 interface ge-0/0/2.2
```

11. Commit the configuration.

```
[edit]
user@host# commit
```

Results

From configuration mode, confirm your configuration by entering the **show interfaces** and **show tenants** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show interfaces
ge-0/0/2 {
```

```
    vlan-tagging;
    unit 3 {
        vlan-id 103;
        family inet {
            address 10.0.0.3/24;
        }
    }
}
```

```
[edit]
user@host# show tenants
TSYS1 {
    interfaces {
        ge-0/0/2 {
            unit 1 {
                vlan-id 101;
                family inet {
                    address 10.0.0.1/24;
                }
            }
        }
    }
    routing-instances {
        r1 {
            instance-type virtual-router;
            interface ge-0/0/2.1;
            interface ge-0/0/2.3;
        }
    }
}
TSYS2 {
    interfaces {
        ge-0/0/2 {
            unit 2 {
                vlan-id 102;
                family inet {
                    address 10.0.0.2/24;
                }
            }
        }
    }
    routing-instances {
        r2 {
            instance-type virtual-router;
```

```
        interface ge-0/0/2.2;
      }
    }
  }
```

The **show tenants** command displays all the interfaces that are defined in the tenant systems **TSYS1** and **TSYS2**, and the routing instance parameters configured for both the tenant systems.

```
user@host> show interfaces ge-0/0/2.1 detail
  Logical interface ge-0/0/2.1 (Index 89) (SNMP ifIndex 548) (Generation 161)
    Flags: Up SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.101 ]  Encapsulation: ENET2
    Tenant Name: TSYS1
    Traffic statistics:
     Input  bytes  :                   0
     Output bytes  :                  46
     Input  packets:                   0
     Output packets:                   1
    Local statistics:
     Input  bytes  :                   0
     Output bytes  :                  46
     Input  packets:                   0
     Output packets:                   1
    Transit statistics:
     Input  bytes  :                   0                  0 bps
     Output bytes  :                   0                  0 bps
     Input  packets:                   0                  0 pps
     Output packets:                   0                  0 pps
    Security: Zone: Null
    Flow Statistics :
.............................
```

```
user@host> show interfaces ge-0/0/2.2 detail
  Logical interface ge-0/0/2.2 (Index 90) (SNMP ifIndex 549) (Generation 162)
    Flags: Up SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.102 ]  Encapsulation: ENET2
    Tenant Name: TSYS2
    Traffic statistics:
     Input  bytes  :                   0
     Output bytes  :                  46
     Input  packets:                   0
     Output packets:                   1
    Local statistics:
     Input  bytes  :                   0
```

```
 Output bytes  :                  46
 Input  packets:                   0
 Output packets:                   1
Transit statistics:
 Input  bytes  :                   0                    0 bps
 Output bytes  :                   0                    0 bps
 Input  packets:                   0                    0 pps
 Output packets:                   0                    0 pps
Security: Zone: Null
Flow Statistics :
Flow Input statistics :
  Self packets :                    0
  ICMP packets :                    0
  VPN packets :              ..........................
```

SEE ALSO

- Tenant System Configuration Overview | 500

Understanding Tenant System Security Profiles (Master Administrators Only)

IN THIS SECTION

- Tenant Systems Security Profiles | 528
- Understanding How the System Assesses Resources Assignment and Use Across the Tenant Systems | 528
- Cases: Assessments of Reserved Resources Assigned Through Security Profiles | 530

Tenant systems allow you to virtually divide a supported SRX Series device into multiple devices, securing them from intrusion and attacks, and protecting them from faulty conditions outside their own contexts. To protect tenant systems, security resources are configured in a manner similar to how they are configured for a discrete device. However, the master administrator assigns resources to the tenant systems.

An SRX Series device running tenant systems can be partitioned into tenant systems, an interconnected tenant system, if necessary, and the default master logical system. When the system is initialized, the

master logical system is created at the root. All system resources are assigned to it, effectively creating a default master logical system security profile. To distribute security resources across the tenant systems, the master administrator creates security profiles that specify the resources to be allocated to a tenant system. Only the master administrator can configure security profiles and bind them to the tenant systems. The tenant system administrator uses these resources for the respective tenant system.

The tenant systems are defined by the resources allocated to them, including security components, interfaces, routing instance, static routes, and dynamic routing protocols. The master administrator configures the security profiles and assigns them to the tenant systems. You cannot commit a tenant system configuration without a security profile assigned to it.

This topic includes the following sections:

Tenant Systems Security Profiles

The master administrator can configure and assign a security profile to a specific tenant system or multiple tenant systems. The maximum number of security profiles that can be configured depends on the capacity of an SRX Series device. When the maximum number of security profiles have been created, you need to delete a security profile and commit the configuration change before you can create and commit another security profile. In many cases, fewer security profiles are needed because you can bind a single security profile to more than one tenant system.

Security profiles allow you to:

- Share the device's resources, including policies, zones, addresses and address books, flow sessions, and various forms of NAT, among all tenant systems appropriately. You can assign various amounts of a resource to the tenant systems and allow the tenant systems to utilize the resources effectively.

  Security profiles protect against one tenant system exhausting a resource that is required at the same time by other tenant systems. Security profiles protect critical system resources and maintain a better performance among tenant systems when the device is experiencing a heavy traffic flow. Security profiles defend against one tenant system dominating the use of resources and allow the other tenant systems to use the resources effectively.
- Configure the device in a scalable way to allow for creation of additional tenant systems.

You need to delete the security profile of a tenant system before you can delete the tenant system.

Understanding How the System Assesses Resources Assignment and Use Across the Tenant Systems

To provision a tenant system with security features, the master administrator configures a security profile that specifies the resource for each security feature:

- A reserved quota that guarantees that the specified resource amount is always available to the tenant system.

- A maximum allowed quota. If a tenant system requires additional resources that exceed the reserved quota, then it can utilize the resources configured for the global maximum amount if the global resources are not allocated to the other tenant systems. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. The tenant systems need to utilize the global resources effectively based on the available resources.

If a reserved quota is not configured for a resource, the default value is 0. If a maximum allowed quota is not configured for a resource, the default value is the global system quota for the resource (global system quotas are platform-dependent). The master administrator must configure the appropriate maximum allowed quota values in the security profiles so that the maximum resource usage of a specific tenant system does not negatively impact other tenant systems configured on the device.

The system maintains a count of all allocated resources that are reserved, used, and made available again when a tenant system is deleted. This count determines whether resources are available to use for tenant systems or to increase the amount of the resources allocated to existing tenant systems through their security profiles.

Resources configured in security profiles are characterized as static modular resources or dynamic resources. For static resources, we recommend setting a maximum quota for a resource equal or close to the amount specified as its reserved quota, to allow for scalable configuration of tenant systems. A maximum quota for a resource gives a tenant system greater flexibility through access to a larger amount of that resource, but it constrains the amount of resources available to allocate to other tenant systems.

The following security features resources can be specified in a security profile:

- Security zones
- Addresses and address books for security policies
- Application firewall rule sets
- Application firewall rules
- Firewall authentication
- Flow sessions and gates
- NAT, including:
  - Cone NAT bindings
  - NAT destination rule
  - NAT destination pool
  - NAT IP address in source pool without Port Address Translation (PAT)

> **NOTE:** IPv6 addresses in IPv6 source pools without PAT are not included in security profiles.

- NAT IP address in source pool with PAT
- NAT port overloading
- NAT source pool
- NAT source rule
- NAT static rule

NOTE: All resources except flow sessions are static.

You can modify a tenant system security profile dynamically while the security profile is assigned to other tenant systems. However, to ensure that the system resource quota is not exceeded, the system takes the following actions:

- If a static quota is changed, the system process that maintains the tenant system counts for resources specified in security profiles subsequently reevaluates the security profiles assigned to the profile associated with the static quota. This check identifies the number of resources assigned across all tenant systems to determine whether the allocated resources, including their increased amounts are available.

  These quota checks are the same quota checks that the system performs when you add a tenant system and bind a security profile to it. They are also performed when you bind a different security profile from the security profile that is currently assigned to it to an existing tenant system (or the master logical system).

- If a dynamic quota is revised, no check is performed, but the revised quota is imposed on future resource usage.

Cases: Assessments of Reserved Resources Assigned Through Security Profiles

To understand how the system assesses allocation of reserved resources through security profiles, consider the following three cases explained in Table 36 on page 531 and that address allocation of the resources and zones. To keep the example simple, 10 zones are allocated in security-profile-1: 4 reserved zones and 6 maximum zones. This example assumes that the maximum amount specified—six zones—is available for the tenant systems. The system maximum number of zones is 10.

The three cases address the configuration across the tenant systems. The three cases verify whether a configuration succeeds or fails when it is committed based on the allocation of zones.

Table 35 on page 531 shows the security profiles and their zone allocations.

Table 35: Security Profiles Used for Reserved Resource Assessments

Two Security Profiles Used in the Configuration Cases
security-profile-1 • zones reserved quota = 4 • zones maximum quota = 6 **NOTE:** The master administrator dynamically increases the reserved zone count specified in this profile later.
master-logical-system-profile • zones maximum quota = 10 • no reserved quota

Table 36 on page 531 shows three cases that illustrate how the system assesses reserved resources for zones across the tenant systems based on the security profile configurations.

- The configuration for the first case succeeds because the cumulative reserved resource quota for zones configured in the security profiles bound to all tenant systems is 8, which is less than the system maximum resource quota.
- The configuration for the second case fails because the cumulative reserved resource quota for zones configured in the security profiles bound to all logical systems is 12, which is greater than the system maximum resource quota.
- The configuration for the third case fails because the cumulative reserved resource quota for zones configured in the security profiles bound to all tenant systems is 12, which is greater than the system maximum resource quota.

Table 36: Reserved Resource Allocation Assessment Across Tenant Systems

Reserved Resource Quota Checks Across Tenant Systems
Example 1: Succeeds This configuration is within bounds: 4+4+0=8, maximum capacity =10. Security Profiles Used • The security profile security-profile-1 is bound to two tenant systems: tenant-system-1 and tenant-system-2. • The master-logical-system-profile profile is used exclusively for the master logical system. • tenant-system-1 = 4 reserved zones. • tenant-system-2 = 4 reserved zones. • master-logical-system = 0 reserved zones.

Table 36: Reserved Resource Allocation Assessment Across Tenant Systems *(continued)*

Reserved Resource Quota Checks Across Tenant Systems
Example 2: Fails This configuration is out of bounds: 4+4+4=12, maximum capacity =10. • tenant-system-1 = 4 reserved zones. • tenant-system-2 = 4 reserved zones. • master-logical-system = 0 reserved zones. • new-tenant-system = 4 reserved zones. Security Profiles • The security profile security-profile-1 is bound to two tenant systems: tenant-system-1 and tenant-system-2. • The master-logical-system-profile is bound to the master logical system and used exclusively for it. • The master administrator configures a new tenant system called new-tenant-system and binds security-profile-1 to it.
Example 3: Fails This configuration is out of bounds: 6+6=12, maximum capacity =10. The master administrator modifies the reserved zones quota in security-profile-1, increasing the count to 6. • tenant-system-1 = 6 reserved zones. • tenant-system-2 = 6 reserved zones. • master-logical-system = 0 reserved zones.

Example: Configuring Tenant Systems Security Profiles (Master Administrators Only)

IN THIS SECTION

- Requirements | 533
- Overview | 533

Configuration | 534
Verification | 542

This example shows how the master administrator configures security profiles for the master logical system and two tenant systems.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with tenant systems.
- Junos OS Release 18.3R1 and later releases.

Before you begin:

- Read the "Understanding Tenant Systems" on page 496 to understand how this task fits into the overall configuration process.
- Read the "Flow for Tenant Systems" on page 549 to understand how to create a tenant system, a tenant system administrator, and an interconnect tenant system.

Overview

The master administrator creates security profiles that specify the resources to be allocated across the tenant systems. You cannot commit a tenant system configuration without a security profile assigned to it.

This example shows how to configure the security profiles for different tenant systems described in Table 37 on page 533.

Table 37: Security Profiles for Logical Systems

Logical Systems	Security Profile
Master logical system	Master profile
Tenant system TSYS1	SP1
Tenant system TSYS2	SP2
Interconnect tenant system	Null

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile master-profile policy maximum 65
set system security-profile master-profile policy reserved 60
set system security-profile master-profile zone maximum 22
set system security-profile master-profile zone reserved 17
set system security-profile master-profile flow-session maximum 3000
set system security-profile master-profile flow-session reserved 2100
set system security-profile master-profile nat-nopat-address maximum 115
set system security-profile master-profile nat-nopat-address reserved 100
set system security-profile master-profile nat-static-rule maximum 125
set system security-profile master-profile nat-static-rule reserved 100
set system security-profile master-profile auth-entry maximum 1000
set system security-profile master-profile auth-entry reserved 400
set system security-profile master-profile logical-system root-logical-system
set system security-profile SP1 policy maximum 100
set system security-profile SP1 policy reserved 50
set system security-profile SP1 zone maximum 100
set system security-profile SP1 zone reserved 50
set system security-profile SP1 flow-session maximum 100
set system security-profile SP1 flow-session reserved 50
set system security-profile SP1 nat-nopat-address maximum 125
set system security-profile SP1 nat-nopat-address reserved 100
set system security-profile SP1 nat-static-rule maximum 125
set system security-profile SP1 nat-static-rule reserved 100
set system security-profile SP1 auth-entry maximum 1000
set system security-profile SP1 auth-entry reserved 600
set system security-profile SP1 tenant TSYS1
set system security-profile SP2 policy maximum 50
set system security-profile SP2 policy reserved 40
set system security-profile SP2 zone maximum 10
set system security-profile SP2 zone reserved 5
set system security-profile SP2 flow-session maximum 100
set system security-profile SP2 flow-session reserved 50
set system security-profile SP2 nat-nopat-address maximum 125
set system security-profile SP2 nat-nopat-address reserved 100
set system security-profile SP2 nat-static-rule maximum 125
set system security-profile SP2 nat-static-rule reserved 100
set system security-profile SP2 auth-entry maximum 1000
```

```
set system security-profile SP2 auth-entry reserved 500
set system security-profile SP2 tenant TSYS2
set system security-profile interconnect-profile tenants interconnect-tenant
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *Junos OS CLI User Guide*.

1. Create the first security profile for the master logical system.

   a. Specify the number of maximum and reserved security policies.

   ```
   [edit system security-profile]
   user@host# set master-profile policy maximum 65
   user@host# set master-profile policy reserved 60
   ```

   b. Specify the number of maximum and reserved security zones.

   ```
   [edit system security-profile]
   user@host# set master-profile zone maximum 22
   user@host# set master-profile zone reserved 17
   ```

   c. Specify the number of maximum and reserved security sessions.

   ```
   [edit system security-profile]
   user@host# set master-profile flow-session maximum 3000
   user@host# set master-profile flow-session reserved 2100
   ```

   d. Specify the number of maximum and reserved source NAT, no-PAT addresses, and static NAT rules.

   ```
   [edit system security-profile]
   user@host# set master-profile nat-nopat-address maximum 115
   user@host# set master-profile nat-nopat-address reserved 100
   user@host# set master-profile nat-static-rule maximum 125
   user@host# set master-profile nat-static-rule reserved 100
   ```

   e. Specify the maximum and reserved number of resources for the firewall authentication entries.

   ```
   [edit system security-profile]
   user@host# set master-profile auth-entry maximum 1000
   ```

```
user@host# set master-profile auth-entry reserved 400
```

f. Bind the security profile to the master logical system.

```
[edit system security-profile]
user@host# set master-profile logical-system root-logical-system
```

2. Create the second security profile for the first tenant system.

a. Specify the number of maximum and reserved security policies.

```
[edit system security-profile]
user@host# set SP1 policy maximum 100
user@host# set SP1 policy reserved 50
```

b. Specify the number of maximum and reserved security zones.

```
[edit system security-profile]
user@host# set SP1 zone maximum 100
user@host# set SP1 zone reserved 50
```

c. Specify the number of maximum and reserved security sessions.

```
[edit system security-profile]
user@host# set SP1 flow-session maximum 100
user@host# set SP1 flow-session reserved 50
```

d. Specify the number of maximum and reserved source NAT, no-PAT addresses, and static NAT rules.

```
[edit system security-profile]
user@host# set SP1 nat-nopat-address maximum 115
user@host# set SP1 nat-nopat-address reserved 100
user@host# set SP1 nat-static-rule maximum 125
user@host# set SP1 nat-static-rule reserved 100
```

e. Specify the maximum and reserved number of resources for the firewall authentication entries.

```
[edit system security-profile]
```

```
user@host# set SP1 auth-entry maximum 1000
user@host# set SP1 auth-entry reserved 600
```

f. Bind the security profile to the tenant system **TSYS1**.

```
[edit system security-profile]
user@host# set security-profile SP1 tenants TSYS1
```

3. Create the third security profile for the second tenant system.

a. Specify the number of maximum and reserved security policies.

```
[edit system security-profile]
user@host# set SP2 policy maximum 50
user@host# set SP2 policy reserved 40
```

b. Specify the number of maximum and reserved security zones.

```
[edit system security-profile]
user@host# set SP2 zone maximum 10
user@host# set SP2 zone reserved 5
```

c. Specify the number of maximum and reserved security sessions.

```
[edit system security-profile]
user@host# set SP2 flow-session maximum 100
user@host# set SP2 flow-session reserved 50
```

d. Specify the number of maximum and reserved source NAT, no-PAT addresses, and static NAT rules.

```
[edit system security-profile]
user@host# set SP2 nat-nopat-address maximum 115
user@host# set SP2 nat-nopat-address reserved 100
user@host# set SP2 nat-static-rule maximum 125
user@host# set SP2 nat-static-rule reserved 100
```

e. Specify the maximum and reserved number of resources for the firewall authentication entries.

```
[edit system security-profile]
user@host# set SP2 auth-entry maximum 1000
user@host# set SP2 auth-entry reserved 600
```

f. Bind the security profile to the tenant system **TSYS2**.

```
[edit system security-profile]
user@host# set security-profile SP2 tenants TSYS2
```

4. Bind a null security profile to the interconnect tenant system.

```
[edit system security-profile]
user@host# set security-profile interconnect-profile tenants interconnect-tenant
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile** command to view all the configured security profiles.

```
user@host# show system security-profile
SP1 {
    auth-entry {
        maximum 1000;
        reserved 600;
    }
    policy {
        maximum 100;
        reserved 50;
    }
    zone {
        maximum 100;
        reserved 50;
    }
    flow-session {
        maximum 100;
        reserved 50;
    }
    nat-nopat-address {
        maximum 115;
        reserved 100;
    }
```

```
    nat-static-rule {
        maximum 125;
        reserved 100;
    }
}
SP2 {
    auth-entry {
        maximum 1000;
        reserved 500;
    }
    policy {
        maximum 50;
        reserved 40;
    }
    zone {
        maximum 10;
        reserved 5;
    }
    flow-session {
        maximum 100;
        reserved 50;
    }
    nat-nopat-address {
        maximum 115;
        reserved 100;
    }
    nat-static-rule {
        maximum 125;
        reserved 100;
    }
}
master-profile {
    auth-entry {
        maximum 1000;
        reserved 400;
    }
    policy {
        maximum 65;
        reserved 60;
    }
    zone {
        maximum 22;
        reserved 17;
    }
```

```
    flow-session {
        maximum 3000;
        reserved 2100;
    }
    nat-nopat-address {
        maximum 115;
        reserved 100;
    }
    nat-static-rule {
        maximum 125;
        reserved 100;
    }
}
```

To view the security profile configured for the tenant systems and the master logical system, enter the **show tenants** and **show logical-systems root-logical-system** commands respectively.

```
user@host# show tenants
interconnect-tenant {
    security-profile {
        interconnect-profile;
    }
}
TSYS1 {
    security-profile {
        SP1;
    }
}
TSYS2 {
    security-profile {
        SP2;
    }
}
```

```
user@host# show logical-systems root-logical-system
root-logical-system {
    security-profile {
        master-profile;
    }
}
```

To view the individual security profiles, enter the **show system security-profile master-profile**, the **show system security-profile SP1**, and the **show system security-profile SP2** commands.

```
user@host# show system security-profile master-profile
auth-entry {
    maximum 1000;
    reserved 400;
}
policy {
    maximum 65;
    reserved 60;
}
zone {
    maximum 22;
    reserved 17;
}
flow-session {
    maximum 3000;
    reserved 2100;
}
nat-nopat-address {
    maximum 115;
    reserved 100;
}
nat-static-rule {
    maximum 125;
    reserved 100;
}
```

```
user@host# show system security-profile SP1
auth-entry {
    maximum 1000;
    reserved 600;
}
policy {
    maximum 100;
    reserved 50;
}
zone {
    maximum 100;
    reserved 50;
}
flow-session {
    maximum 100;
    reserved 50;
}
nat-nopat-address {
```

```
    maximum 115;
    reserved 100;
}
nat-static-rule {
    maximum 125;
    reserved 100;
}
```

```
user@host# show system security-profile SP2
auth-entry {
    maximum 1000;
    reserved 500;
}
policy {
    maximum 50;
    reserved 40;
}
zone {
    maximum 10;
    reserved 5;
}
flow-session {
    maximum 100;
    reserved 50;
}
nat-nopat-address {
    maximum 115;
    reserved 100;
}
nat-static-rule {
    maximum 125;
    reserved 100;
}
```

If the output does not display the intended configuration, repeat the configuration instructions in these examples to correct it. If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verify the Security Profiles Assigned to the Tenant Systems | **543**

To confirm that the security resources that you allocated for tenant systems have been assigned to them, follow this procedure for each tenant system and for all its resources.

Verify the Security Profiles Assigned to the Tenant Systems

Purpose

Verify the security resources for each tenant system. Follow this process for all the configured tenant systems.

Action

1. Use the SSH services to access the device, and then log in to each tenant system as its administrator with the login ID and password provided by the master administrator.

```
login: <tenant_name>
password: <password>
TSYS1_admin1@host:TSYS1>
```

2. Enter the following statement to identify the resources that are configured for the security profile.

```
TSYS1_admin1@host:TSYS1> show system security-profile ?
```

3. Enter the following command at the resulting prompt. Repeat the following step for all the security features configured in the security profiles.

```
TSYS1_admin1@host:TSYS1> show system security-profile zone detail
tenant system name : TSYS1
security profile name : SP1
used amount : 0
reserved amount : 50
maximum quota : 100
```

Meaning

The sample output shows the security resources that are configured for each tenant system.

SEE ALSO

Understanding Tenant Systems | 496

Release History Table

Release	Description
19.2R1	Starting in Junos OS Release 19.2R1, the virtual-router configured in a tenant system is passed as the default routing-instance to **ping**, **telnet**, **ssh**, **traceroute**, **show arp**, **clear arp**, **show ipv6 neighbors**, and **clear ipv6 neighbors** commands.

RELATED DOCUMENTATION

Logical Systems and Tenant Systems support for VSRX and VSRX 3.0 Instances | 44

Security Zones for Tenant Systems

IN THIS SECTION

- Understanding Zones for Tenant Systems | 544
- Example: Configuring Zones in the Tenant System | 545

Security zones can be configured with tenant systems. For more information see the following topics:

Understanding Zones for Tenant Systems

Security zones are logical entities to which one or more interfaces are bound. Security zones can be configured on the tenant systems by the administrator. On a tenant system, the administrator can configure multiple security zones, dividing the network into network segments to which various security options can be applied.

The master administrator configures the maximum and reserved numbers of security zones for the tenant system. Then the administrator for the tenant system can create the security zones in the tenant system and assign interfaces to each security zone. The number of zones configured in the tenant system count toward the maximum number of zones available on the device. The **show system security-profile zones** command is used to view the number of security zones allocated to the tenant system and the **show interfaces** command to view the interfaces assigned to the tenant system.

You can configure the following features in a tenant system security zone:

- Interfaces that are part of a security zone.
- Screen options—For every security zone, you can enable a set of predefined screen options that detect and block various kinds of traffic that the device determines as potentially harmful.
- TCP-Reset—When this feature is enabled, the system sends a TCP segment with the RESET flag set when traffic arrives that does not match an existing session and does not have the synchronize flag set.
- Host inbound traffic—This feature specifies the kinds of traffic that can reach the device from systems that are directly connected to its interfaces. You can configure these parameters at the zone level, in which case they affect all interfaces of the zone, or at the interface level. Interface configuration overrides that of the zone.

There are no preconfigured security zones in the tenant system.

The management functional zone (MGT) can be configured for the tenant system. There is the management interface per device that is allocated to the tenant system.

The administrator for the tenant system can configure and view all attributes for a security zone in a tenant system. All security zone attributes in a tenant system are also visible to the master administrator.

Example: Configuring Zones in the Tenant System

IN THIS SECTION

- Requirements | **546**
- Overview | **546**
- Configuration | **546**
- Verification | **548**

This example shows how to configure the zones for the tenant system.

Requirements

Before you begin the configuration:

- Configure the interfaces created by the master administrator. See *Example: Configuring Interfaces and Routing Instances for a Tenant System*.

Overview

In this example, you can configure zones for the tenant systems. Security zones are the building blocks for policies; they are logical entities to which one or more interfaces are bound. The **[edit tenants tenant-name security zones]** hierarchy level is used to configure the security zones. This example configures the security policies and zones described in Table 38 on page 546.

Table 38: Security Zones Parameters

Feature	Configuration Parameters
Zones 1	• Security zone: trust • System services: any-service • Bind to interfaces xe-0/0/1.0 (trust), xe-0/0/3.0 (untrust)
Zone 2	• Security zone: untrust • System services: any-service • Bind to interfaces xe-0/0/1.0 (trust), xe-0/0/3.0 (untrust)

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TN1 security zones security-zone trust host-inbound-traffic system-services any-service
set tenants TN1 security zones security-zone trust interfaces xe-0/0/1.0
set tenants TN1 security zones security-zone untrust host-inbound-traffic system-services any-service
set tenants TN1 security zones security-zone untrust interfaces xe-0/0/3.0
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure security zones in the tenant system:

1. Define the tenant system name as TN1.

```
[edit]
user@host# set tenants TN1
```

2. Configure a security zone as trust that permits traffic from zone trust and assign it to an interface.

```
[edit tenants TN1 security zones security-zone trust]
user@host# set host-inbound-traffic system-services any-service
user@host# set interfaces xe-0/0/1.0
```

3. Configure a security zone as untrust that permits traffic from zone untrust and assign it to an interface.

```
[edit tenants TN1 security zones security-zone untrust]
user@host# set host-inbound-traffic system-services any-service
user@host# set interfaces xe-0/0/3.0
```

Results

From configuration mode, confirm your configuration by entering the **show tenants tenant-name security policies** and **show tenants tenant-name security zones** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TN1 security zones
security-zone trust {
    host-inbound-traffic {
        system-services {
            any-service;
        }
    }
    interfaces {
        xe-0/0/1.0;
    }
}
security-zone untrust {
    host-inbound-traffic {
        system-services {
```

```
            any-service;
        }
    }
    interfaces {
        xe-0/0/3.0;
    }
}
```

Verification

IN THIS SECTION

- Verifying Zone Configuration | **548**

To confirm that the configuration is working properly, perform the following task:

Verifying Zone Configuration

Purpose

Verify the information about security zones.

Action

To verify the configuration is working properly, enter the **show security zones tenant all** command from operational mode.

```
user@host> show security zones tenant all
```

```
Tenant: TN1

Security zone: Host
Send reset for non-SYN session TCP packets: Off
Policy configurable: Yes
Interfaces bound: 0
Interfaces:

Security zone: abc
Send reset for non-SYN session TCP packets: Off
```

```
Policy configurable: Yes
Interfaces bound: 0
Interfaces:xe-0/0/1.0

Security zone: def
Send reset for non-SYN session TCP packets: Off
Policy configurable: Yes
Interfaces bound: 1
Interfaces:xe-0/0/3.0
```

Meaning

The output displays the information of security zones configured on the tenant system.

RELATED DOCUMENTATION

Security Policies for Tenant Systems | 616

Flow for Tenant Systems

IN THIS SECTION

- Session Creation for Devices Running Tenant Systems | 550
- Configuring Logical Systems and Tenant Systems Interconnect with Multiple VPLS Switches | 555
- Configuring tenant systems Interconnect with Logical Tunnel Interface point-to-point connection | 565
- Configuring Logical System and Tenant System Interconnect with a Logical Tunnel Interface point-to-point connection | 574

This topic explains how packets are processed in flow sessions on devices that are configured with tenant systems. It describes how the device running tenant systems handles pass-through traffic between tenant systems. This topic also covers self-traffic as self-initiated traffic within a tenant system and self-traffic terminated on another tenant system. Before addressing tenant systems, the topic provides basic information about the SRX Series architecture with respect to packet processing and sessions. Finally, addresses the sessions and how to change session characteristics.

Session Creation for Devices Running Tenant Systems

A session is created, based on routing and other classification information, to store information and allocate resources for a flow. Basically, a session is established when a traffic enters a tenant system interface, route lookup is performed to identify the next hop interface, and policy lookup is performed.

Optionally, the tenant systems enable you to configure an internal software switch. A virtual private LAN switch (VPLS) is implemented as an interconnect in tenant system. The VPLS enables both transit traffic and traffic terminated at a tenant system to pass between tenant systems. To allow traffic to pass between tenant systems or between tenant system and logical system, logical tunnel (lt-0/0/0) interfaces across the interconnect tenant system are used.

> **NOTE:** Packet sequence occurs at the ingress and the egress interfaces. Packets traversing between tenant systems might not be processed in the order in which they were received on the physical interface.

Understanding Packet Classification

The Packet classification for a flow-based processing is based on both the physical interface and the logical interface and depends on the incoming interface. The packet classification is performed at the ingress point and within a flow, the packet-based processing also takes place on an SPU sometimes.

Packet classification is assessed the same way for devices that are configured with or without tenant systems. The traffic for a dedicated interface is classified to the tenant system that contains that interface. The filters and class-of-service features are typically associated with an interface to influence which packets are allowed to transit the device and to apply special actions to packets as needed.

Understanding the VPLS Switch and Logical Tunnel Interfaces

This topic covers the interconnect tenant system that serves as an internal virtual private LAN service (VPLS) switch connecting one tenant system on the device to another. The topic also explains how logical tunnel (lt-0/0/0) interfaces are used to connect tenant systems through the interconnect tenant system.

A device running tenant systems can use an internal VPLS switch to pass traffic without it leaving the device. For communication between tenant systems on the device to occur, you must configure an lt-0/0/0 interface on each tenant system that will use the internal switch, and you must associate it with its peer lt-0/0/0 interface on the interconnect tenant system, effectively creating a logical tunnel between them. You define a peer relationship at each end of the tunnel when you configure the tenant system's lt-0/0/0 interfaces.

You might want all tenant systems on the device to be able to communicate with one another without using an external switch. Alternatively, you might want some tenant systems to connect across the internal switch but not all of them.

WARNING: If you configure an lt-0/0/0 interface in any tenant system and you do not configure a VPLS switch containing a peer lt-0/0/0 interface for it, the commit will fail.

An SRX Series device running tenant systems can be used in a chassis cluster and each node has the same configuration.

When you use SRX Series devices configured with tenant systems within a chassis cluster, you must purchase and install the same number of licenses for each node in the chassis cluster. tenant systems licenses pertain to a single chassis, or node, within a chassis cluster and not to the cluster collectively.

Handling Pass-Through Traffic for Tenant Systems

IN THIS SECTION

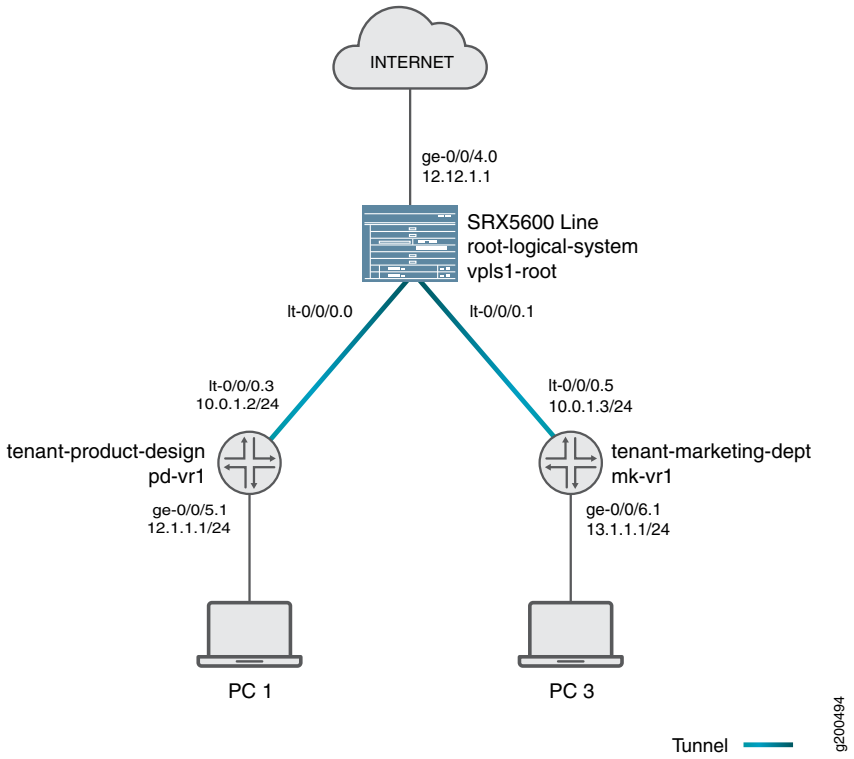
- Pass-Through Traffic Between Tenant Systems | **551**

For SRX Series devices running tenant systems, pass-through traffic can exist within a tenant system or between tenant systems.

Pass-Through Traffic Between Tenant Systems

Pass-through traffic between tenant systems is complicated by fact that each tenant system has an ingress and an egress interface that the traffic must transit. It is as if traffic were coming into and going out from two devices. Consider how pass-through traffic is handled between tenant systems given in the topology shown in Figure 14 on page 552.

Figure 14: Tenant Systems, Their Virtual Routers, and Their Interfaces



Two sessions must be established for pass-through traffic between tenant systems. (Note that policy lookup is performed in both tenant systems).

- On the incoming tenant system, one session is set up between the ingress interface (a physical interface) and its egress interface (an lt-0/0/0 interface).
- On the egress tenant system, another session is set up between the ingress interface (the lt-0/0/0 interface of the second tenant system) and its egress interface (a physical interface).

Consider how pass-through traffic is handled across tenant systems in the topology shown in Figure 14 on page 552.

- A session is established in the incoming tenant system.
  - When a packet arrives on interface ge-0/0/5, it is identified as belonging to the tenant-product-design tenant system.
  - Because ge-0/0/5 belongs to the pd-vr1 routing instance, route lookup is performed in pd-vr1.
  - As a result of the lookup, the egress interface for the packet is identified as lt-0/0/0.3 with the next hop identified as lt-0/0/0.5, which is the ingress interface in the tenant-marketing-dept.
  - A session is established between ge-0/0/5 and lt-0/0/0.3.

- A session is established in the outgoing tenant system.
  - The packet is injected into the flow again from lt-0/0/0.5, and the tenant system context identified as tenant-marketing-dept is derived from the interface.
  - Packet processing continues in the tenant-marketing-dept tenant system.
  - To identify the egress interface, route lookup for the packet is performed in the mk-vr1 routing instances.
  - The outgoing interface is identified as ge-0/0/6, and the packet is transmitted from the interface to the network.

Handling Self-Traffic

Self-traffic is traffic that originates in a tenant system on a device and is either sent out to the network from that tenant system or is terminated on another tenant system on the device.

Self-Initiated Traffic

Self-initiated traffic is generated from a source tenant system context and forwarded directly to the network from the tenant system interface.

The following process occurs:

- When a packet is generated in a tenant system, a process for handling the traffic is started in the tenant system.
- Route lookup is performed to identify the egress interface, and a session is established.
- The tenant system performs a policy lookup and processes the traffic accordingly.

Consider how self-initiated traffic is handled across tenant systems given the topology shown in Figure 14 on page 552.

- A packet is generated in the tenant-product-design tenant system, and a process for handling the traffic is started in the tenant system.
- Route lookup is performed in pd-vr2, and the egress interface is identified as ge-0/0/8.
- A session is established.
- The packet is transmitted to the network from ge-0/0/8.

Traffic Terminated on a Tenant System

When a packet enters the device on an interface belonging to a tenant system and the packet is destined for another tenant system on the device, the packet is forwarded between the tenant systems in the same manner as is pass-through traffic. However, route lookup in the second tenant system identifies the local egress interface as the packet destination. Consequently the packet is terminated on the second tenant system as self-traffic.

- For terminated self-traffic, two policy lookups are performed, and two sessions are established.
  - On the incoming tenant system, one session is set up between the ingress interface (a physical interface) and its egress interface (an lt-0/0/0 interface).
  - On the destination tenant system, another session is set up between the ingress interface (the lt-0/0/0 interface of the second tenant system) and the local interface.

Consider how terminated self-traffic is handled across tenant systems in the topology shown in Figure 14 on page 552.

- A session is established in the incoming tenant system.
  - When a packet arrives on interface ge-0/0/5, it is identified as belonging to the tenant-product-design tenant system.
  - Because ge-0/0/5 belongs to the pd-vr1 routing instance, route lookup is performed in pd-vr1.
  - As a result of the lookup, the egress interface for the packet is identified as lt-0/0/0.3 with the next hop identified as lt-0/0/0.5, the ingress interface in the ls-marketing-dept.
  - A session is established between ge-0/0/5 and lt-0/0/0.3.
- A management session is established in the destination tenant system.
  - The packet is injected into the flow again from lt-0/0/0.5, and the tenant system context identified as tenant-marketing-dept is derived from the interface.
  - Packet processing continues in the tenant-marketing-dept tenant system.
  - Route lookup for the packet is performed in the mk-vr1 routing instance. The packet is terminated in the destination tenant system as self-traffic.

Understanding Session and Gate Limitation Control

Sessions are created based on routing and other classification information to store information and allocate resources for a flow. The tenant systems flow module provides session and gate limitation to ensure that these resources are shared among the tenant systems. Resources allocation and limitations for each tenant system are specified in the security profile bound to the tenant system.

- For session limiting, the system checks the first packet of a session against the maximum number of sessions configured for the tenant system. When the maximum limit of session is reached, the device drops the packet and logs the event.
- For gate limiting, the device checks the first packet of a session against the maximum number of gates configured for the tenant system. If the maximum number of gates for a tenant system is reached, the device rejects the gate open request and logs the event.

About Configuring Sessions

Depending on the protocol and service, a session is programmed with a timeout value. For example, the default timeout for TCP is 1800 seconds. The default timeout for UDP is 60 seconds. When a flow is terminated, it is marked as invalid, and its timeout is reduced to 10 seconds. If no traffic uses the If no traffic uses the session before the service timeout, the session is aged out and freed to a common resource pool for reuse.

You can affect the life of a session in the following ways:

- Age out sessions, based on how full the session table is.
- Set an explicit timeout for aging out TCP sessions.
- Configure a TCP session to be invalidated when it receives a TCP RST (reset) message.
- You can configure sessions to accommodate other systems as follows:
  - Disable TCP packet security checks.
  - Change the maximum segment size.

Configuring Logical Systems and Tenant Systems Interconnect with Multiple VPLS Switches

IN THIS SECTION

- Requirements | **556**
- Overview | **556**
- Configuration | **557**
- Verification | **563**

This example shows how to interconnect logical systems and tenant systems with multiple VPLS switches. This is achieved by configuring multiple logical systems and tenant systems with more than one logical tunnel (LT) interface under a tenant system and multiple VPLS switches that are configured to pass the traffic without leaving an SRX Series device.

Requirements

This example uses an SRX Series device running Junos OS with logical systems and tenant systems.

Overview

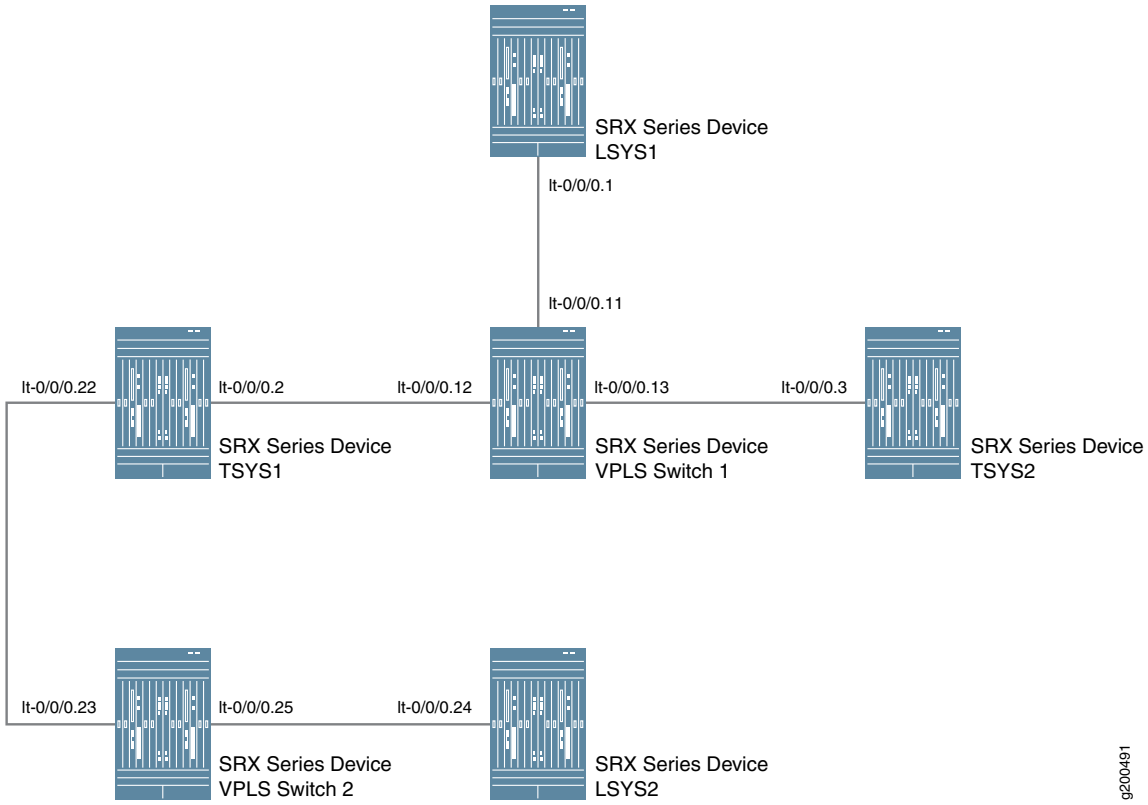
In this example, we configure multiple LT interfaces and multiple VPLS switches under one tenant system.

In this example, we also configure interconnection between multiple logical systems and tenant systems with LT interface point-to point connections (Encapsulation Ethernet and Encapsulation Frame-Relay).

For interconnected logical systems and tenant systems with multiple VPLS switches, this example configures logical tunnel interfaces lt-0/0/0 with ethernet-vpls as the encapsulation type. The corresponding peer lt-0/0/0 interfaces and security-profiles are assigned to the logical systems and tenant systems. The routing instance for the VPLS switch-1 and VPLS switch-2 are also assigned to the logical systems and tenant systems.

Figure 15 on page 556 shows the topology for interconnected logical systems and tenant systems with multiple VPLS switches.

Figure 15: Configuring the interconnected logical systems and tenant systems with multiple VPLS switches.



Configuration

To configure interfaces for the logical system and tenant system, perform these tasks:

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set interfaces lt-0/0/0 unit 11 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 11 peer-unit 1
set interfaces lt-0/0/0 unit 12 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 12 peer-unit 2
set interfaces lt-0/0/0 unit 13 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 13 peer-unit 3
set interfaces lt-0/0/0 unit 23 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 23 peer-unit 22
set interfaces lt-0/0/0 unit 25 encapsulation ethernet-vpls
set interfaces lt-0/0/0 unit 25 peer-unit 24
set routing-instances vpls-switch-1 instance-type vpls
set routing-instances vpls-switch-1 interface lt-0/0/0.11
set routing-instances vpls-switch-1 interface lt-0/0/0.12
set routing-instances vpls-switch-1 interface lt-0/0/0.13
set routing-instances vpls-switch-2 instance-type vpls
set routing-instances vpls-switch-2 interface lt-0/0/0.23
set routing-instances vpls-switch-2 interface lt-0/0/0.25
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 encapsulation ethernet
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 peer-unit 11
set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 family inet address 192.168.0.1/24
set interfaces lt-0/0/0 unit 2 encapsulation ethernet
set interfaces lt-0/0/0 unit 2 peer-unit 12
set interfaces lt-0/0/0 unit 2 family inet address 192.168.0.2/24
set interfaces lt-0/0/0 unit 22 encapsulation ethernet
set interfaces lt-0/0/0 unit 22 peer-unit 23
set interfaces lt-0/0/0 unit 22 family inet address 192.168.4.1/30
set tenants TSYS1 routing-instances vr11 instance-type virtual-router
set tenants TSYS1 routing-instances vr11 interface lt-0/0/0.2
set tenants TSYS1 routing-instances vr11 interface lt-0/0/0.22
set interfaces lt-0/0/0 unit 3 encapsulation ethernet
set interfaces lt-0/0/0 unit 3 peer-unit 13
set interfaces lt-0/0/0 unit 3 family inet address 192.168.0.3/24
set tenants TSYS2 routing-instances vr12 instance-type virtual-router
set tenants TSYS2 routing-instances vr12 interface lt-0/0/0.3
set logical-systems LSYS2 interfaces lt-0/0/0 unit 24 encapsulation ethernet
```

```
set logical-systems LSYS2 interfaces lt-0/0/0 unit 24 peer-unit 25
set logical-systems LSYS2 interfaces lt-0/0/0 unit 24 family inet address 192.168.4.2/30
set system security-profile SP-user policy maximum 100
set system security-profile SP-user policy reserved 50
set system security-profile SP-user zone maximum 60
set system security-profile SP-user zone reserved 10
set system security-profile SP-user flow-session maximum 100
set system security-profile SP-user flow-session reserved 50
set system security-profile SP-user logical-system LSYS1
set system security-profile SP-user tenant TSYS1
set system security-profile SP-user tenant TSYS2
set system security-profile SP-user logical-system LSYS2
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

1. Configure the lt-0/0/0 interfaces.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 11 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 11 peer-unit 1
user@host# set interfaces lt-0/0/0 unit 12 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 12 peer-unit 2
user@host# set interfaces lt-0/0/0 unit 13 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 13 peer-unit 3
user@host# set interfaces lt-0/0/0 unit 23 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 23 peer-unit 22
user@host# set interfaces lt-0/0/0 unit 25 encapsulation ethernet-vpls
user@host# set interfaces lt-0/0/0 unit 25 peer-unit 24
```

2. Configure the routing instance for the VPLS switches and add interfaces to it.

```
[edit]
user@host# set routing-instances vpls-switch-1 instance-type vpls
user@host# set routing-instances vpls-switch-1 interface lt-0/0/0.11
user@host# set routing-instances vpls-switch-1 interface lt-0/0/0.12
user@host# set routing-instances vpls-switch-1 interface lt-0/0/0.13
user@host# set routing-instances vpls-switch-2 instance-type vpls
user@host# set routing-instances vpls-switch-2 interface lt-0/0/0.23
user@host# set routing-instances vpls-switch-2 interface lt-0/0/0.25
```

3. Configure LSYS1 with lt-0/0/0.1 interface and peer lt-0/0/0.11.

```
[edit]
user@host# set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 encapsulation ethernet
user@host# set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 peer-unit 11
user@host# set logical-systems LSYS1 interfaces lt-0/0/0 unit 1 family inet address 192.168.0.1/24
```

4. Configure TSYS1 with lt-0/0/0.2 interface and peer lt-0/0/0.12.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 2 encapsulation ethernet
user@host# set interfaces lt-0/0/0 unit 2 peer-unit 12
user@host# set interfaces lt-0/0/0 unit 2 family inet address 192.168.0.2/24
user@host# set interfaces lt-0/0/0 unit 22 encapsulation ethernet
user@host# set interfaces lt-0/0/0 unit 22 peer-unit 23
user@host# set interfaces lt-0/0/0 unit 22 family inet address 192.168.4.1/30
user@host# set tenants TSYS1 routing-instances vr11 instance-type virtual-router
user@host# set tenants TSYS1 routing-instances vr11 interface lt-0/0/0.2
user@host# set tenants TSYS1 routing-instances vr11 interface lt-0/0/0.22
```

5. Configure TSYS2 with lt-0/0/0.3 interface and peer lt-0/0/0.13

```
[edit]
user@host# set interfaces lt-0/0/0 unit 3 encapsulation ethernet
user@host# set interfaces lt-0/0/0 unit 3 peer-unit 13
user@host# set interfaces lt-0/0/0 unit 3 family inet address 192.168.0.3/24
user@host# set tenants TSYS2 routing-instances vr12 instance-type virtual-router
user@host# set tenants TSYS2 routing-instances vr12 interface lt-0/0/0.3
```

6. Configure LSYS2 with lt-0/0/0 interface and peer-unit 24.

```
[edit]
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 24 encapsulation ethernet
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 24 peer-unit 25
user@host# set logical-systems LSYS2 interfaces lt-0/0/0 unit 24 family inet address 192.168.4.2/30
```

7. Assign security-profile for logical-systems.

```
[edit]
user@host# set system security-profile SP-user policy maximum 100
```

```
user@host# set system security-profile SP-user policy reserved 50
user@host# set system security-profile SP-user zone maximum 60
user@host# set system security-profile SP-user zone reserved 10
user@host# set system security-profile SP-user flow-session maximum 100
user@host#set system security-profile SP-user flow-session reserved 50
user@host# set system security-profile SP-user logical-system LSYS1
user@host# set system security-profile SP-user tenant TSYS1
user@host# set system security-profile SP-user tenant TSYS2
user@host# set system security-profile SP-user logical-system LSYS2
```

Results

- From configuration mode, confirm your configuration by entering the **show interfaces lt-0/0/0**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it

```
unit 2 {
    encapsulation ethernet;
    peer-unit 12;
    family inet {
        address 192.168.0.2/24;
    }
}
unit 3 {
    encapsulation ethernet;
    peer-unit 13;
    family inet {
        address 192.168.0.3/24;
    }
}
unit 11 {
    encapsulation ethernet-vpls;
    peer-unit 1;
}
unit 12 {
    encapsulation ethernet-vpls;
    peer-unit 2;
}
unit 13 {
    encapsulation ethernet-vpls;
    peer-unit 3;
}
unit 22 {
    encapsulation ethernet;
```

```
    peer-unit 23;
    family inet {
      address 192.168.4.1/30;
    }
  }
  unit 23 {
    encapsulation ethernet-vpls;
    peer-unit 22;
  }
  unit 25 {
    encapsulation ethernet-vpls;
    peer-unit 24;
  }
```

- From configuration mode, confirm your configuration by entering the **show routing-instances**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show routing-instances
vpls-switch-1 {
  instance-type vpls;
  interface lt-0/0/0.11;
  interface lt-0/0/0.12;
  interface lt-0/0/0.13;
}
vpls-switch-2 {
  instance-type vpls;
  interface lt-0/0/0.23;
  interface lt-0/0/0.25;
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS1**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS1
interfaces {
  lt-0/0/0 {
    unit 1 {
      encapsulation ethernet;
      peer-unit 11;
```

```
        family inet {
          address 192.168.0.1/24;
        }
      }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS2**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show tenants TSYS1
routing-instances {
    vr11 {
        instance-type virtual-router;
        interface lt-0/0/0.2;
        interface lt-0/0/0.22;
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS3**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show tenants TSYS2
routing-instances {
    vr12 {
        instance-type virtual-router;
        interface lt-0/0/0.3;
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS2**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS2
interfaces {
    lt-0/0/0 {
        unit 24 {
```

```
            encapsulation ethernet;
            peer-unit 25;
            family inet {
               address 192.168.4.2/30;
            }
         }
      }
   }
```

- From configuration mode, confirm your configuration by entering the **show system security-profile**, command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show system security-profile
SP-user {
   policy {
      maximum 100;
      reserved 50;
   }
   zone {
      maximum 60;
      reserved 10;
   }
   flow-session {
      maximum 100;
      reserved 50;
   }
   logical-system [ LSYS1 LSYS2 ];
   tenant [ TSYS1 TSYS2 ];
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the Security-Profile for Logical-systems | **564**
- Verifying the LT Interfaces for Logical systems | **564**

To confirm that the configuration is working properly, perform these tasks:

Verifying the Security-Profile for Logical-systems

Purpose

Verify security profile for each logical systems.

Action

From operational mode, enter the **show system security-profile security-log-stream-number logical-system all** command.

```
user@host> show system security-profile assignment summary
```

```
                                  Total     Maximum
security-profiles                     1          65
logical-systems                       1          32
tenants                               0          32
logical-systems and tenants           1          64
```

Meaning

The output provides the usage and reserved values for the logical systems when security-log-stream is configured.

Verifying the LT Interfaces for Logical systems

Purpose

Verify interfaces for logical systems.

Action

From operational mode, enter the **show interfaces lt-0/0/0 terse** command.

```
user@host> show interfaces lt-0/0/0 terse
```

```
Interface               Admin Link Proto    Local                 Remote
lt-0/0/0                up    up
lt-0/0/0.1              up    up   inet     192.168.0.1/24
lt-0/0/0.2              up    up   inet     192.168.0.2/24
lt-0/0/0.3              up    up   inet     192.168.0.3/24
lt-0/0/0.11             up    up   vpls
lt-0/0/0.12             up    up   vpls
lt-0/0/0.13             up    up   vpls
```

```
lt-0/0/0.22            up    up   inet     192.168.4.1/30
lt-0/0/0.23            up    up   vpls
lt-0/0/0.24            up    up   inet     192.168.4.2/30
lt-0/0/0.25            up    up   vpls
lt-0/0/0.32767         up    up
```

Meaning

The output provides the status of LT interfaces. All the LT interfaces are up.

Configuring tenant systems Interconnect with Logical Tunnel Interface point-to-point connection

IN THIS SECTION

- Requirements | **565**
- Overview | **565**
- Configuration | **566**
- Verification | **573**

This example shows how to interconnect tenant systems with logical tunnel (LT) interfaces in a point-to-point connection.

Requirements

This example uses an SRX Series device running Junos OS with logical systems and tenant systems.

Overview

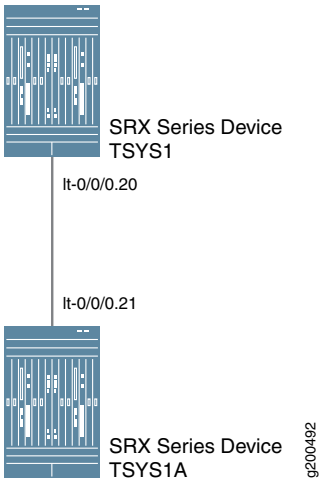
In this example we show how to interconnect tenant systems with logical tunnel (LT) interface in a point-to-point connection.

For the interconnected tenant systems with a point-to-point connection (encapsulation frame-relay) LT interface, this example configures the logical tunnel interface lt-0/0/0. This example configures security-zone and assigns interfaces to the logical systems.

The interconnected logical system lt-0/0/0 interface is configured with frame-relay as the encapsulation type. The corresponding peer lt-0/0/0 interfaces in the tenant systems are configured with frame-relay as the encapsulation type. A security profile is assigned to the tenant systems.

Figure 16 on page 566 shows the topology for interconnected tenant systems with a point-to-point connection LT interface.

Figure 16: Configuring the interconnect tenant systems with a point-to-point connection LT interface



Configuration

IN THIS SECTION

- Configuring [item] | **567**
- Results | **570**

To configure security-zone and assigns interfaces to tenant systems, perform these tasks:

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile sp1 tenant TSYS1
```

```
set system security-profile sp2 tenant TSYS1A
set interfaces xe-0/0/5 gigether-options redundant-parent reth0
set interfaces xe-0/0/6 gigether-options redundant-parent reth1
set interfaces xe-1/0/5 gigether-options redundant-parent reth0
set interfaces xe-1/0/6 gigether-options redundant-parent reth1
set interfaces reth0 redundant-ether-options redundancy-group 2
set interfaces reth1 redundant-ether-options redundancy-group 1
set interfaces lt-0/0/0 unit 20 encapsulation ethernet
set interfaces lt-0/0/0 unit 20 peer-unit 21
set interfaces lt-0/0/0 unit 20 family inet address 198.51.1.20/24
set interfaces reth0 unit 0 family inet address 198.51.100.1/24
set interfaces lt-0/0/0 unit 21 encapsulation ethernet
set interfaces lt-0/0/0 unit 21 peer-unit 20
set interfaces lt-0/0/0 unit 21 family inet address 198.51.1.21/24
set interfaces reth1 unit 0 family inet address 192.0.2.1/24
set tenants TSYS1 routing-instances vr11 instance-type virtual-router
set tenants TSYS1 routing-instances vr11 interface lt-0/0/0.20
set tenants TSYS1 routing-instances vr11 interface reth0.0
set tenants TSYS1 routing-instances vr11 routing-options static route 192.0.2.0/24 next-hop 198.51.1.21
set tenants TSYS1 security policies default-policy permit-all
set tenants TSYS1 security zones security-zone trust host-inbound-traffic system-services all
set tenants TSYS1 security zones security-zone trust host-inbound-traffic protocols all
set tenants TSYS1 security zones security-zone trust interfaces reth0.0
set tenants TSYS1 security zones security-zone untrust host-inbound-traffic system-services all
set tenants TSYS1 security zones security-zone untrust host-inbound-traffic protocols all
set tenants TSYS1 security zones security-zone untrust interfaces lt-0/0/0.20
set tenants TSYS1A routing-instances vr12 instance-type virtual-router
set tenants TSYS1A routing-instances vr12 interface lt-0/0/0.21
set tenants TSYS1A routing-instances vr12 interface reth1.0
set tenants TSYS1A routing-instances vr12 routing-options static route 198.51.100.0/24 next-hop 198.51.1.20
set tenants TSYS1A security policies default-policy permit-all
set tenants TSYS1A security zones security-zone trust host-inbound-traffic system-services all
set tenants TSYS1A security zones security-zone trust host-inbound-traffic protocols all
set tenants TSYS1A security zones security-zone trust interfaces reth1.0
set tenants TSYS1A security zones security-zone untrust host-inbound-traffic system-services all
set tenants TSYS1A security zones security-zone untrust host-inbound-traffic protocols all
set tenants TSYS1A security zones security-zone untrust interfaces lt-0/0/0.21
```

Configuring [item]

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode*.

1. Define a security profile sp1 and assign to a tenant system TNI. Define another security profile sp1 and assign to a tenant system TSYS1A

```
[edit]
user@host# set system security-profile sp1 tenant TSYS1
user@host# set system security-profile sp2 tenant TSYS1A
```

2. Set the interface for reth0 and reth1 and assign it to the redundancy group 1 and redundancy group 2.

```
[edit]
set interfaces xe-0/0/5 gigether-options redundant-parent reth0
set interfaces xe-0/0/6 gigether-options redundant-parent reth1
set interfaces xe-1/0/5 gigether-options redundant-parent reth0
set interfaces xe-1/0/6 gigether-options redundant-parent reth1
set interfaces reth0 redundant-ether-options redundancy-group 2
set interfaces reth1 redundant-ether-options redundancy-group 1
```

3. Set the LT interface as encapsulation ethernet in the tenant system TSYS1.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 20 encapsulation ethernet
```

4. Configure a peer unit relationship between LT interfaces, thus creating a point-to-point connection.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 20 peer-unit 21
```

5. Specify the IP address for the LT interface.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 20 family inet address 198.51.1.20/24
```

6. Specify the IP address for the reth0.

```
[edit]
```

```
user@host# set interfaces reth0 unit 0 family inet address 198.51.100.1/24
```

7. Set the LT interface as encapsulation ethernet in the tenant system TSYS1A.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 21 encapsulation ethernet
```

8. Configure a peer unit relationship between LT interfaces, thus creating a point-to-point connection.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 21 peer-unit 20
```

9. Specify the IP address for the LT interface.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 21 family inet address 198.51.1.21/24
```

10. Specify the IP address for the reth1.

```
[edit]
user@host# set interfaces reth1 unit 0 family inet address 192.0.2.1/24
```

11. Define the routing-instances for TSYS1.

```
[edit]
set tenants TSYS1 routing-instances vr11 instance-type virtual-router
set tenants TSYS1 routing-instances vr11 interface lt-0/0/0.20
set tenants TSYS1 routing-instances vr11 interface reth0.0
set tenants TSYS1 routing-instances vr11 routing-options static route 192.0.2.0/24 next-hop 198.51.1.21
```

12. Configure a security policy that permits all traffics.

```
[edit]
user@host# set tenants TSYS1 security policies default-policy permit-all
```

13. Configure security zones.

```
[edit]
set tenants TSYS1 security zones security-zone trust host-inbound-traffic system-services all
set tenants TSYS1 security zones security-zone trust host-inbound-traffic protocols all
set tenants TSYS1 security zones security-zone trust interfaces reth0.0
set tenants TSYS1 security zones security-zone untrust host-inbound-traffic system-services all
set tenants TSYS1 security zones security-zone untrust host-inbound-traffic protocols all
set tenants TSYS1 security zones security-zone untrust interfaces lt-0/0/0.20
```

14. Define the routing-instances for TSYS1A.

```
[edit]
set tenants TSYS1A routing-instances vr12 instance-type virtual-router
set tenants TSYS1A routing-instances vr12 interface lt-0/0/0.21
set tenants TSYS1A routing-instances vr12 interface reth1.0
set tenants TSYS1A routing-instances vr12 routing-options static route 198.51.100.0/24 next-hop 198.51.1.20
```

15. Configure a security policy that permits all traffics.

```
[edit]
set tenants TSYS1A security policies default-policy permit-all
```

16. Configure security zones.

```
[edit]
set tenants TSYS1A security zones security-zone trust host-inbound-traffic system-services all
set tenants TSYS1A security zones security-zone trust host-inbound-traffic protocols all
set tenants TSYS1A security zones security-zone trust interfaces reth1.0
set tenants TSYS1A security zones security-zone untrust host-inbound-traffic system-services all
set tenants TSYS1A security zones security-zone untrust host-inbound-traffic protocols all
set tenants TSYS1A security zones security-zone untrust interfaces lt-0/0/0.21
```

Results

- From configuration mode, confirm your configuration by entering the **show tenants TSYS1** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show tenants TSYS1
routing-instances {
```

```
    vr11 {
        instance-type virtual-router;
        interface lt-0/0/0.20;
        interface reth0.0;
        routing-options {
            static {
                route 192.0.2.0/24 next-hop 198.51.1.21;
            }
        }
    }
}
security {
    policies {
        default-policy {
            permit-all;
        }
    }
    zones {
        security-zone trust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                reth0.0;
            }
        }
        security-zone untrust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.20;
            }
        }
```

```
    }
}
```

- From configuration mode, confirm your configuration by entering the **show tenants TSYS1A** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show tenants TSYS1A
routing-instances {
    vr12 {
        instance-type virtual-router;
        interface lt-0/0/0.21;
        interface reth1.0;
        routing-options {
            static {
                route 198.51.100.0/24 next-hop 198.51.1.20;
            }
        }
    }
}
security {
    policies {
        default-policy {
            permit-all;
        }
    }
    zones {
        security-zone trust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                reth1.0;
            }
        }
        security-zone untrust {
            host-inbound-traffic {
                system-services {
```

```
                all;
            }
            protocols {
                all;
            }
        }
        interfaces {
            lt-0/0/0.21;
        }
    }
  }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the Security-Profile for all tenant systems | **573**

To confirm that the configuration is working properly, perform these tasks:

Verifying the Security-Profile for all tenant systems

Purpose

Verify security profile for each logical systems.

Action

From operational mode, enter the **show system security-profile zone tenant al** command.

```
user@host> show system security-profile zone tenant al
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

T1                           bronze                        1          0
2048
```

```
T1A                             pX                              0          0
  2048
```

Meaning

The output provides the usage and reserved values for the logical systems when security-log-stream is configured.

Configuring Logical System and Tenant System Interconnect with a Logical Tunnel Interface point-to-point connection

This example shows how to interconnect logical systems and tenant systems with logical tunnel (LT) interface in a point-to-point connection.

Requirements

This example uses an SRX Series device running Junos OS with logical systems and tenant systems.

Overview

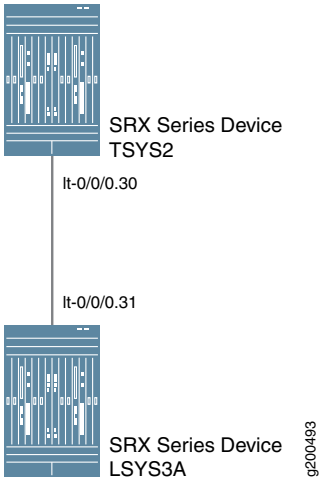
In this example we show how to interconnect logical systems and tenant systems with logical tunnel (LT) interface point-to-point connection.

For the interconnect logical system and tenant system with a point-to-point connection LT interface, the example configures logical tunnel interfaces lt-0/0/0. This example configures security-zone and assigns interfaces to the logical systems

To interconnect the logical system and tenant system, lt-0/0/0 interfaces are configured with Ethernet as the encapsulation type. The corresponding peer lt-0/0/0 interfaces are configured with Ethernet as the encapsulation type. A security profile is assigned to the logical system and tenant system

Figure 17 on page 575 shows the topology for interconnected logical systems and tenant systems with LT interface point-to-point connection.

Figure 17: Configuring the interconnect between logical systems and tenant systems with a point-to-point connection LT interface



Configuration

IN THIS SECTION

- [xref target has no title]
- Results | **578**

To configure security-zone and assigns interfaces to logical systems, perform these tasks:

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile SP-user tenant TSYS2
set interfaces lt-0/0/0 unit 30 encapsulation ethernet
set interfaces lt-0/0/0 unit 30 peer-unit 31
set interfaces lt-0/0/0 unit 30 family inet address 192.255.2.1/30
set tenants TSYS2 routing-instances vr11 instance-type virtual-router
set tenants TSYS2 routing-instances vr11 interface lt-0/0/0.30
set security zones security-zone LT interfaces lt-0/0/0.30
set system security-profile SP-user logical-system LSYS3A
```

```
set logical-systems LSYS3A interfaces lt-0/0/0 unit 21 encapsulation ethernet
set logical-systems LSYS3A interfaces lt-0/0/0 unit 21 peer-unit 20
set logical-systems LSYS3A interfaces lt-0/0/0 unit 21 family inet address 192.255.2.2/30
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match source-address any
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match destination-address any
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match application any
set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT then permit
set logical-systems LSYS3A security policies default-policy permit-all
set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic system-services all
set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic protocols all
set logical-systems LSYS3A security zones security-zone LT interfaces lt-0/0/0.31
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Define a security profile and assign to a tenant system.

```
[edit]
user@host# set system security-profile SP-user tenant TSYS2
```

2. Set the LT interface as encapsulation ethernet in the tenant system.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 20 encapsulation ethernet
```

3. Configure a peer relationship for tenant systems TSYS2.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 20 peer-unit 21
```

4. Specify the IP address for the LT interface.

```
[edit]
user@host# set interfaces lt-0/0/0 unit 20 family inet address 192.255.2.1/30
```

5. Set the security zone for the LT interface.

```
[edit]
```

```
user@host# set logical-systems LSYS2 security zones security-zone LT interfaces lt-0/0/0.30
```

6. Define a security profile and assign to a logical system.

```
[edit]
user@host# set system security-profile SP-user logical-system LSYS3A
```

7. Define the routing-instances for TSYS2.

```
[edit]
set tenants TSYS2 routing-instances vr11 instance-type virtual-router
set tenants TSYS2 routing-instances vr11 interface lt-0/0/0.30
```

8. Set the LT interface as encapsulation ethernet in the logical system 3A.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 21 encapsulation ethernet
```

9. Configure a peer relationship for logical systems LSYS3A.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 21 peer-unit 20
```

10. Specify the IP address for the LT interface.

```
[edit]
user@host# set logical-systems LSYS3A interfaces lt-0/0/0 unit 21 family inet address 192.255.2.2/30
```

11. Configure a security policy that permits traffic from the LT zone to the LT policy LT zone.

```
[edit]
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match
   source-address any
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match
   destination-address any
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT match application
   any
user@host# set logical-systems LSYS3A security policies from-zone LT to-zone LT policy LT then permit
```

12. Configure a security policy that permits traffic from default-policy.

```
[edit]
user@host# set logical-systems LSYS3A security policies default-policy permit-all
```

13. Configure security zones.

```
[edit]
user@host# set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic system-services
    all
user@host# set logical-systems LSYS3A security zones security-zone LT host-inbound-traffic protocols all
user@host# set logical-systems LSYS3A security zones security-zone LT interfaces lt-0/0/0.31
```

Results

- From configuration mode, confirm your configuration by entering the **show tenants TSYS2** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show tenants TSYS2
routing-instances {
    vr11 {
        instance-type virtual-router;
        interface lt-0/0/0.30;
    }
}
```

- From configuration mode, confirm your configuration by entering the **show logical-systems LSYS3A** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show logical-systems LSYS3A
interfaces {
    lt-0/0/0 {
        unit 21 {
            encapsulation ethernet;
            peer-unit 20;
            family inet {
                address 192.255.2.2/30;
            }
```

```
        }
    }
}
security {
    policies {
        from-zone LT to-zone LT {
            policy LT {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
                then {
                    permit;
                }
            }
        }
        default-policy {
            permit-all;
        }
    }
    zones {
        security-zone LT {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                lt-0/0/0.31;
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the LT Interfaces for all Logical and tenant systems | 580
- Verifying the Security-Profile for all Logical-systems | 580

To confirm that the configuration is working properly, perform these tasks:

Verifying the LT Interfaces for all Logical and tenant systems

Purpose

Verify interfaces for logical systems.

Action

From operational mode, enter the **show system security-profile zone all-logical-systems-tenants** command.

```
user@host> show system security-profile zone all-logical-systems-tenants
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                1           0
 2048
LSYS3A1                        gold                           1           0
   2048
TSYS23                          bronze                         1           0
    2048
```

Meaning

The output provides the status of LT interfaces. All the LT interfaces are up.

Verifying the Security-Profile for all Logical-systems

Purpose

Verify security profile for each logical systems.

Action

From operational mode, enter the **show system security-profile security-log-stream-number logical-system all** command.

```
user@host> show system security-profile security-log-stream-number logical-system all
```

```
logical system name   security profile name       usage    reserved   maximum
root-logical-system   Default-Profile                2          0          2000
LSYS3A                 SP-user                        1          10          60
```

Meaning

The output provides the usage and reserved values for the logical systems when security-log-stream is configured.

Flow Trace for Tenant Systems

IN THIS SECTION

- Flow Trace Support for Tenant Systems Overview | **581**
- Configure Flow Trace Support for Tenant Systems | **582**

Flow trace also called traceoptions, allows you to monitor traffic flow into and out of an SRX Series device. You can use tracoptions as debugging tool to trace the packets as they traverse the SRX Series device. Traceoptions help you to get details of actions by your security device.

Flow Trace Support for Tenant Systems Overview

For an SRX Series device configured with tenant systems, by default the traceoptions are configured at the root level only. In this case, all the system traces including root and tenant systems are logged in one single trace file. This generated large amounts of information in a single file.

Starting in Junos OS Release 19.4R1, you can enable tracing operations per tenant system level. When you configure the traceoptions at the tenant system level, then the traces for that specific tenant systems

are logged in the respective trace file. You can generate an output file for the specified tenant system, and you can find the required traffic information easily in the trace file.

When you enable traceoptions, you specify the name of the file and the type of information you want to trace.

All flow trace sent to one log file in root, if you enable the traceoptions under root context. Traces for a tenant system only sent to the respective trace file, if you enable the traceoptions for the specific tenant system.

Configure Flow Trace Support for Tenant Systems

Configuring traceoptions for a tenant system includes configuring both a target file and a flag. The target file determines where the trace output is recorded. The flag defines what type of data to be collected. If you configure traceoptions for a tenant system, the respective trace file sent to the specific tenant system log file only.

To configure traceoptions for a tenant system:

1. Create tenant system **TSYS1** and setup the basic configurations. See "Tenant System Configuration Overview" on page 500.

2. Configure target file to save the trace information for the tenant system.

```
[edit]
user@host# set tenants TSYS1 security flow traceoptions file flow_tsys1.log
user@host# set tenants TSYS1 security flow traceoptions file size 1g
```

3. Configure traceoptions flag for the tenant system.

```
[edit]
user@host# set tenants TSYS1 security flow traceoptions flag all
```

After you commit the traceoptions configuration, you can view the traceoptions debug files for the tenant system using **show log *tracefilename*** operational command.

`user@host:TSYS1>` **show log *flow_tsys1.log***

```
Nov  7 13:21:47
13:21:47.217744:CID-0:THREAD_ID-05:LSYS_ID-32:RT:<192.0.2.0/0->198.51.100.0/9011;1,0x0>
```

```
 :

Nov  7 13:21:47 13:21:47.217747:CID-0:THREAD_ID-05:LSYS_ID-32:RT:packet [84] ipid
 = 39281, @0x7f490ae56d52

Nov  7 13:21:47 13:21:47.217749:CID-0:THREAD_ID-05:LSYS_ID-32:RT:----
flow_process_pkt: (thd 5): flow_ctxt type 0, common flag 0x0, mbuf 0x4882b600,
rtbl7

Nov  7 13:21:47 13:21:47.217752:CID-0:THREAD_ID-05:LSYS_ID-32:RT: flow process pak
 fast ifl 88 in_ifp lt-0/0/0.101

Nov  7 13:21:47 13:21:47.217753:CID-0:THREAD_ID-05:LSYS_ID-32:RT:
lt-0/0/0.101:192.0.2.0->198.51.100.0, icmp, (0/0)

Nov  7 13:21:47 13:21:47.217756:CID-0:THREAD_ID-05:LSYS_ID-32:RT: find flow: table
 0x11d0a2680, hash 20069(0xffff), sa 192.0.2.0, da 198.51.100.0, sp 0, d0

Nov  7 13:21:47 13:21:47.217760:CID-0:THREAD_ID-05:LSYS_ID-32:RT:Found: session
id 0x12. sess tok 28685

Nov  7 13:21:47 13:21:47.217761:CID-0:THREAD_ID-05:LSYS_ID-32:RT:  flow got session.


Nov  7 13:21:47 13:21:47.217761:CID-0:THREAD_ID-05:LSYS_ID-32:RT:  flow session
id 18

Nov  7 13:21:47 13:21:47.217763:CID-0:THREAD_ID-05:LSYS_ID-32:RT: vector bits 0x200
 vector 0x84ae85f0

Nov  7 13:21:47 13:21:47.217764:CID-0:THREAD_ID-05:LSYS_ID-32:RT:set nat
0x11e463550(18) timeout const to 2

Nov  7 13:21:47 13:21:47.217765:CID-0:THREAD_ID-05:LSYS_ID-32:RT: set_nat_timeout
 2 on session 18

Nov  7 13:21:47 13:21:47.217765:CID-0:THREAD_ID-05:LSYS_ID-32:RT:refresh nat
0x11e463550(18) timeout to 2

Nov  7 13:21:47 13:21:47.217767:CID-0:THREAD_ID-05:LSYS_ID-32:RT:insert usp tag
for apps

Nov  7 13:21:47 13:21:47.217768:CID-0:THREAD_ID-05:LSYS_ID-32:RT:mbuf 0x4882b600,
 exit nh 0xfffb0006
```

Firewall Authentication for Tenant Systems

IN THIS SECTION

- Understanding Tenant System Firewall Authentication | 584
- Configuring Firewall Authentication for a Tenant System | 587
- Understanding Integrated User Firewall Support in a Tenant System | 600
- Example: Configuring Integrated User Firewall Identification Management for a Tenant System | 601
- Example: Configure Integrated User Firewall in Customized Model for Tenant System | 609

The firewall authentication feature is introduced for tenant systems in Junos OS Release 18.3R1 on the Juniper SRX Series devices to enable you to restrict or permit users individually or in groups. The authentication requests are initiated based on destination addresses defined in the policies.

Understanding Tenant System Firewall Authentication

A firewall user is a network user who must provide a username and password for authentication when initiating a connection across the firewall.

Firewall authentication is a policy-based authentication method, which requires user to initiate an authentication request through HTTP, FTP or Telnet traffic.

Junos OS enables administrators to restrict and permit firewall users to access protected resources behind a firewall based on their source IP address and other credentials.

The master administrator configures the following:

- maximum and reserved number of firewall authentication sessions in the tenant system.
- access profile using the profile configuration command at the **[edit access]** hierarchy which is available to all the tenant systems.

Access profiles allows to:

- Storing usernames and passwords of users or point to external authentication servers where such information is stored.
- Including the order of authentication methods, LDAP or RADIUS server options, and session options.

- Associating with a security policy in the tenant system.

After defining the firewall users, create a policy that requires the users to authenticate through one of the authentication modes defined in the Table 39 on page 585.

Table 39: Firewall Authentication Options

Authentication Options	Description	Supported Protocols	Supported Backend
Web Authentication	Users use HTTP to connect to an IP address on the device that is enabled for Web authentication and are prompted for the username and password. Subsequent traffic from the user or host to the protected resource is allowed or denied based on the result of this authentication.	HTTP HTTPS	Local LDAP RADIUS SecurId
Pass-through	Inline authentication with a host or a user from one zone tries to access resources on another zone. The device uses the supported protocols to collect username and password information, and subsequent traffic from the user or host is allowed or denied based on the result of this authentication.	HTTP HTTPS TELNET FTP	Local LDAP RADIUS SecurId
Web Redirect	Automatically redirect client to WebAuth page for authentication (http or https)	HTTP HTTPS	Local LDAP RADIUS SecurId

Table 39: Firewall Authentication Options *(continued)*

Authentication Options	Description	Supported Protocols	Supported Backend
Integrated User Firewall	SRX Series devices uses WMI client (WMIC) requests to the AD to get IP address-to-user mapping information in Security event logs.	none	Active Directory
User-Firewall	Same as pass-through but user information is passed to USERID process to go in Auth Table	HTTP HTTPS	Local LDAP RADIUS SecurId

The tenant system administrator configures the following properties for firewall authentication in the tenant system:

- Security policy that specifies firewall authentication for matching traffic. Firewall authentication is specified with the firewall-authentication configuration statement at the **[edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name* then permit]** hierarchy level. In an access profile, users or user groups can be allowed access by the policy can optionally be specified with the client-match configuration statement. If no users or user groups are specified, any user who is successfully authenticated is allowed access.
- The type of authentication (pass-through or Web authentication), default access profile, and success banner for the FTP, Telnet, or HTTP session. These properties are configured with the firewall-authentication configuration statement at the **[edit access]** hierarchy.

  Host inbound traffic. Protocols, services, or both are allowed to access the tenant system. The types of traffic are configured with the **host-inbound-traffic**configuration statement at the **[edit security zones security-zone *zone-name*]** or **[edit security zones security-zone *zone-name* interfaces *interface-name*]** hierarchy.

Configuring Firewall Authentication for a Tenant System

IN THIS SECTION

- Requirements | 587
- Overview | 587
- Configuration | 589
- Verification | 598

This example shows how to send different firewall authentication traffic from the client to server across one tenant system using the three authentication modes pass-through, pass-through with web-redirect, and web authentication.

Requirements

This example uses the following hardware and software components:

- an SRX4100 device
- Junos OS Release 18.3R1 and later
- Telnet or HTTP
- External authentication servers are RADIUS, LDAP, and SecurID

Ensure to have the following configured to send firewall authentication traffic from client to server:

- Configure security zones for a tenant system
- Configure interfaces created by the master administrator

Overview

When a firewall user attempts to initiate a Telnet, HTTP, or HTTPS session to access a resource in another zone, the SRX Series firewall acts a proxy to authenticate the firewall users before allowing the users to access the Telnet, HTTP, or HTTPS servers behind the firewall.

In this example, you can configure a tenant system and bind the security policy to it. When the traffic from is sent from client to server as referred in Figure 18 on page 589, the users are authenticated based on the authentication process defined in the security policy.

NOTE: The master administrator is responsible for creating tenants and assigning the system resources such as routing-instances, interfaces in routing-instances and security-profile to tenant system.

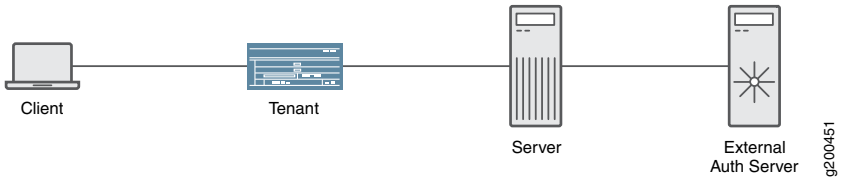
Table 40: Firewall Configuration for the Tenant System

Feature	Name	Description
security-profile	tn1_pf	Name of the security profile. This profile specifies the resources to allocate to a tenant system to which the security profile is bound.
interfaces	xe-0/0/1 xe-0/0/2	Name of the interfaces. The interfaces provide traffic connectivity.
access profile	local_pf radius_pf securid_pf	Name of the access profiles. These profiles are used to define the users and passwords and to obtain authorization information about the user's access right.
SSL termination profile	fwauthhttpspf	Name of the profile. This profile is used for SSL termination services.
routing-instances	vr1	Instance type as virtual routing instance.
security policies	p7	Name of the policy. This policy is used to configure pass-through firewall-authentication using fwauthhttpspf SSL termination profile.
	p1	Name of the policy. This policy is used to configure pass-through firewall-authentication using local_pf access profile.
	p4	Name of the policy. This policy is used to configure pass-through web-redirect firewall-authentication using radius_pf.
	p3	Name of the policy. This policy is used to configure web-authentication firewall-authentication.

Topology

Figure 18 on page 589 shows the topology used in this configuration example. The tenant shown in this topology is an SRX Series device partitioned to multiple tenants. The external servers supported are RADIUS, LDAP, and SecurID. The communication from the client to the tenant happens over xe-0/0/1 interface and from the tenant to the server happens over xe-0/0/2 interface.

Figure 18: Topology for Tenant System



Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter commit from configuration mode.

```
set system security-profile tn1_pf policy maximum 500
set system security-profile tn1_pf policy reserved 100
set system security-profile tn1_pf zone maximum 50
set system security-profile tn1_pf zone reserved 10
set tenants tn1 security-profile tn1_pf
set services ssl termination profile fwauthhttpspf server-certificate device
set interfaces xe-0/0/1 unit 0 family inet address 192.0.2.0/24
set interfaces xe-0/0/1 unit 0 family inet address 192.0.2.254/16 web-authentication http
set interfaces xe-0/0/2 unit 0 family inet address 198.51.100.0/24 web-authentication http
set access profile local_pf client test firewall-user password "$ABC123"
set access profile local_pf client test1 client-group local-group1
set access profile local_pf client test1 client-group local-group2
set access profile local_pf client test1 firewall-user password "$BCD678"
set access profile local_pf client test2 client-group local-group2
set access profile local_pf client test2 firewall-user password "$DEF234"
set access profile local_pf client test3 client-group local-group3
set access profile local_pf client test3 firewall-user password "$DBC123"
set access profile local_pf client test4 client-group local-group4
set access profile local_pf client test4 firewall-user password "$FAB123"
set access profile radius_pf authentication-order radius
set access profile radius_pf radius-server 203.0.113.1 secret "$AFD123"
set access profile securid_pf authentication-order securid
set tenants tn1 routing-instances vr1 instance-type virtual-router
set tenants tn1 routing-instances vr1 interface xe-0/0/1.0
set tenants tn1 routing-instances vr1 interface xe-0/0/2.0
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p1 match source-address any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p1 match destination-address
  any
```

```
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p1 match application junos-telnet
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p1 then permit
    firewall-authentication pass-through access-profile local_pf
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p7 match source-address any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p7 match destination-address
    any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p7 match application any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p7 then permit
    firewall-authentication pass-through access-profile local_pf
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p7 then permit
    firewall-authentication pass-through ssl-termination-profile fwauthhttpspf
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p4 match source-address any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p4 match destination-address
    any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p4 match application junos-http
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p4 then permit
    firewall-authentication pass-through access-profile radius_pf
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p4 then permit
    firewall-authentication pass-through web-redirect
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p3 match source-address any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p3 match destination-address
    any
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p3 match application junos-http
set tenants tn1 security policies from-zone tn1_trust to-zone tn1_untrust policy p3 then permit
    firewall-authentication web-authentication
set tenants tn1 security policies policy-rematch
set tenants tn1 security zones security-zone tn1_trust interfaces xe-0/0/1.0 host-inbound-traffic system-services
    all
set tenants tn1 security zones security-zone tn1_trust interfaces xe-0/0/1.0 host-inbound-traffic protocols all
set tenants tn1 security zones security-zone tn1_untrust interfaces xe-0/0/2.0 host-inbound-traffic
    system-services all
set tenants tn1 security zones security-zone tn1_untrust interfaces xe-0/0/2.0 host-inbound-traffic protocols
    all
set tenants tn1 access firewall-authentication pass-through default-profile local_pf
set tenants tn1 access firewall-authentication pass-through telnet banner login ****tenant1_telnet_login_banner
set tenants tn1 access firewall-authentication pass-through telnet banner success
    ****tenant1_telnet_success_banner
set tenants tn1 access firewall-authentication pass-through telnet banner fail ****tenant1_telnet_fail_banner
set tenants tn1 access firewall-authentication web-authentication default-profile securid_pf
set tenants tn1 access firewall-authentication web-authentication banner success
    ****tenant1_webauth_success_banner
```

Configuring access profiles and firewall authentication

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see Using the CLI Editor in Configuration Mode.

1. Configure a security profile tn1_pf and bind it to the tenant system.

```
[edit system security-profile]
user@host# set tn1_pf policy maximum 500
user@host# set tn1_pf policy reserved 100
user@host# set tn1_pf zone maximum 50
user@host# set tn1_pf zone reserved 10
```

2. Create a tenant system tn1 and bind the security profile tn1_pf to the tenant system.

```
[edit tenants]
user@host# set tn1 security-profile tn1_pf
```

3. Define the access profile used for SSL termination services for HTTPS traffic to trigger pass-through authentication.

```
[edit services]
user@host# set ssl termination profile fwauthhttpspf server-certificate device
```

4. Configure interfaces and assign IP addresses. Enable web authentication at xe-0/0/1 interface.

```
[edit interfaces]
user@host# set interfaces xe-0/0/1 unit 0 family inet address 192.0.2.0/24
user@host# set interfaces xe-0/0/1 unit 0 family inet address 192.0.2.254/24 web-authentication http
user@host# set interfaces xe-0/0/2 unit 0 family inet address 198.51.100.0/24 web-authentication http
```

5. Configure routing instances and add interfaces to it.

```
[edit tenants tn1 routing-instances]
user@host# set vr1 instance-type virtual-router
user@host# set vr1 interface xe-0/0/1.0
user@host# set vr1 interface xe-0/0/2.0
```

Step-by-Step Procedure

The master administrator is responsible for configuring access profiles in the tenant system. To configure access profiles:

1. Create the access profiles to be used for firewall authentication. Access profiles defines clients as firewall users and the passwords that provide them access for firewall authentication. When unauthenticated traffic is permitted for firewall authentication, the user is authenticated based on the access profile configured in this command.

```
[edit access profile]
user@host# set local_pf client test firewall-user password "$ABC123"
user@host# set local_pf client test1 client-group local-group1
user@host# set local_pf client test1 client-group local-group2
user@host# set local_pf client test1 firewall-user password "$BCD678"
user@host# set local_pf client test2 client-group local-group2
user@host# set local_pf client test2 firewall-user password "$DEF234"
user@host# set local_pf client test3 client-group local-group3
user@host# set local_pf client test3 firewall-user password "$DBC123"
user@host# set local_pf client test4 client-group local-group4
user@host# set local_pf client test4 firewall-user password "$FAB123"
```

2. Create an access profile to configure the RADIUS server.

```
[edit access profile]
user@host# set radius_pf authentication-order radius
user@host# set radius_pf radius-server 203.0.113.1 secret "$AFD123"
```

3. Create an access profile to configure SecurID as the server to be used for external authentication.

```
[edit access profile]
user@host# set securid_pf authentication-order securid
```

Step-by-Step Procedure

Configure different security policies that permit HTTP, HTTPS, and Telnet traffic between zones using pass-through (direct and web-redirect) and web authentication modes in a tenant system.

1. Configure policy p1 for pass-through authentication for Telnet traffic.

```
[edit tenants tn1 security policies]
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p1 match source-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p1 match destination-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p1 match application junos-telnet
```

```
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p1 then permit firewall-authentication
    pass-through access-profile local_pf
```

2. Configure policy p7 for pass-through authentication for HTTPS traffic.

```
[edit tenants tn1 security policies]
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p7 match source-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p7 match destination-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p7 match application junos-https
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p7 then permit firewall-authentication
    pass-through access-profile local_pf
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p7 then permit firewall-authentication
    pass-through ssl-termination-profile fwauthhttpspf
```

3. Configure policy p4 for pass through authentication using web-redirect for HTTP traffic.

```
[edit tenants tn1 security policies]
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p4 match source-address ipv6_addr1
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p4 match destination-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p4 match application junos-http
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p4 then permit firewall-authentication
    pass-through access-profile radius_pf
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p4 then permit firewall-authentication
    pass-through web-redirect
```

4. Configure policy p3 for web authentication for HTTP traffic.

```
[edit tenants tn1 security policies]
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p3 match source-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p3 match destination-address any
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p3 match application junos-http
user@host# set from-zone tn1_trust to-zone tn1_untrust policy p3 then permit firewall-authentication
    web-authentication
user@host# set policy-rematch
```

5. Configure zones and assign interfaces to each zone in a tenant system.

```
[edit tenants tn1 security zones]
user@host# set security-zone tn1_trust interfaces xe-0/0/1.0 host-inbound-traffic system-services all
user@host# set security-zone tn1_trust interfaces xe-0/0/1.0 host-inbound-traffic protocols all
```

```
user@host# set security-zone tn1_untrust interfaces xe-0/0/2.0 host-inbound-traffic system-services all
user@host# set security-zone tn1_untrust interfaces xe-0/0/2.0 host-inbound-traffic protocols all
```

6. Define a success banner for Telnet sessions. Configure firewall authentication pass-through and web authentication banner for applications in a tenant system.

```
[edit tenants tn1 access firewall-authentication]
user@host# set pass-through default-profile local_pf
user@host# set pass-through telnet banner login ****tenant1_telnet_login_banner
user@host# set pass-through telnet banner success ****tenant1_telnet_success_banner
user@host# set pass-through telnet banner fail ****tenant1_telnet_fail_banner
user@host# set web-authentication default-profile securid_pf
user@host# set web-authentication banner success ****tenant1_webauth_success_banner
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile**, **show interfaces**, **show access**, **show tenants**, and **show services ssl termination** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show interfaces
xe-0/0/1 {
    unit 0 {
        family inet {
            address 192.0.2.0/24;
            address 192.0.2.254/24 {
                web-authentication {
                    http;
                    https;
                }
            }
        }
    }
}
xe-0/0/2 {
    unit 0 {
        family inet {
            address 198.51.100.0/24;
        }
    }
}
```

```
user@host#show services ssl termination
profile fwauthhttpspf {
    server-certificate device;
}
```

```
user@host#show access
profile local_pf {
    client test {
        firewall-user {
            password "$ABC123"; ## SECRET-DATA
        }
    }
    client test1 {
        client-group [ local-group1 local-group2 ];
        firewall-user {
            password "$BCD678"; ## SECRET-DATA
        }
    }
    client test2 {
        client-group local-group2;
        firewall-user {
            password "$DEF234"; ## SECRET-DATA
        }
    }
    client test3 {
        client-group local-group3;
        firewall-user {
            password "$DBC123"; ## SECRET-DATA
        }
    }
    client test4 {
        client-group local-group4;
        firewall-user {
            password "$FAB123"; ## SECRET-DATA
        }
    }
    session-options {
        client-session-timeout 3;
    }
}
profile radius_pf {
    authentication-order radius;
    session-options {
        client-session-timeout 3;
```

```
    }
    radius-server {
        203.0.113.1 secret "$AFD123"; ## SECRET-DATA
    }
}
```

```
user@host#  show system security-profile
tn1_pf {
    policy {
        maximum 500;
        reserved 100;
    }
    zone {
        maximum 50;
        reserved 10;
    }
}
```

```
user@host#  show tenants
tn1 {
    routing-instances {
        vr1 {
            instance-type virtual-router;
            interface xe-0/0/1.0;
            interface xe-0/0/2.0;
        }
    }
    security-profile {
        tn1_pf;
    }
    security {
        policies {
            from-zone tn1_trust to-zone tn1_untrust {
                policy p2 {
                    match {
                        source-address any;
                        destination-address any;
                        application any;
                    }
                    then {
                        permit {
                            firewall-authentication {
                                pass-through {
```

```
                    access-profile ldap_pf;
                }
            }
        }
    }
}
zones {
    security-zone tn1_trust {
        interfaces {
            xe-0/0/1.0 {
                host-inbound-traffic {
                    system-services {
                        all;
                    }
                    protocols {
                        all;
                    }
                }
            }
        }
    }
    security-zone tn1_untrust {
        interfaces {
            xe-0/0/2.0 {
                host-inbound-traffic {
                    system-services {
                        all;
                    }
                    protocols {
                        all;
                    }
                }
            }
        }
    }
}
access {
    firewall-authentication {
        pass-through {
            default-profile local_pf;
            telnet {
```

```
            banner {
              login ****tenant1_telnet_login_banner;
              success ****tenant1_telnet_success_banner;
              fail ****tenant1_telnet_fail_banner;
            }
          }
        }
        web-authentication {
          default-profile radius_pf;
          banner {
            success ****tenant1_webauth_success_banner;
          }
        }
      }
    }
  }
```

If you are done configuring the device, enter **commit**from configuration mode.

Verification

Verifying Firewall User Authentication and Monitoring Users and IP Addresses in the Authentication Table

Purpose

The administrator for tenant system can use the **show security firewall-authentication users** or **show security firewall-authentication history commands** to view the information about firewall users and history for the tenant system. The administrator for the tenant system can use the same commands to view information for all tenant systems.

Action

From operational mode, enter the following show commands:

`user@host>` **show security firewall-authentication history tenant tn1 identifier 10**

```
Username: test
Source IP: 12.12.12.10
Authentication state: Success
Authentication method: Pass-through using HTTP
Access start date: 2018-05-31
Access start time: 17:07:38
Duration of user access: 0:10:01
Lsys: root-logical-system
Tenant: tn1
```

```
Source zone: trust-tn1
Destination zone: untrust-tn1
Access profile: test
Bytes sent by this user: 380
Bytes received by this user: 0
```

user@host> **show security firewall-authentication history tenant tn1**

```
History of firewall authentication data:
  Authentications: 2
          Id Source Ip                          Date       Time     Duration
Status    User
           1 203.0.112.10                        2018-05-27 09:33:05 0:01:44
Success   test
           2 203.0.112.10                        2018-05-27 10:01:09 0:10:02
Success   test
```

user@host> **show security firewall-authentication users tenant tn1**

```
Firewall authentication data:
  Total users in table: 1
          Id Source Ip                          Src zone Dst zone Profile    Age
Status    User
           2 203.0.112.10                          N/A      N/A      test         1
 Success  test
```

Meaning

The output displays the authenticated firewall users and the firewall authentication history of the users for the tenant system

SEE ALSO

firewall-authentication | 736

show security firewall-authentication history | 916

show security firewall-authentication users | 919

Understanding Integrated User Firewall Support in a Tenant System

Tenant system supports the user firewall authentication in shared and active mode.

Starting in Junos OS Release 19.1R1, user firewall authentication is supported on tenant systems using a shared model. In this model, the master logical system shares the user firewall configuration and authentication entries with the tenant system. The master logical system shares the authentication data with the tenant system, which is collected from the Local authentication, Active Directory (AD) authentication, firewall authenticationft, Juniper Identity Management Service (JIMS), and ClearPass authentication.

In the shared model, user firewall related configuration is configured under the master logical system, such as authentication source, authentication source priority, authentication entries timeout, and IP query or individual query and so on. The user firewall provides user information service for an application on the SRX Series device, such as policy and logging. Traffic from a tenant system queries the authentication tables from the master logical system.

The authentication tables are managed by a master logical system. The tenant systems share the authentication tables. Traffic from the master logical system and the tenant systems query the same authentication table. Tenant systems enable the use of the source-identity in security policy.

For example, if the master logical system is configured with **employee** and the tenant system is configured with the source-identity **manager**, then the reference group of this authentication entry includes **employee** and **manager**. This reference group contains the same authentication entries from master logical system and tenant system.

Starting in Junos OS Release 19.3R1, support for user firewall authentication is enhanced by using a customized model through integrated JIMS with active mode. In this model, the tenant system extracts the authentication entries from the root level. The master logical system is configured to the JIMS server based on the logical system and tenant system name. In active mode the SRX series device actively queries the authenticaton entries received from the JIMS server through HTTPs protocol. To reduce the data exchange, firewall filters are applied.

The user firewall uses the tenant system name as a diffrentiator and is consistent between the JIMS server and SRX series device. The JIMS server sends the diffrentiator which is included in the authentication entry. The authentication entries are distributed into the root logical system, when the diffrentiator is set as default for the master logical system.

The user firewall support In-service software upgrade (ISSU) for tenant systems, as user firewall changes the internal database table format from Junos OS Release 19.2R1 onwards. Prior to Junos OS Release 19.2R1, the ISSU is not supported for tenant systems.

Limitation of Using User Firewall Authentication in Tenant Systems

Using user firewall authentication on tenant systems has the following limitation:

- The IP addresses under different tenant systems must not overlap. If the address overlap, then the authentication entry is changed when different users log in under different tenant systems.

Limitation of using User Firewall Authentication in customized model on Tenant Systems

Using user firewall authentication in customized model on tenant systems has the following limitation:

- The JIMS server configurations to be configured under the root logical systems.
- The tenant system name should be consistent and unique between the JIMS server and the SRX series device.

SEE ALSO

show services user-identification authentication-table | 1118

Example: Configuring Integrated User Firewall Identification Management for a Tenant System

IN THIS SECTION

- Requirements | 602
- Overview | 602
- Configuration | 602
- Verification | 607

This example shows how to configure the SRX Series device's advanced query feature for obtaining user identity information from the Juniper Identity Management Service (JIMS) and the security policy to match the source identity for a tenant system. In the master logical system, user firewall is configured with JIMS, and then the master logical system manages all of authentication entries coming from JIMS. In this example, the master logical systems shares the authentication entries with the tenant systems.

Requirements

This example uses the following hardware and software components:

- SRX1500 devices operating in chassis clustering
- JIMS server
- Junos OS Release 19.1 R1

Overview

In this example, you can configure JIMS with HTTPs connection on port 443 and primary server with IPv4 address on the master logical system, policy p1 with source-identity "group1" of dc0 domain on tenant system TN1, policy p1 with source-identity "group1" of dc0 domain on tenant system TN2, and send traffic from and through tenant system TN1 to tenant system TN2. You can view the authentication entries on master logical system and tenant systems (TN1 and TN2) even after rebooting the primary node.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match
    source-address any
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match
    destination-address any
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match application
    any
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match
    source-identity "example.com\group1"
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 then permit
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 match
    source-address any
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 match
    destination-address any
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 match application
    any
set tenants TN1 security policies from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 then permit
set tenants TN1 security policies from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 match
    source-address any
```

```
set tenants TN1 security policies from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 match
    destination-address any
set tenants TN1 security policies from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 match application
    any
set tenants TN1 security policies from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 then permit
set tenants TN1 security policies policy-rematch
set tenants TN2 security policies from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match
    source-address any
set tenants TN2 security policies from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match
    destination-address any
set tenants TN2 security policies from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match
    application any
set tenants TN2 security policies from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match
    source-identity "example.com\group2"
set tenants TN2 security policies from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 then permit
set tenants TN2 security policies policy-rematch
set services user-identification identity-management connection connect-method https
set services user-identification identity-management connection port 443
set services user-identification identity-management connection primary address 192.0.2.5
set services user-identification identity-management connection primary client-id otest
set services user-identification identity-management connection primary client-secret "$ABC123"
set security policies from-zone root_trust to-zone root_trust policy root_policy1 match source-address any
set security policies from-zone root_trust to-zone root_trust policy root_policy1 match destination-address any
set security policies from-zone root_trust to-zone root_trust policy root_policy1 match application any
set security policies from-zone root_trust to-zone root_trust policy root_policy1 then permit
set security policies policy-rematch
set security zones security-zone root_trust interfaces reth1.0 host-inbound-traffic system-services all
set security zones security-zone root_trust interfaces reth1.0 host-inbound-traffic protocols all
set security zones security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic system-services all
set security zones security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic protocols all
set firewall family inet filter impair-ldap term allow_all then accept
```

Configuring user firewall identification management

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure user firewall identification management:

1. Log in to the master logical system as the master administrator and enter configuration mode.

```
user@host> configure
user@host#
```

2. Create tenant systems.

```
[edit tenants]
user@host#set TN1
user@host#set TN2
```

3. Configure a security policy TN1_policy1 with source-identity group1 on the tenant system TN1 that permits traffic from TN1_trust to TN1_trust.

```
[edit security policies]
user@host#set from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match source-address any
user@host#set from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match destination-address any
user@host#set from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match application any
user@host#set from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 match source-identity
   "example.com\group1"
user@host#set from-zone TN1_trust to-zone TN1_trust policy TN1_policy1 then permit
```

4. Configure a security policy TN1_policy2 that permits traffic from TN1_trust to TN1_untrust.

```
[edit security policies]
user@host#set from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 match source-address any
user@host#set from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 match destination-address
   any
user@host#set from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 match application any
user@host#set from-zone TN1_trust to-zone TN1_untrust policy TN1_policy2 then permit
```

5. Configure a security policy TN1_policy3 that permits traffic from TN1_untrust to TN1_trust.

```
[edit security policies]
user@host#set from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 match source-address any
user@host#set from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 match destination-address
   any
user@host#set from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 match application any
user@host#set from-zone TN1_untrust to-zone TN1_trust policy TN1_policy3 then permit
user@host#set policy-rematch
```

6. Configure security zone and assign interfaces to each zone.

```
[edit security zones]
user@host#set security-zone TN1_trust interfaces reth2.0 host-inbound-traffic system-services all
```

```
user@host#set security-zone TN1_trust interfaces reth2.0 host-inbound-traffic protocols all
user@host#set security-zone TN1_trust interfaces lt-0/0/0.11 host-inbound-traffic system-services all
user@host#set security-zone TN1_trust interfaces lt-0/0/0.11 host-inbound-traffic protocols all
user@host#set security-zone TN1_untrust interfaces reth3.0 host-inbound-traffic system-services all
user@host#set security-zone TN1_untrust interfaces reth3.0 host-inbound-traffic protocols all
```

7. Configure a security policy TN2_policy1 with source-identity group1 that permits traffic from TN2_untrust to TN2_untrust on TN2.

```
[edit security policies]
user@host#set from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match source-address any
user@host#set from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match destination-address
   any
user@host#set from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match application any
user@host#set from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 match source-identity
   "example.com\group2"
user@host#set from-zone TN2_untrust to-zone TN2_untrust policy TN2_policy1 then permit
user@host#set policy-rematch
```

8. Configure security zones and assign interfaces to each zone on TN2.

```
[edit security zones]
user@host#set security-zone TN2_untrust interfaces reth4.0 host-inbound-traffic system-services all
user@host#set security-zone TN2_untrust interfaces reth4.0 host-inbound-traffic protocols all
user@host#set security-zone TN2_untrust interfaces lt-0/0/0.21 host-inbound-traffic system-services all
user@host#set security-zone TN2_untrust interfaces lt-0/0/0.21 host-inbound-traffic protocols all
```

9. Configure JIMS as the authentication source for advanced query requests with the primary address. The SRX Series device requires this information to contact the server.

```
[edit services user-identification identity-management]
user@host#set connection port 443
user@host#set connection connect-method https
user@host#set connection primary address 192.0.2.5
user@host#set connection primary client-id otest
user@host#set connection primary client-secret test
user@host#set authentication-entry-timeout 0
```

10. Configure security policies and zones on the master logical system.

```
[edit security policies]
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 match source-address any
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 match destination-address any
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 match application any
user@host#set from-zone root_trust to-zone root_trust policy root_policy1 then permit
user@host#set policy-rematch
```

11. Configure security zones and assign interfaces to each zone on master logical system.

```
[edit security zones]
user@host#set security-zone root_trust interfaces reth1.0 host-inbound-traffic system-services all
user@host#set security-zone root_trust interfaces reth1.0 host-inbound-traffic protocols all
user@host#set security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic system-services all
user@host#set security-zone root_trust interfaces lt-0/0/0.1 host-inbound-traffic protocols all
user@host#set firewall family inet filter impair-ldap term allow_all then accept
```

Results

From configuration mode, confirm your configuration by entering the **show services user-identification identity-management show chassis cluster** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show services user-identification identity-management
connection {
    connect-method https;
    port 443;
    primary {
        address 192.0.2.5;
        client-id otest;
        client-secret "$ABC123"; ## SECRET-DATA
    }
}
```

```
user@host# show chassis cluster
reth-count 5;
    control-ports {
    fpc 3 port 0;
    fpc 9 port 0;
}
redundancy-group 0 {
    node 0 priority 200;
```

```
    node 1 priority 1;
}
redundancy-group 1 {
    node 0 priority 100;
    node 1 priority 1;
}
redundancy-group 2 {
    node 0 priority 100;
    node 1 priority 1;
}
redundancy-group 3 {
    node 0 priority 100;
    node 1 priority 1;
}
redundancy-group 4 {
    node 0 priority 100;
    node 1 priority 1;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying chassis cluster status and authentication entries | **607**
- Verifying chassis cluster status | **608**

To confirm that the configuration is working properly, perform the below tasks:

Verifying chassis cluster status and authentication entries

Purpose

To verify authentication entries in a tenant system.

Action

To verify the configuration is working properly, enter the **show services user-identification authentication-table authentication-source identity-management tenant TN1** command.

user@host> show services user-identification authentication-table authentication-source identity-management tenant TN1

```
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system
Domain: ad2012.jims.com
Total entries: 3
Source IP       Username       groups(Ref by policy)         state
2001:db8:aaaa:  N/A                                          Valid
2001:db8:aaaa:  administrator                                Valid
203.0.113.50    administrator                                Valid
node1:
--------------------------------------------------------------------------
Logical System: root-logical-system
Domain: ad2012.jims.com
Total entries: 3
Source IP       Username       groups(Ref by policy)         state
2001:db8:aaaa:  N/A                                          Valid
2001:db8:aaaa:  administrator                                Valid
203.0.113.50    administrator                                Valid
```

Meaning

The output displays the authentication entries that are shared from the master logical system to the tenant system.

Verifying chassis cluster status

Purpose

Verify chassis cluster status after rebooting the primary node.

Action

To verify the configuration is working properly, enter the **show chassis cluster status** command.

user@host> show chassis cluster status

```
Monitor Failure codes:
CS  Cold Sync monitoring        FL  Fabric Connection monitoring
GR  GRES monitoring             HW  Hardware monitoring
IF  Interface monitoring        IP  IP monitoring
```

```
LB  Loopback monitoring         MB  Mbuf monitoring
NH  Nexthop monitoring          NP  NPC monitoring
SP  SPU monitoring              SM  Schedule monitoring
CF  Config Sync monitoring      RE  Relinquish monitoring
Cluster ID: 6
Node   Priority Status               Preempt Manual   Monitor-failures
Redundancy group: 0 , Failover count: 0
node0  200      hold                 no      no       None
node1  1        secondary            no      no       None
Redundancy group: 1 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
Redundancy group: 2 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
Redundancy group: 3 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
Redundancy group: 4 , Failover count: 0
node0  0        hold                 no      no       CS
node1  1        secondary            no      no       None
```

Meaning

The output displays user identification management session existing on TN1 and TN2 after rebooting the primary node.

SEE ALSO

show services user-identification authentication-table | 1118

Example: Configure Integrated User Firewall in Customized Model for Tenant System

IN THIS SECTION

- Requirements | 610
- Overview | 610

Configuration | **610**
Verification | **614**

This example shows how to configure the integrated user firewall by using a customized model through the Juniper Identity Management Service (JIMS) server with active mode for a tenant system. The master logical systems does not share the authentication entries with the tenant systems. The SRX series device queries the authentication entries received from the JIMS server through HTTPs protocol in active mode.

In this example following configurations are performed:

- Active JIMS Server Configuration
- Tenant System IP Query Configuration
- Tenant System Authentication Entry Configuration
- Tenant System Security Policy Configuration

Requirements

This example uses the following hardware and software components:

- JIMS server version 2.0
- Junos OS Release 19.3R1

Before you begin, be sure you have following information:

- The IP address of the JIMS server.
- The port number on the JIMS server for receiving HTTPs requests.
- The client ID from the JIMS server for active query server.
- The client secret from the JIMS server for active query server.

Overview

In this example, you can configure JIMS with HTTPs connection on port 443 and primary server with IPv4 address on the master logical system, policy p2 with source-identity **group1** on tenant system **TSYS1**.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter commit from configuration mode.

```
set services user-identification logical-domain-identity-management active query-server jims1 connection
    connect-method https
set services user-identification logical-domain-identity-management active query-server jims1 connection port
    443
set services user-identification logical-domain-identity-management active query-server jims1 connection
    primary address 192.0.2.5
set services user-identification logical-domain-identity-management active query-server jims1 connection
    primary client-id otest
set services user-identification logical-domain-identity-management active query-server jims1 connection
    primary client-secret "$ABC123"
set tenants TSYS1 services user-identification logical-domain-identity-management active ip-query
    query-delay-time 30
set tenants TSYS1 services user-identification logical-domain-identity-management active
    invalid-authentication-entry-timeout 1
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match source-address any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match destination-address any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match application any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match source-identity
    "example.com\group1"
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 then permit
```

Configuring Integrated User Firewall in Customized Model:

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure Integrated User Firewall in Customized Model:

1. Configure JIMS as the authentication source for advanced query requests with the primary address. The SRX Series device requires this information to contact the server.

```
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection connect-method https
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection port 443
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection primary address 192.0.2.5
user@host# set services user-identification logical-domain-identity-management active query-server jims1
    connection primary client-id otest
```

```
user@host# set services user-identification logical-domain-identity-management active query-server jims1
  connection primary client-secret "$ABC123"
```

2. Configure the IP query delay time for TSYS1.

```
user@host# set tenants TSYS1 services user-identification logical-domain-identity-management active
  ip-query query-delay-time 30
```

3. Configure the authentication entry attributes for TSYS1.

```
user@host# set tenants TSYS1 services user-identification logical-domain-identity-management active
  invalid-authentication-entry-timeout 1
```

4. Configure the security policy p2 that permits traffic from-zone untrust to-zone trust for TSYS1.

```
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match
  source-address any
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match
  destination-address any
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match application
  any
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match
  source-identity "example.com\group1"
user@host#set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 then permit
```

Results

From configuration mode, confirm your configuration by entering the **show services user-identification logical-domain-identity-management** and **show tenants TSYS1** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show services user-identification logical-domain-identity-management
active {
    query-server jims1 {
        connection {
            connect-method https;
            port 443;
            primary {
                address 1.1.1.1;
                client-id otest;
```

```
            client-secret "$ABC123"; ## SECRET-DATA
        }
    }
  }
}
```

```
user@host# show tenants TSYS1
security {
    policies {
        from-zone untrust to-zone trust {
            policy p2 {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                    source-identity "example.com\group1";
                }
                then {
                    permit;
                }
            }
        }
    }
}
services {
    user-identification {
        logical-domain-identity-management {
            active {
                invalid-authentication-entry-timeout 1;
                ip-query {
                    query-delay-time 30;
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the User Identification Identity Management status | 614
- Verifying the User Identification Identity Management status counters | 615
- Verifying the User Identification Authentication Table | 615

To confirm that the configuration is working properly, perform the below tasks:

Verifying the User Identification Identity Management status

Purpose

Verify the user identification status for identity-management as the authentication source.

Action

To verify the configuration is working properly, enter the **show services user-identification logical-domain-identity-management status** command.

`user@host>`**show services user-identification logical-domain-identity-management status**

```
node0:
--------------------------------------------------------------------------
     Query server name                :jims1
     Primary server :
    Address                      : 1.1.1.1
    Port                         : 443
    Connection method            : HTTPS
    Connection status            : Online
    Last received status message : OK (200)
    Access token                 : isdHIbl8BXwxFftMRubGVsELRukYXtW3rtKmHiL
    Token expire time            : 2017-11-27 23:45:22
    Secondary server :
    Address                      : Not configured
```

Meaning

The output displays the statistical data about the advanced user query function batch queries and IP queries, or show status on the Juniper Identity Management Service servers.

Verifying the User Identification Identity Management status counters

Purpose

Verify the user identification counters for identity-management as the authentication source.

Action

To verify the configuration is working properly, enter the **show services user-identification logical-domain-identity-management counters** command.

```
user@host>show services user-identification logical-domain-identity-management counters
```

```
node0:
      --------------------------------------------------------------------------
   Query server name                      :jims1
    Primary server :
     Address                           : 10.208.137.208
     Batch query sent number           : 65381
     Batch query total response number : 64930
     Batch query error response number : 38
     Batch query last response time    : 2018-08-14 15:10:52
     IP query sent number              : 10
     IP query total response number    : 10
     IP query error response number    : 0
     IP query last response time       : 2018-08-13 12:41:56
  Secondary server :
 Address                           : Not configured
```

Meaning

The output displays the statistical data about the advanced user query function batch queries and IP queries, or show counters on the Juniper Identity Management Service servers.

Verifying the User Identification Authentication Table

Purpose

Verify the user identity information authentication table entries for the specified authentication source.

Action

To verify the configuration is working properly, enter the **show services user-identification authentication-table authentication-source all tenant TSYS1** command.

```
user@host>show services user-identification authentication-table authentication-source all tenant
TSYS1
```

```
node0:
      --------------------------------------------------------------------------
   Tenant System: TSYS1
Domain: ad03.net
Total entries: 4
Source IP       Username       groups(Ref by policy)          state
12.0.0.2        administrator  posture-healthy                Valid
12.0.0.15       administrator  posture-healthy                Valid
3000::5         N/A            posture-healthy                Valid
fe80::342c:302b N/A            posture-healthy                Valid
```

Meaning

The output displays the entire content of the specified authentication source's authentication table, or a specific domain, group, or user based on the user name. Display the identity information for a user based on the IP address of the user's device.

Security Policies for Tenant Systems

IN THIS SECTION

- Understanding Security Policies for Tenant Systems | **616**
- Example: Configuring Security Policies in the Tenant System | **618**
- Configuring Dynamic Address for Tenant Systems | **623**

Security policies can be configured with tenant systems. For more information see the following topics:

Understanding Security Policies for Tenant Systems

Security policies enforce rules for what traffic can pass through the firewall and actions that need to take place on the traffic as it passes through the firewall. Through the creation of security policies, the administrator for the tenant system can control the traffic flow from zone to zone by defining the kinds of traffic permitted to pass from sources to destinations. From the perspective of the security policies,

traffic enters one security zone and exits through another security zone. By default, the tenant system denies all traffic in all directions, including intra-zone and inter-zone directions.

Starting in Junos OS Release 18.3R1, the security policies feature supported on logical systems is now extended to tenant systems.

Security policies can be configured in the tenant systems. Tenant security policies are configured the same way as logical system security policies and firewall-wide security policies. Any security policies, policy rules, address books, applications and application sets, and schedulers created within a tenant system are only applicable to that tenant system. Only predefined applications and application sets, such as **junos-ftp**, are shared between the tenant systems.

The administrator for the tenant system can configure and view all attributes for security policies in a tenant system.

Starting in Junos OS Release 18.4R1, the tenant system administrator can create dynamic address within a tenant system. A dynamic address entry contains IP addresses and prefixes extracted from external sources. The security policies use the dynamic address in the source-address field or destination-address field. You can view the dynamic-address information including the name, feeds, and properties for tenant systems by using the command **show security dynamic-address**.

A dynamic address entry (DAE) is a group of IP addresses that can be entered manually or imported from external sources within tenant systems. The DAE feature allows feed-based IP objects to be used in security policies to either deny or allow traffic based on either source or destination IP criteria.

> **NOTE:** The maximum number of DAE for a given tenant system equals the system-wide scaling number. Furthermore, the sum of DAE for all the tenant systems must be less than or equal to the system-wide scaling number for DAE. If one tenant system uses maximum number of IP entries, other tenant system will fail to get IP entries into their DAE.
>
> Starting in Junos 18.4R1, the **set security dynamic-address feed-server** command can be configured under the tenant systems.

Application Timeouts

The application timeout value set for an application determines the session timeout. Application timeout behavior is the same for a tenant system as it is at the root level. Although the administrators of the tenant system can use predefined applications in security policies, the administrators cannot modify the timeout value for these predefined applications. Application timeout values are stored in the application entry database and in the corresponding tenant system TCP and UDP port-based timeout tables.

Security Policy Allocation

The master administrator creates a security profile to allocate the maximum number of policies that can be configured for each tenant system. The administrator of the tenant system is then restricted by the security profile to create no more than the number of policies described in the security profile. The administrator of the tenant system use the **show system security-profile policy** command to view the number of security policies allocated to the tenant system.

```
user@host> show system security-profile policy
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                1          0
16000
```

Example: Configuring Security Policies in the Tenant System

IN THIS SECTION

- Requirements | **618**
- Overview | **619**
- Configuration | **619**
- Verification | **621**

This example shows how to configure the security policies for the tenant system.

Requirements

Before you begin the configuration:

- Configure zones. See *Example: Configuring Security Zones in the Tenant System*.
- Use the **show system security-profiles policy** command to see the security policy resources allocated to the tenant system.

Overview

In this example, you can configure a security policy for the tenant system. The administrator for the tenant system user can use **[edit tenants tenant-name security policies]** hierarchy level to configure the security policies. This example configures the security policies described in Table 41 on page 619.

Table 41: Security Policies Parameters

Feature	Configuration Parameters
Policy 1	Permit the following traffic: • Policy name: p1 • Tenant name: TSYS1 • From zone: trust • To zone: untrust • Source address: any • Destination address: any • Application: any
Policy 2	Permit the following traffic: • Policy name: p1 • Tenant name: TSYS1 • From zone: untrust • To zone: trust • Source address: any • Destination address: any • Application: any

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TSYS1 security policies from-zone trust to-zone untrust policy p1 match source-address any
set tenants TSYS1 security policies from-zone trust to-zone untrust policy p1 match destination-address any
set tenants TSYS1 security policies from-zone trust to-zone untrust policy p1 match application any
set tenants TSYS1 security policies from-zone trust to-zone untrust policy p1 then permit
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match source-address any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match destination-address any
```

```
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 match application any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy p2 then permit
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure the security policies in the tenant system:

1. Log in to the tenant system and define the tenant system name as TSYS1.

```
[edit]
user@host# set tenants TSYS1
```

2. Create a security policy as p1 that permits traffic from zone trust to zone untrust and configure the match condition.

```
[edit tenants TSYS1 security policies from-zone trust to-zone untrust]
user@host# set policy p1 match source-address any
user@host# set policy p1 match destination-address any
user@host# set policy p1 match application any
user@host# set policy p1 then permit
```

3. Create a security policy as p2 that permits traffic from zone untrust to zone trust and configure the match condition.

```
[edit tenants TSYS1 security policies from-zone untrust to-zone trust]
user@host# set policy p2 match source-address any
user@host# set policy p2 match destination-address any
user@host# set policy p2 match application any
user@host# set policy p2 then permit
```

Results

From configuration mode, confirm your configuration by entering the **show tenants tenant-name security policies** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TSYS1 security policies
from-zone trust to-zone untrust {
    policy p1 {
```

```
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit;
        }
    }
}
from-zone untrust to-zone trust {
    policy p2 {
        match {
            source-address any;
            destination-address any;
            application any;
        }
        then {
            permit;
        }
    }
}
```

Verification

Verifying Policy Configuration

Purpose

Verify the information about security policies.

Action

To verify the configuration is working properly, enter the **show security policies detail tenant TSYS1** command from operational mode.

```
user@host> show security policies detail tenant TSYS1
```

```
Default policy: deny-all
Pre ID default policy: permit-all
Policy: p1, action-type: permit, State: enabled, Index: 4, Scope Policy: 0
Policy Type: Configured
Sequence number: 1
```

```
From zone: trust, To zone: untrust
Source addresses: any
Destination addresses: any
Application: any
IP protocol: 1, ALG: 0, Inactivity timeout: 60
ICMP Information: type=255, code=0
Application: junos-telnet
IP protocol: tcp, ALG: 0, Inactivity timeout: 1800
Source port range: [0-0]
Destination port range: [23-23]
Application: app_udp
IP protocol: udp, ALG: 0, Inactivity timeout: 1800
Source port range: [0-0]
Destination port range: [5000-5000]
Application: junos-icmp6-all
IP protocol: 58, ALG: 0, Inactivity timeout: 60
ICMP Information: type=255, code=0
Per policy TCP Options: SYN check: No, SEQ check: No, Window scale: No
Session log: at-create, at-close
Policy statistics:
Input  bytes     :                   0                   0 bps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Output bytes     :                   0                   0 bps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Input  packets   :                   0                   0 pps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Output packets   :                   0                   0 pps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Session rate     :                   0                   0 sps
Active sessions  :                   0
Session deletions:                   0
Policy lookups   :                   0
```

Meaning

The output displays the information about the security policies configured on the tenant system.

Release History Table

Release	Description
18.3R1	Starting in Junos OS Release 18.3R1, the security policies feature supported on logical systems is now extended to tenant systems.

RELATED DOCUMENTATION

Tenant Systems Overview | 495

Configuring Dynamic Address for Tenant Systems

A dynamic address entry in the tenant system provides dynamic IP address information to security policies. To use dynamic address, you must specify basic information of dynamic address including their names, feeds and properties for a tenant system.

- Read the "Example: Configuring Security Policies in the Tenant System" on page 618 to understand how and where this procedure fits in the overall tenant support for security policy.

To configure the dynamic address in IPv4 networks within a tenant system:

1. Define the tenant system name as TSYS1.

```
[edit]
user@host# set tenants TSYS1
```

2. Create dynamic address within a tenant system.

```
[edit tenants TSYS1]
user@host# set security dynamic-address address-name Ipv4 profile category IPFilter feed fd1
```

3. Confirm your configuration by entering the **show tenants TSYS1 security dynamic-address** command.

```
[edit]
user@host# show tenants TSYS1 security dynamic-address
address-name Ipv4 {
   profile {
      category GeoIP;
```

```
        category IPFilter {
          feed fd1;
          }
        }
      }
  }
```

- To configure the security policies in the tenant system:

  1. Define the tenant system name as TSYS1.

     ```
     [edit]
     user@host# set tenants TSYS1
     ```

  2. Create a security policy as p1 that permits traffic from zone trust to zone untrust and configure the match condition.

     ```
     [edit tenants TSYS1 security policies from-zone trust to-zone untrust]
     user@host# set policy p1 match source-address any
     user@host# set policy p1 match destination-address any
     user@host# set policy p1 match application any
     user@host# set policy p1 then permit
     ```

  3. Confirm your configuration by entering the **show tenants tenant-name security policies** command

     ```
     [edit]
     user@host# show tenants TSYS1 security policies
     from-zone trust to-zone untrust {
        policy p1 {
           match {
              source-address any;
              destination-address any;
              application any;
           }
           then {
              permit;
           }
        }
     }
     ```

Screen Options for Tenant Systems

IN THIS SECTION

- Understanding Tenant System Screen Options | 626
- Example: Configuring Screen Options for a Tenant System | 626

Screen options for Tenant Systems on SRX Series devices prevent attacks as , such as IP address sweeps, port scans, denial of service (DOS) attacks, ICMP, UDP, and SYN floods as same as Logical Systems. For more information, see the following topics:

Understanding Tenant System Screen Options

Using screen options, the device secures a zone by inspecting, and then allowing or denying all connection attempts that require crossing an interface bound to that zone. Junos OS applies the firewall policies, which can contain the content filtering and the IDP components to the traffic that passes the screen filters. All screen options that are available on the device are also available in each tenant system.

Starting in Junos OS Release 18.3R1, the screen options that are supported for logical systems are extended to tenant systems.

SEE ALSO

Understanding Screens Options on SRX Series Devices

Example: Configuring Screen Options for a Tenant System

IN THIS SECTION

- Requirements | 627
- Overview | 627
- Configuration | 627
- Verification | 631

This example shows how to configure screen options for a tenant system.

Requirements

Before you begin:

- Understand the tenant system configuration process. See "Tenant System Configuration Overview" on page 500 to understand how this task fits into the overall configuration process.
- Configure the zones for the tenant system. See "Security Zones for Tenant Systems" on page 544to understand how to configure the zones for the tenant systems.

Overview

Using screen options, the security device can protect against the different internal and external attacks for security zones. You can limit the number of concurrent sessions to the same destination IP address in a tenant system. Setting a destination based session limit can ensure that Junos OS allows only an acceptable number of concurrent connection requests—no matter what the source—to reach any one host. When the number of concurrent connection requests to an IP address surpasses the limit, Junos OS blocks further connection attempts to that IP address.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TN1 security screen ids-option jscreen limit-session destination-ip-based 80
set tenants TN1 security screen ids-option jscreen icmp ip-sweep threshold 1000
set tenants TN1 security screen ids-option jscreen icmp fragment
set tenants TN1 security screen ids-option jscreen icmp large
set tenants TN1 security screen ids-option jscreen icmp flood threshold 200
set tenants TN1 security screen ids-option jscreen icmp ping-death
set tenants TN1 security screen ids-option jscreen ip bad-option
set tenants TN1 security screen ids-option jscreen ip stream-option
set tenants TN1 security screen ids-option jscreen ip spoofing
set tenants TN1 security screen ids-option jscreen ip strict-source-route-option
set tenants TN1 security screen ids-option jscreen ip unknown-protocol
set tenants TN1 security screen ids-option jscreen ip tear-drop
set tenants TN1 security screen ids-option jscreen tcp syn-fin
set tenants TN1 security screen ids-option jscreen tcp tcp-no-flag
set tenants TN1 security screen ids-option jscreen tcp syn-frag
```

```
set tenants TN1 security screen ids-option jscreen tcp port-scan threshold 1000
set tenants TN1 security screen ids-option jscreen tcp syn-ack-ack-proxy threshold 500
set tenants TN1 security screen ids-option jscreen tcp syn-flood alarm-threshold 500
set tenants TN1 security screen ids-option jscreen tcp syn-flood attack-threshold 500
set tenants TN1 security screen ids-option jscreen tcp syn-flood source-threshold 50
set tenants TN1 security screen ids-option jscreen tcp syn-flood destination-threshold 1000
set tenants TN1 security screen ids-option jscreen tcp syn-flood timeout 10
set tenants TN1 security screen ids-option jscreen tcp land
set tenants TN1 security screen ids-option jscreen tcp winnuke
set tenants TN1 security screen ids-option jscreen tcp tcp-sweep threshold 1000
set tenants TN1 security screen ids-option jscreen udp flood threshold 500
set tenants TN1 security screen ids-option jscreen udp udp-sweep threshold 1000
set tenants TN1 security zones security-zone untrust screen jscreen
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure destination-based session limits in a tenant system:

1. Log in to the tenant system as the administrator and enter configuration mode.

   ```
   user@host:TN1#> configure
   user@host:TN1#
   ```

2. Define the tenant system name as TN1 and configure a screen option for a destination-based session limit.

   ```
   [edit tenants TN1]
   user@host:TN1# set security screen ids-option jscreen limit-session destination-ip-based 80
   ```

3. Configure the ICMP screening options.

   ```
   [edit tenants TN1 security screen ids-option jscreen]
   user@host:TN1# set icmp ip-sweep threshold 1000
   user@host:TN1# set icmp fragment
   user@host:TN1# set icmp large
   user@host:TN1# set icmp flood threshold 200
   user@host:TN1# set icmp ping-death
   ```

4. Configure the IP screening options.

```
[edit tenants TN1 security screen ids-option jscreen]
user@host:TN1# set ip bad-option
user@host:TN1# set ip stream-option
user@host:TN1# set ip spoofing
user@host:TN1# set ip strict-source-route-option
user@host:TN1# set ip unknown-protocol
user@host:TN1# set ip tear-drop
```

5. Configure the TCP screening options.

```
[edit tenants TN1 security screen ids-option jscreen]
user@host:TN1# set tcp syn-fin
user@host:TN1# set tcp tcp-no-flag
user@host:TN1# set tcp syn-frag
user@host:TN1# set tcp port-scan threshold 1000
user@host:TN1# set tcp syn-ack-ack-proxy threshold 500
user@host:TN1# set tcp syn-flood alarm-threshold 500
user@host:TN1# set tcp syn-flood attack-threshold 500
user@host:TN1# set tcp syn-flood source-threshold 50
user@host:TN1# set tcp syn-flood destination-threshold 1000
user@host:TN1# set tcp syn-flood timeout 10
user@host:TN1# set tcp land
user@host:TN1# set tcp winnuke
user@host:TN1# set tcp tcp-sweep threshold 1000
```

6. Configure the UDP screening options.

```
[edit tenants TN1 security screen ids-option jscreen]
user@host:TN1# set udp flood threshold 500
user@host:TN1# set udp udp-sweep threshold 1000
```

7. Attach the IDS profile to the zone.

```
[edit tenants TN1]
user@host:TN1# set security zones security-zone untrust screen jscreen
```

Results

From configuration mode, confirm your configuration by entering the **show tenants TN1 security screen** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TN1 security screen
ids-option jscreen {
    limit-session {
        destination-ip-based 80;
    }
}
ids-option jscreen {
    icmp {
        ip-sweep threshold 1000;
        fragment;
        large;
        flood threshold 200;
        ping-death;
    }
    ip {
        bad-option;
        stream-option;
        spoofing;
        strict-source-route-option;
        unknown-protocol;
        tear-drop;
    }
    tcp {
        syn-fin;
        tcp-no-flag;
        syn-frag;
        port-scan threshold 1000;
        syn-ack-ack-proxy threshold 500;
        syn-flood {
            alarm-threshold 500;
            destination-threshold 1000;
            timeout 10;
        }
        land;
        winnuke;
        tcp-sweep threshold 1000;
    }
    udp {
        flood {
            threshold 500;
        }
        udp-sweep threshold 1000;
    }
}
```

Verification

IN THIS SECTION

- Verifying security screen status | 631

To confirm that the configuration is working properly, perform the below task:

Verifying security screen status

Purpose

Verify that the IDS profile for multiple screening options is configured properly:

Action

To verify the configuration is working properly, enter the **show security screen ids-option jscreen tenant TN1** and **show security zone tenant TN1**command from operational mode.

user@host> show security screen ids-option jscreen tenant TN1

```
Screen object status:

Name                                    Value
ICMP flood threshold                    200
UDP flood threshold                     500
TCP winnuke                             enabled
TCP port scan threshold                 1000
ICMP address sweep threshold            1000
TCP sweep threshold                     1000
UDP sweep threshold                     1000
IP tear drop                            enabled
TCP SYN flood attack threshold          500
TCP SYN flood alarm threshold           500
TCP SYN flood source threshold          50
TCP SYN flood destination threshold     1000
TCP SYN flood timeout                   10
IP spoofing                             enabled
ICMP ping of death                      enabled
TCP land attack                         enabled
TCP SYN fragment                        enabled
TCP no flag                             enabled
```

```
  IP unknown protocol                         enabled
  IP bad options                              enabled
  IP strict source route option               enabled
  IP stream option                            enabled
  ICMP fragmentation                          enabled
  ICMP large packet                           enabled
  TCP SYN FIN                                 enabled
  TCP SYN-ACK-ACK proxy threshold             500
```

user@host> show security zone tenant TN1

```
Security zone: untrust
Send reset for non-SYN session TCP packets: Off
Policy configurable: Yes
Screen: jscreen
Interfaces bound: 0
Interfaces:
```

Meaning

The output displays the screen status in the tenant system.

SEE ALSO

Understanding Tenant System Screen Options | 626

Release History Table

Release	Description
18.3R1	Starting in Junos OS Release 18.3R1, the screen options that are supported for logical systems are extended to tenant systems.

RELATED DOCUMENTATION

Example: Configuring Tenant Systems | 516

NAT for Tenant Systems

IN THIS SECTION

- Understanding Network Address Translation for Tenant systems | 633
- Example: Configuring Network Address Translation for the Tenant Systems | 634

NAT is a method for modifying or translating network address information in packet headers. Either or both source and destination addresses in a packet may be translated. For more information, see the following topics:

Understanding Network Address Translation for Tenant systems

Starting in Junos OS Release 18.3R1, the network address translation including source NAT, destination NAT, and static NAT supported on logical systems is supported on tenant systems.

A tenant system has an administrator (tenant administrator) who can configure source NAT, destination NAT, and static NAT for the tenant systems. The tenant administrator can view the details of the source NAT, destination NAT, and static NAT of the tenant system. The master administrator can view the statistics or information of the source NAT, destination NAT, and static NAT for any tenant systems.

For the tenant system, the master administrator can configure the maximum and reserved numbers for the following NAT resources:

- Source NAT pools and destination NAT pools
- IP addresses in the source NAT pools with and without port address translation
- Rules for source, destination, and static NAT
- Prefix list for rule matching
- NAT cone binding
- IP addresses that support port overloading

The reserved numbers allocated guarantees that the specified resource amount is constantly available to the tenant systems. The administrator for tenant systems can use the **show system security-profile** command with a NAT option to view the NAT resources allocated to the tenant system.

SEE ALSO

Understanding Network Address Translation for Tenant systems | 633

Introduction to NAT

Example: Configuring Network Address Translation for the Tenant Systems

IN THIS SECTION

- Requirements | 634
- Overview | 634
- Configuration | 635
- Verification | 638

This example shows how to configure source NAT, destination NAT and static NAT for a given tenant systems.

Requirements

This example uses the following hardware and software components:

- SRX Series device with Junos OS Release 18.3R1 or later. This configuration example is tested for Junos OS Release 18.3R1.
- Create tenant system. See : “Example: Configuring Tenant Systems” on page 516.
- Configure network interfaces. See : “Configuring a Routing Instance for a Tenant System” on page 515.

Overview

In this example, first you configure the trust security zone for the private address space and then you configure the untrust security zone for the public address space.

Devices in the untrust zone access a specific host in the trust zone, with the destination IP address 203.0.113.200/24. This example configures the NAT described in Table 1: Tenant System NAT Configuration.

Table 42: Tenant System NAT Configuration

Feature	Name	Configuration Parameters
Static, source and destination NAT rule set	r1	• Rule r1 to match packets from untrust zone with destination address. • Destination IP address in matching packets is translated.
Source pool	pat	Address 192.0.2.1 to 192.0.2.24.
Destination pool	h1	Address 192.168.1.200.
Proxy ARP	arp	Address 192.0.2.1 to 192.0.2.24.
NAT interfaces for traffic direction.		ge-0/0/0 and ge-0/0/1.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants tn1 security nat source pool pat address 192.0.2.1 to 192.0.2.24
set tenants tn1 security nat source rule-set from_intf from interface ge-0/0/0.0
set tenants tn1 security nat source rule-set from_intf to interface ge-0/0/1.0
set tenants tn1 security nat source rule-set from_intf rule r1 match source-address 192.0.2.0/24
set tenants tn1 security nat source rule-set from_intf rule r1 match destination-address 203.0.113.200/24
set tenants tn1 security nat source rule-set from_intf rule r1 then source-nat pool pat
set tenants tn1 security nat static rule-set from_zone from zone trust
set tenants tn1 security nat static rule-set from_zone rule r1 match source-address 192.0.2.0/24
set tenants tn1 security nat static rule-set from_zone rule r1 match destination-address 203.0.113.203/24
set tenants tn1 security nat static rule-set from_zone rule r1 then static-nat prefix 192.168.1.203/24
set tenants tn1 security nat destination pool h1 address 192.168.1.200
set tenants tn1 security nat destination rule-set from_zone from zone trust
set tenants tn1 security nat destination rule-set from_zone rule r1 match source-address 192.0.2.0/24
set tenants tn1 security nat destination rule-set from_zone rule r1 match destination-address 203.0.113.202/24
set tenants tn1 security nat destination rule-set from_zone rule r1 then destination-nat pool h1
set tenants tn1 security nat proxy-arp interface ge-0/0/1.0 address 192.0.2.1 to 192.0.2.24
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure NAT in the tenant system:

1. Create a security NAT source pool and rule set for the tenant system.

```
[edit tenant tn1 security nat source]
user@host# set tenants tn1 security nat source pool pat address 192.0.2.1 to 192.0.2.24
user@host# set tenants tn1 security nat source rule-set from_intf from interface ge-0/0/0.0
user@host# set tenants tn1 security nat source rule-set from_intf to interface ge-0/0/1.0
user@host# set tenants tn1 security nat source rule-set from_intf rule r1 match source-address 192.0.2.0/24
user@host# set tenants tn1 security nat source rule-set from_intf rule r1 match destination-address
    203.0.113.200/24
user@host# set tenants tn1 security nat source rule-set from_intf rule r1 then source-nat pool pat
```

2. Create a security NAT static rule set for the tenant system.

```
[edit tenants tn1 security nat static]
user@host# set tenants tn1 security nat static rule-set from_zone from zone trust
user@host# set tenants tn1 security nat static rule-set from_zone rule r1 match source-address 192.0.2.0/24
user@host# set tenants tn1 security nat static rule-set from_zone rule r1 match destination-address
    203.0.113.203/24
user@host# set tenants tn1 security nat static rule-set from_zone rule r1 then static-nat prefix
    192.168.1.203/24
```

3. Create a security NAT destination pool and rule set for the tenant system.

```
[edit tenants tn1 security nat destination]
user@host# set tenants tn1 security nat destination pool h1 address 192.168.1.200
user@host# set tenants tn1 security nat destination rule-set from_zone from zone trust
user@host# set tenants tn1 security nat destination rule-set from_zone rule r1 match source-address
    192.0.2.0/24
user@host# set tenants tn1 security nat destination rule-set from_zone rule r1 match destination-address
    203.0.113.202/24
user@host# set tenants tn1 security nat destination rule-set from_zone rule r1 then destination-nat pool
    h1
```

4. Configure proxy Address Resolution Protocol (ARP).

```
[edit tenant tn1 security nat]
user@host# set tenants tn1 security nat proxy-arp interface ge-0/0/1.0 address 192.0.2.1 to 192.0.2.24
```

Results

From configuration mode, confirm your configuration by entering the **show tenants tn1 security nat** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
source {
    pool pat {
        address {
            192.0.2.1 to 192.0.2.24;
        }
    }
    rule-set from_intf {
        from interface ge-0/0/0.0;
        to interface ge-0/0/1.0;
        rule r1 {
            match {
                source-address 192.168.1.0/24;
                destination-address [203.0.113.200/24 ];
            }
            then {
                source-nat {
                    pool {
                        pat;
                    }
                }
            }
        }
    }
}
destination {
    pool h1 {
        address 192.168.1.200;
    }
    rule-set from_zone {
        from zone untrust;
        rule r1 {
            match {
                source-address 192.0.2.0/24;
                destination-address 203.0.113.202/24;
            }
            then {
                destination-nat {
                    pool {
                        h1;
```

```
            }
          }
        }
      }
    }
}
static {
    rule-set from_zone {
        from zone untrust;
        rule r1 {
            match {
                source-address 192.0.2.0/24;
                destination-address 203.0.113.203/24;
            }
            then {
                static-nat {
                    prefix {
                        192.168.1.203/24;
                    }
                }
            }
        }
    }
}
proxy-arp {
    interface ge-0/0/1.0 {
        address {
            192.0.2.1 to 192.0.2.24;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Static NAT Configuration | **639**
- Verifying Destination NAT Configuration | **639**
- Verifying Source NAT Configuration | **640**

To confirm that the configuration is working properly, perform these tasks:

Verifying Static NAT Configuration

Purpose

To verify that there is traffic matching the static NAT rule set.

Action

From operational mode, enter the **show security nat static rule all tenant tn1** command. View the **Translation hits** field to check for traffic that matches the rule.

```
user@host> show security nat static rule all tenant tn1
```

Sample Output

```
Total static-nat rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0
Static NAT rule: r1                     Rule-set: from_zone
  Rule-Id                   : 1
  Rule position             : 1
  From zone                 : untrust
  Source addresses          : 192.0.2.0       - 192.0.2.255
  Destination addresses     : 203.0.113.203
  Host addresses            : 192.168.1.203
  Netmask                   : 32
  Host routing-instance     : N/A
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

Meaning

The command output displays the static NAT rule. View the **Translation hits** field to check for traffic that matches the static rule.

Verifying Destination NAT Configuration

Purpose

To verify that there is traffic matching the destination NAT rule set.

Action

From operational mode, enter the **show security nat destination rule all tenant tn1** command. View the **Translation hits** field to check for traffic that matches the rule.

```
user@host> show security nat destination rule all tenant tn1
```

Sample Output

```
Total destination-nat rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0
Destination NAT rule: r1                    Rule-set: from_zone
  Rule-Id                   : 1
  Rule position             : 1
  From zone                 : untrust
  Match
    Source addresses        : 192.0.2.0       - 192.0.2.255
    Destination addresses   : 203.0.113.202   - 203.0.113.202
  Action                    : h1
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

Meaning

The command output displays the destination NAT rule. View the **Translation hits** field to check for traffic that matches the destination rule.

Verifying Source NAT Configuration

Purpose

To verify that there is traffic matching the source NAT rule set.

Action

From operational mode, enter the **show security nat source rule all tenant tn1** command. View the **Translation hits** field to check for traffic that matches the rule.

```
user@host> show security nat source rule all tenant tn1
```

Sample Output

```
Total rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0
source NAT rule: r1                    Rule-set: from_intf
  Rule-Id                   : 1
  Rule position             : 1
  From interface            : ge-0/0/0.0
  To interface              : ge-0/0/1.0
  Match
    Source addresses        : 192.168.1.0     - 192.168.1.255
    Destination addresses   : 203.0.113.200   - 203.0.113.200
  Action                      : pat
    Persistent NAT type       : N/A
    Persistent NAT mapping type : address-port-mapping
    Inactivity timeout        : 0
    Max session number        : 0
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

Meaning

The command output displays the source NAT rule. View the **Translation hits** field to check for traffic that matches the source rule.

RELATED DOCUMENTATION

Tenant System Configuration Overview | 500

UTM for Tenant Systems

IN THIS SECTION

- Understanding UTM Features in Tenant Systems | 642
- Example: Configuring UTM for the Tenant System | 643

Unified threat management (UTM) provides multiple security features and services for SRX Series devices on the network, protecting users from security threats in a simplified way. UTM secures the tenant systems from viruses, malware, or malicious attachments by scanning the incoming data using Deep Packet Inspection and prevents access to unwanted websites by installing Enhanced Web Filtering (EWF).

Understanding UTM Features in Tenant Systems

Unified Threat Management (UTM) in tenant systems provides several security features such as antispam, antivirus, content filtering, and Web filtering to secure users from multiple Internet-borne threats. The advantage of UTM is streamlined installation and management of these multiple security capabilities. The tenant systems administrator configures the UTM features. Configuring UTM features for tenant systems is similar to configuring UTM features on a device that is not configured for tenant systems.

The security features provided as part of the UTM solution are:

- *Antispam Filtering*—E-mail spam consists of unwanted e-mail messages, usually sent by commercial, malicious, or fraudulent entities. The antispam feature examines transmitted e-mail messages to identify e-mail spam. The default antispam feature is configured at the tenant system administrator and it is applicable for all the tenant systems.
- *Content Filtering*—Content filtering blocks or permits certain types of traffic based on the MIME type, file extension, protocol command, and embedded object type. The default content filtering feature is configured at the tenant system administrator and it is applicable for all the tenant systems.
- *Web Filtering*—Web filtering lets you manage Internet usage by preventing access to inappropriate Web content. The default Web filtering feature is configured at the tenant system administrator, and the tenant system inherit these default Web filtering configuration.
- *Sophos Antivirus* —Sophos Antivirus scanning is offered as a less CPU-intensive alternative to the full file-based antivirus feature. Sophos Antivirus is as an in-the-cloud antivirus solution. The default antivirus feature is configured at the tenant system administrator, and the tenant system inherit these default antivirus configuration.
- *Avira Antivirus* —Avira Antivirus feature profile settings include the scanning options, such as virus detection type, white list, black list, fallback and notification options. Only one Avira antivirus, Web filtering, Antispam filtering, or Content filtering engine is running in root system. You must configure the Avira antivirus, Web filtering, and Antispam filtering feature type in default configuration. It is configured by the root-user only. All tenants should use the same routing engine and profile type.

You must configure the custom objects for the Web filtering, anti-spam, and content filtering features before configuring the UTM features. You can configure custom objects for each tenant system.

The predefined UTM default policy parameters for Web filtering, content filtering, antivirus, and antispam profiles are configured at the tenant system administrator. The tenant system inherit the same antivirus and Web filtering features configured for the tenant system administrator. The options such as

mime-whitelist and **url-whitelist** in antivirus profile, and **address-blacklist** and **address-whitelist** in antispam profile can be configured at the following hierarchy levels, respectively:

- **[edit security utm feature-profile anti-virus sophos-engine profile]**
- **[edit security utm feature-profile anti-spam sbl profile]**

The options **url-whitelist** and **url-blacklist** are not supported in the Web fiterling profile, you can use the custom category option to achieve the function.

Example: Configuring UTM for the Tenant System

IN THIS SECTION

- Requirements | **643**
- Overview | **643**
- Configuration | **644**
- Verification | **647**

This example shows how to configure the UTM features antivirus, antispam, content filtering, custom message, custom url category, and Web filtering in the tenant system. The tenant system administrator is responsible for assigning the UTM features to the tenant system.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with the tenant systems.
- Junos OS Release 19.2R1 and later releases.

Before you begin:

- Understand the tenant systems role and functions. See tenant systems overview.

Overview

The tenant system administrator assigns UTM features antivirus, antispam, content filtering, and Web filtering to the tenant system.

This example shows how to configure the UTM features for tenant system.

Configuration

CLI Quick Configuration

To quickly configure this example, log in to the master logical system as the master administrator, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TSYS1 security utm custom-objects url-pattern cust-list value www.ask.com
set tenants TSYS1 security utm custom-objects url-pattern cust-list value www.playboy.com
set tenants TSYS1 security utm custom-objects url-pattern cust-list2 value www.baidu.com
set tenants TSYS1 security utm custom-objects custom-url-category cust-list value cust-list
set tenants TSYS1 security utm custom-objects custom-url-category cust-list2 value cust-list2
set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1 default log-and-permit
set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1 category cust-list
    action log-and-permit
set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1 category cust-list2
    action block
set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1 fallback-settings
    default log-and-permit
set tenants TSYS1 security utm feature-profile web-filtering juniper-enhanced profile ewf_my_profile1 category
    Enhanced_Adult_Content action block
set tenants TSYS1 security utm feature-profile web-filtering juniper-enhanced profile ewf_my_profile1 category
    Enhanced_Social_Web_Facebook action log-and-permit
set tenants TSYS1 security utm feature-profile web-filtering juniper-enhanced profile ewf_my_profile1 category
    cust-list action block
set tenants TSYS1 security utm utm-policy utmpolicy1 web-filtering http-profile ewf_my_profile1
```

Configuring UTM for Tenant System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Log in to the tenant system and enter configuration mode.

```
user@host> configure
admin@host#
```

2. Configure the custom objects for the tenant system.

```
[edit tenants TSYS1 security utm custom-objects]
user@host# url-pattern cust-list value www.ask.com
user@host# url-pattern cust-list value www.playboy.com
user@host# url-pattern cust-list2 value www.baidu.com
user@host# custom-url-category cust-list value cust-list
user@host# custom-url-category cust-list2 value cust-list2
```

3. Configure the feature profile **web-filtering** for the tenant system.

```
[edit tenants TSYS1 security utm feature-profile]
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1
   default log-and-permit
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1
   category cust-list action log-and-permit
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1
   category cust-list2 action block
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-local profile my_local1
   fallback-settings default log-and-permit
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-enhanced profile
   ewf_my_profile1 category Enhanced_Adult_Content action block
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-enhanced profile
   ewf_my_profile1 category Enhanced_Social_Web_Facebook action log-and-permit
user@host# set tenants TSYS1 security utm feature-profile web-filtering juniper-enhanced profile
   ewf_my_profile1 category cust-list action block
```

4. Configure the UTM policy for the tenant system.

```
[edit tenants TSYS1 security utm ]
user@host# set tenants TSYS1 security utm utm-policy utmpolicy1 web-filtering http-profile ewf_my_profile1
```

Results

- From configuration mode, confirm your configuration by entering the **show tenants TSYS1 security utm custom-objects** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TSYS1 security utm custom-objects
url-pattern {
   cust-list {
      value [ www.ask.com www.playboy.com ];
   }
```

```
    cust-list2 {
        value www.baidu.com;
    }
}
custom-url-category {
    cust-list {
        value cust-list;
    }
    cust-list2 {
        value cust-list2;
    }
}
```

- From configuration mode, confirm your configuration by entering the **show tenants TSYS1 security utm feature-profile web-filtering** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TSYS1 security utm feature-profile web-filtering
juniper-local {
    profile my_local1 {
        default log-and-permit;
        category {
            cust-list {
                action log-and-permit;
            }
            cust-list2 {
                action block;
            }
        }
        fallback-settings {
            default log-and-permit;
        }
    }
}
juniper-enhanced {
    profile ewf_my_profile1 {
        category {
            Enhanced_Adult_Content {
                action block;
            }
            Enhanced_Social_Web_Facebook {
                action log-and-permit;
            }
            cust-list {
```

```
            action block;
        }
    }
  }
}
```

- From configuration mode, confirm your configuration by entering the **show tenants TSYS1 security utm** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TSYS1 security utm
utm-policy utmpolicy1 {
    web-filtering {
        http-profile ewf_my_profile1;
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Web Filtering Configuration | 647

To confirm that the configuration is working properly, perform these tasks:

Verifying Web Filtering Configuration

Purpose

Verify that the Web filtering feature is configured for the tenant system.

Action

From operational mode, enter the **show security utm web-filtering statistics tenant TSYS1** command to view the details of the Web filtering feature configured for the tenant system.

```
user@host> show security utm web-filtering statistics tenant TSYS1
```

```
UTM web-filtering statistics:
    Total requests:                    19784932
    white list hit:                    0
    Black list hit:                    0
    No license permit:                 0
    Queries to server:                 19782736
    Server reply permit:               18819472
    Server reply block:                0
```

Meaning

The output displays the Web filtering statistics for the tenant system.

IDP for Tenant Systems

IN THIS SECTION

- Understanding IDP for Tenant Systems | **649**
- Understanding IDP Features in Tenant Systems | **651**
- Example: Configuring IDP Policies and Attacks for Tenant Systems | **652**

An Intrusion Detection and Prevention (IDP) policy in tenant systems enables you to selectively enforce various attack detection and prevention techniques on the network traffic passing through an SRX Series device. The SRX Series devices offer the same set of IDP signatures that are available on Juniper Networks IDP Series Intrusion Detection and Prevention Appliances to secure networks against attacks.

Understanding IDP for Tenant Systems

IN THIS SECTION

- IDP Policies | 649
- Limitation | 650
- IDP Installation and Licensing for Tenant Systems | 650

A Junos OS Intrusion Detection and Prevention (IDP) policy enables you to selectively enforce various attack detection and prevention techniques on network traffic passing through a tenant system.

This topic includes the following sections:

IDP Policies

Configuring IDP policies at the root level and tenant systems level are similar. IDP policy templates configured at the root level are visible and used by all tenant systems. The master administrator specifies an IDP policy in the security profile that is bound to a tenant system. To enable IDP in a tenant system, the master administrator or tenant system administrator configures a security policy that defines the traffic to be inspected and specifies at the **permit application-services idp-policy *idp-policy-name*** hierarchy level.

The master administrator can configure multiple IDP policies and a tenant system can have multiple IDP policies at a time. For tenant systems, the master administrator can either bind the same IDP policy to multiple tenant systems or bind the necessary IDP policies to each tenant system. If you configure more than one IDP policy, then configuring a default IDP policy is mandatory.

The master administrator configures the number of maximum IDP sessions reservation for a master logical system and tenant systems. The number of IDP sessions that are allowed for a master logical system are defined using the command **set security idp max-sessions *max-sessions*** and the number of IDP sessions that are allowed for a tenant system are defined using the command **set security idp tenant-system *tenant-system* max-sessions *max-sessions***.

The tenant system administrator performs the following actions:

- Configure multiple IDP policies and attach to the firewall policies to be used by the tenant systems. If the IDP policy is not configured for a tenant system, the default IDP policy configured by the master administrator is used. The IDP policy is bound to the tenant systems through a tenant systems security policy.
- Create or modify IDP policies for their tenant system. The IDP policies are bound to tenant systems. When an IDP policy is changed, and commit fails, only the tenant system that has initiated the commit change is notified about the commit failure.
- The tenant system administrator can create security zones in the tenant system and assign interfaces to each security zone. Zones that are specific to tenant systems cannot be referenced in IDP policies configured by the master administrator. The master administrator can reference zones in the master logical system in an IDP policy configured for the master logical system.
- View the attack statistics detected and IDP counters, attack table, and policy commit status by the individual tenant system using the commands **show security idp counters**, **show security idp attack table**, **show security idp policies**, **show security idp policy-commit-status**, and **show security idp security-package-version**.

View the attack statistics detected and IDP counters, attack table, and policy commit status from the root using the commands **show security idp counters *counters* tenant *tenant-name***, **show security idp attack table tenant *tenant-name***, **show security idp policies tenant *tenant-name***, **show security idp policy-commit-status tenant *tenant-name***, and **show security idp security-package-version tenant *tenant-name***.

Limitation

- IDP policy compilation in Packet Forwarding Engine is done at global level. Any changes in policy made for a logical system or a tenant system results in the compilation of policies of all the logical systems or tenant systems because the IDP internally treats it as a single global policy.
- Any changes in policy made for a logical system or a tenant system results in clearing the attack table of all logical systems or a tenant systems.

IDP Installation and Licensing for Tenant Systems

An idp-sig license must be installed at the root level. Once IDP is enabled at the root level, it can be used with any tenant system on the device.

A single IDP security package is installed for all tenant systems on the device at the root level. The download and install options can only be executed at the root level. The same version of the IDP attack database is shared by all tenant systems.

Understanding IDP Features in Tenant Systems

IN THIS SECTION

- Rulebases | 651
- Multi-Detectors | 651
- Logging and Monitoring | 651

This topic includes the following sections:

Rulebases

A single IDP policy can contain only one instance of any type of rulebase. The Intrusion prevention system (IPS) rulebase uses attack objects to detect known and unknown attacks. It detects attacks based on stateful signature and protocol anomalies.

NOTE: Status monitoring for IPS is global to the device and not on a per tenant system basis.

Multi-Detectors

When a new IDP security package is received, it contains attack definitions and a detector. After a new policy is loaded, it is also associated with a detector. If the policy being loaded has an associated detector that matches the detector already in use by the existing policy, the new detector is not loaded and both policies use a single associated detector. But if the new detector does not match the current detector, the new detector is loaded along with the new policy. In this case, each loaded policy will then use its own associated detector for attack detection.

The version of the detector is common to all tenant systems.

Logging and Monitoring

Status monitoring options are available to the master administrator only. All status monitoring options under the **show security idp** and **clear security idp** CLI operational commands present global information, but not on a per tenant system basis.

NOTE:

- SNMP monitoring for IDP is not supported on tenant systems.
- The tenant systems supports only the stream mode for syslog and does not support the event mode.

IDP generates event logs when an event matches an IDP policy rule in which logging is enabled.

The tenant systems identification is added to the following types of IDP traffic processing logs:

- Attack logs. The following example shows an attack log for the **TSYS1** tenant system:

```
"<14>1 2019-02-18T02:17:56+05:30 4.0.0.254 pamba RT_IDP  - -
IDP_ATTACK_LOG_EVENT_LS: Lsys TSYS1: IDP: At 1550485076, SIG Attack log
<4.0.0.1/51480->5.0.0.1/21> for TCP protocol and service SERVICE_IDP application
FTP by rule 1 of rulebase IPS in policy new. attack: id=4641, repeat=0, action=NONE,
 threat-severity=MEDIUM, name=FTP:USER:ROOT, NAT <0.0.0.0:0->0.0.0.0:0>,
time-elapsed=0, inbytes=0, outbytes=0, inpackets=0, outpackets=0,
intf:l1z1:xe-4/0/0.0->l1z2:xe-4/0/1.0, packet-log-id: 0, alert=no, username=N/A,
roles=N/A and misc-message -
```

- IP action logs. The following example shows an IP action log for the **TSYS1** tenant system:

```
"<14>1 2019-02-19T02:21:43+05:30 4.0.0.254 pamba RT_FLOW  - -  FLOW_IP_ACTION_LS:
 Lsys TSYS1: Flow IP action detected attack attempt:4.0.0.1/51492 --> 5.0.0.1/21
from interface xe        -4/0/0.0, from zone l1z1, action close.
"<14>1 2019-02-19T02:21:45+05:30 4.0.0.254 pamba RT_FLOW  - -
APPTRACK_SESSION_CLOSE_LS: Lsys TSYS1: AppTrack session closed Closed by
junos-tcp-clt-emul: 4.0.0.1/51492->5.0.0.1/        21 junos-ftp FTP UNKNOWN
4.0.0.1/51492->5.0.0.1/21 N/A N/A 6 l1z1-l1z2 l1z1 l1z2 50000058 6(287) 5(281) 6
N/A N/A No N/A N/A VR1 xe-4/0/1.0  0 0 Infrastructure File-Servers N/A        N/A
```

Example: Configuring IDP Policies and Attacks for Tenant Systems

IN THIS SECTION

- Requirements | **653**
- Overview | **653**

Configuration | 653
Verification | 666

This example shows how to configure IDP policies and attacks for tenant systems.

Requirements

This example uses the following hardware and software components:

- SRX Series device configured with the tenant systems.
- Junos OS Release 19.2R1 and later releases.

Before you configure IDP policies and attacks for tenant systems, be sure you have:

- Read "Tenant Systems Overview" on page 495 to understand how this task fits into the overall configuration process.
- Create tenant system **TSYS1**. See "Example: Creating Tenant Systems, Tenant System Administrators, and an Interconnect VPLS Switch" on page 502.
- Create security zones for tenant system **TSYS1**. See "Example: Configuring Zones in the Tenant System" on page 545.
- Log in to the tenant system as the tenant system administrator. See "Tenant System Configuration Overview" on page 500.

Overview

In this example you configure IDP custom attacks, policies, custom attack group, pre-defined attack and attack-group, and dynamic attack group in the tenant system **TSYS1**.

Configuration

IN THIS SECTION

Configuring a Custom Attack | 654
Configuring an IDP Policy | 655
Configuring Multiple IDP Policies with a Default IDP Policy | 657
Configuring IDP Custom Attack Group | 661

Configuring Pre-defined Attack and Attack Group | 663
Configuring IDP Dynamic Attack Group | 665

Configuring a Custom Attack

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp custom-attack my-http severity info
set security idp custom-attack my-http attack-type signature protocol-binding application HTTP
set security idp custom-attack my-http attack-type signature context http-get-url
set security idp custom-attack my-http attack-type signature pattern .*testing.*
set security idp custom-attack my-http attack-type signature direction any
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure a custom attack object:

1. Create the custom attack object and set the severity level.

```
[edit security idp]
user@host:TSYS1# set custom-attack my-http severity info
```

2. Configure stateful signature parameters.

```
[edit security idp]
user@host:TSYS1# set custom-attack my-http attack-type signature protocol-binding application HTTP
user@host:TSYS1# set custom-attack my-http attack-type signature context http-get-url
user@host:TSYS1# set custom-attack my-http attack-type signature pattern .*testing.*
user@host:TSYS1# set custom-attack my-http attack-type signature direction any
```

Results

From configuration mode, confirm your configuration by entering the **show security idp custom-attack my-http** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:TSYS1# show security idp custom-attack my-http
severity info;
   attack-type {
   signature {
      protocol-binding {
         application HTTP;
      }
      context http-get-url;
      pattern .*testing.*;
      direction any;
   }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring an IDP Policy

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp idp-policy idpengine rulebase-ips rule 1 match from-zone any
set security idp idp-policy idpengine rulebase-ips rule 1 match source-address any
set security idp idp-policy idpengine rulebase-ips rule 1 match to-zone any
set security idp idp-policy idpengine rulebase-ips rule 1 match destination-address any
set security idp idp-policy idpengine rulebase-ips rule 1 match application default
set security idp idp-policy idpengine rulebase-ips rule 1 match attacks custom-attacks my-http
set security idp idp-policy idpengine rulebase-ips rule 1 then action no-action
set security idp idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure an IDP policy:

1. Create the IDP policy and configure match conditions.

```
[edit security idp]
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match from-zone any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match source-address any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match to-zone any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match destination-address any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match application default
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match attacks custom-attacks my-http
```

2. Configure actions for the IDP policy.

```
[edit security idp]
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 then action no-action
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
```

Results

From configuration mode, confirm your configuration by entering the **show security idp idp-policy idpengine** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:TSYS1# show security idp idp-policy idpengine
rulebase-ips {
    rule 1 {
        match {
            from-zone any;
            source-address any;
            to-zone any;
            destination-address any;
            application default;
            attacks {
                custom-attacks my-http;
            }
        }
        then {
            action {
                no-action;
            }
            notification {
                log-attacks;
            }
        }
    }
```

```
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring Multiple IDP Policies with a Default IDP Policy

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp idp-policy idpengine rulebase-ips rule 1 match from-zone any
set security idp idp-policy idpengine rulebase-ips rule 1 match source-address any
set security idp idp-policy idpengine rulebase-ips rule 1 match to-zone any
set security idp idp-policy idpengine rulebase-ips rule 1 match destination-address any
set security idp idp-policy idpengine rulebase-ips rule 1 match application default
set security idp idp-policy idpengine rulebase-ips rule 1 match attacks predefined-attacks HTTP:AUDIT:URL
set security idp idp-policy idpengine rulebase-ips rule 1 then action no-action
set security idp idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
set security idp idp-policy idpengine1 rulebase-ips rule 1 match from-zone any
set security idp idp-policy idpengine1 rulebase-ips rule 1 match source-address any
set security idp idp-policy idpengine1 rulebase-ips rule 1 match to-zone any
set security idp idp-policy idpengine1 rulebase-ips rule 1 match destination-address any
set security idp idp-policy idpengine1 rulebase-ips rule 1 match attacks predefined-attacks FTP:USER:ROOT
set security idp idp-policy idpengine1 rulebase-ips rule 1 then action no-action
set security idp idp-policy idpengine1 rulebase-ips rule 1 then notification log-attacks
set security policies from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match source-address any
set security policies from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match destination-address any
set security policies from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match application any
set security policies from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match dynamic-application junos:FTP
set security policies from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 then permit application-services idp-policy
    idpengine1
set security policies from-zone l1z1 to-zone l1z2 policy 2 match source-address any
set security policies from-zone l1z1 to-zone l1z2 policy 2 match destination-address any
set security policies from-zone l1z1 to-zone l1z2 policy 2 match application any
set security policies from-zone l1z1 to-zone l1z2 policy 2 match dynamic-application junos:HTTP
set security policies from-zone l1z1 to-zone l1z2 policy 2 then permit application-services idp-policy idpengine
set security idp default-policy idpengine1
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure multiple IDP policies:

1. Create multiple IDP policies and configure match conditions.

```
[edit security idp]
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match from-zone any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match source-address any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match to-zone any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match destination-address any
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match application default
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match attacks predefined-attacks
   HTTP:AUDIT:URL
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 then action no-action
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 match from-zone any
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 match source-address any
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 match to-zone any
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 match destination-address any
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 match attacks predefined-attacks
   FTP:USER:ROOT
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 then action no-action
user@host:TSYS1# set idp-policy idpengine1 rulebase-ips rule 1 then notification log-attacks
```

2. Configure security policies and attach IDP policies to them.

```
[edit security policies]
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match source-address any
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match destination-address any
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match application any
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 match dynamic-application junos:FTP
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy l1z1-l1z2 then permit application-services idp-policy
   idpengine1
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy 2 match source-address any
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy 2 match destination-address any
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy 2 match application any
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy 2 match dynamic-application junos:HTTP
user@host:TSYS1# set from-zone l1z1 to-zone l1z2 policy 2 then permit application-services idp-policy
   idpengine
```

3. Configure a default IDP policy.

NOTE: If you configure more than one IDP policy, then configuring a default IDP policy is mandatory.

```
[edit security idp]
user@host:TSYS1# set default-policy idpengine1
```

Results

From configuration mode, confirm your configuration by entering the **show security idp idp-policy idpengine**, **show security idp idp-policy idpengine1**, **show security policies**, and **show security policies** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:TSYS1# show security idp idp-policy idpengine
rulebase-ips {
    rule 1 {
        match {
            from-zone any;
            source-address any;
            to-zone any;
            destination-address any;
            application default;
            attacks {
                predefined-attacks HTTP:AUDIT:URL;
            }
        }
        then {
            action {
                no-action;
            }
            notification {
                log-attacks;
            }
        }
    }
}
```

```
[edit]
user@host:TSYS1# show security idp idp-policy idpengine1
```

```
rulebase-ips {
    rule 1 {
        match {
            from-zone any;
            source-address any;
            to-zone any;
            destination-address any;
            attacks {
                predefined-attacks FTP:USER:ROOT;
            }
        }
        then {
            action {
                no-action;
            }
            notification {
                log-attacks;
            }
        }
    }
}
```

```
[edit]
user@host:TSYS1# show security policies
from-zone l1z1 to-zone l1z2 {
    policy l1z1-l1z2 {
        match {
            source-address any;
            destination-address any;
            application any;
            dynamic-application junos:FTP;
        }
        then {
            permit {
                application-services {
                    idp-policy idpengine1;
                }
            }
        }
    }
    policy 2 {
        match {
            source-address any;
            destination-address any;
```

```
            application any;
            dynamic-application junos:HTTP;
        }
        then {
            permit {
                application-services {
                    idp-policy idpengine;
                }
            }
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring IDP Custom Attack Group

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp idp-policy idpengine rulebase-ips rule 1 match attacks custom-attack-groups cust-group
set security idp idp-policy idpengine rulebase-ips rule 1 then action no-action
set security idp idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
set security idp custom-attack customftp severity warning
set security idp custom-attack customftp attack-type signature context ftp-username
set security idp custom-attack customftp attack-type signature pattern .*guest.*
set security idp custom-attack customftp attack-type signature direction client-to-server
set security idp custom-attack-group cust-group group-members customftp
set security idp custom-attack-group cust-group group-members ICMP:INFO:TIMESTAMP
set security idp custom-attack-group cust-group group-members "FTP - Minor"
set security idp custom-attack-group cust-group group-members dyn1
set security idp dynamic-attack-group dyn1 filters category values HTTP
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure IDP custom attack group:

1. Create the IDP policy.

```
[edit security idp]
```

```
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match attacks custom-attack-groups cust-group
```

2. Configure match condition of IDP policy.

```
[edit security idp]
user@host:TSYS1# set security idp idp-policy idpengine rulebase-ips rule 1 then action no-action
user@host:TSYS1# set security idp idp-policy idpengine rulebase-ips rule 1 then notification log-attacks
```

3. Configure stateful signature parameters.

```
[edit security idp]
user@host:TSYS1# set security idp custom-attack customftp severity warning
user@host:TSYS1# set custom-attack customftp attack-type signature context ftp-username
user@host:TSYS1# set custom-attack customftp attack-type signature pattern .*guest.*
user@host:TSYS1# set custom-attack customftp attack-type signature direction client-to-server
user@host:TSYS1# set custom-attack-group cust-group group-members customftp
user@host:TSYS1# set custom-attack-group cust-group group-members ICMP:INFO:TIMESTAMP
user@host:TSYS1# set custom-attack-group cust-group group-members "FTP - Minor"
user@host:TSYS1# set custom-attack-group cust-group group-members dyn1
user@host:TSYS1# set dynamic-attack-group dyn1 filters category values HTTP
```

Results

From configuration mode, confirm your configuration by entering the **show security idp** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:TSYS1# show security idp
idp-policy idpengine {
    rulebase-ips {
        rule 1 {
            match {
                attacks {
                    custom-attack-groups cust-group;
                }
            }
            then {
                action {
                    no-action;
                }
```

```
            notification {
                log-attacks;
            }
        }
    }
}
custom-attack customftp {
    severity warning;
    attack-type {
        signature {
            context ftp-username;
            pattern .*guest.*;
            direction client-to-server;
        }
    }
}
custom-attack-group cust-group {
    group-members [ customftp ICMP:INFO:TIMESTAMP "FTP - Minor" dyn1 ];
}
dynamic-attack-group dyn1 {
    filters {
        category {
            values HTTP;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring Pre-defined Attack and Attack Group

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp idp-policy idpengine rulebase-ips rule 1 match attacks predefined-attacks FTP:USER:ROOT
set security idp idp-policy idpengine rulebase-ips rule 1 match attacks predefined-attack-groups "HTTP - All"
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure the pre-defined attack and attack group:

1. Configure the pre-defined attack.

```
[edit security idp]
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match attacks predefined-attacks
   FTP:USER:ROOT
```

2. Configure the pre-defined attack group.

```
[edit security idp]
user@host:TSYS1# set idp-policy idpengine rulebase-ips rule 1 match attacks predefined-attack-groups
   "HTTP - All"
```

Results

From configuration mode, confirm your configuration by entering the **show security idp idp-policy idpengine** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:TSYS1# show security idp idp-policy idpengine
rulebase-ips {
   rule 1 {
      match {
         attacks {
            predefined-attacks FTP:USER:ROOT;
            predefined-attack-groups "HTTP - All";
         }
      }
      then {
         action {
            no-action;
         }
         notification {
            log-attacks;
         }
      }
   }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Configuring IDP Dynamic Attack Group

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set security idp dynamic-attack-group dyn1 filters direction values server-to-client
```

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure IDP dynamic attack group:

1. Configure dynamic attack group parameter.

```
[edit security idp]
user@host:TSYS1# set dynamic-attack-group dyn1 filters direction values server-to-client
```

Results

From configuration mode, confirm your configuration by entering the **show security idp** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host:TSYS1# show security idp
dynamic-attack-group dyn1 {
    filters {
        direction {
            values server-to-client;
        }
    }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verify IDP Policies and Commit Status | 666
- Verify IDP Attack Detection | 666
- Verify IDP Counters | 667

Verify IDP Policies and Commit Status

Purpose

Verify that the IDP policies and commit status is displayed after policy compilation for the tenant system **TSYS1**.

Action

From operational mode, enter the **show security idp policies** command.

```
user@host:TSYS1> show security idp policies
```

```
ID    Name                  Sessions    Memory      Detector
 1     idpengine             0           186024      12.6.130180122
```

From operational mode, enter the **show security idp policy-commit-status** command.

```
user@host:TSYS1> show security idp policy-commit-status
```

```
IDP policy[/var/db/idpd/bins//idp-policy-unified.bin.gz.v] and
detector[/var/db/idpd/sec-repository/installed-detector/libidp-detector.so.tgz.v]
 loaded successfully.
The loaded policy size is:2912 Bytes
```

Meaning

The output displays the IDP policy configured in the tenant system **TSYS1** and the commit status information.

Verify IDP Attack Detection

Purpose

Verify that the IDP attack detection is successful for the tenant system **TSYS1** and displayed in the attack table.

Action

From operational mode, enter the **show security idp attack table** command.

```
user@host:TSYS1> show security idp attack table
```

```
IDP attack statistics:
  Attack name                                  #Hits
  my-http                                          1
```

Meaning

The output displays the attacks detected for the custom attack that is configured in the tenant system **TSYS1**.

Verify IDP Counters

Purpose

Verify one of the IDP counter status is displayed for the tenant system **TSYS1**.

Action

From operational mode, enter the **show security idp counters flow** command.

```
user@host:TSYS1> show security idp counters flow
```

```
IDP counters:

  IDP counter type                                                  Value
Fast-path packets                                                   38
Slow-path packets                                                   1
Session construction failed                                         0
Session limit reached                                               0
Session inspection depth reached                                    0
Memory limit reached                                                0
Not a new session                                                   0
Invalid index at ageout                                             0
Packet logging                                                      0
Policy cache hits                                                   0
Policy cache misses                                                 1
Policy cache entries                                                0
Maximum flow hash collisions                                        0
Flow hash collisions                                                0
```

```
Gates added                                                          0
Gate matches                                                         0
Sessions deleted                                                     1
Sessions aged-out                                                    0
Sessions in-use while aged-out                                       0
TCP flows marked dead on RST/FIN                                     1
Policy init failed                                                   0
Policy reinit failed                                                 0
Number of times Sessions exceed high mark                            0
Number of times Sessions drop below low mark                         0
Memory of Sessions exceeds high mark                                 0
Memory of Sessions drops below low mark                              0
SM Sessions encountered memory failures                              0
SM Packets on sessions with  memory failures                         0
IDP session gate creation requests                                   0
IDP session gate creation acknowledgements                           0
IDP session gate hits                                                0
IDP session gate timeouts                                            0
Number of times Sessions crossed the CPU threshold value that is set 0
Number of times Sessions crossed the CPU upper threshold             0
Sessions constructed                                                 1
SM Sessions ignored                                                  0
SM Sessions dropped                                                  0
SM Sessions interested                                               2
SM Sessions not interested                                           0
SM Sessions interest error                                           0
Sessions destructed                                                  1
SM Session Create                                                    1
SM Packet Process                                                    38
SM ftp data session ignored by idp                                   1
SM Session close                                                     1
SM Client-to-server packets                                          15
SM Server-to-client packets                                          23
SM Client-to-server L7 bytes                                         99
SM Server-to-client L7 bytes                                         367
Client-to-server flows ignored                                       0
Server-to-client flows ignored                                       0
Server-to-client flows tcp optimized                                 0
Client-to-server flows tcp optimized                                 0
Both directions flows ignored                                        1
Fail-over sessions dropped                                           0
Sessions dropped due to no policy                                    0
IDP Stream Sessions dropped due to memory failure                    0
IDP Stream Sessions ignored due to memory failure                    0
```

```
IDP Stream Sessions closed due to memory failure                        0
IDP Stream Sessions accepted                                            0
IDP Stream Sessions constructed                                         0
IDP Stream Sessions destructed                                          0
IDP Stream Move Data                                                    0
IDP Stream Sessions ignored on JSF SSL Event                            0
IDP Stream Sessions not processed for no matching rules                 0
IDP Stream stbuf dropped                                                0
IDP Stream stbuf reinjected                                             0
Busy pkts from stream plugin                                            0
Busy pkts from pkt plugin                                               0
bad kpp                                                                 0
Lsys policy id lookup failed sessions                                   0
NGAppID Events with no L7 App                                           0
NGAppID Events with no active-policy                                    0
NGAppID Detector failed from event handler                              0
NGAppID Detector failed from API                                        0
Busy packets                                                            0
Busy packet Errors                                                      0
Dropped queued packets (async mode)                                     0
Dropped queued packets failed(async mode)                               0
Reinjected packets (async mode)                                         0
Reinjected packets failed(async mode)                                   0
AI saved processed packet                                               0
busy packet count incremented                                           0
busy packet count decremented                                           0
session destructed in pme                                               0
session destruct set in pme                                             0
kq op hold                                                              0
kq op drop                                                              0
kq op route                                                             0
kq op continue                                                          37
kq op error                                                             0
kq op stop                                                              0
PME wait not set                                                        0
PME wait set                                                            0
PME KQ run not called                                                   0
IDP sessions ignored for content decompression in intel inspect mode    0
IDP sessions ignored for bytes depth limit in intel inspect mode        0
IDP sessions ignored for protocol decoding in intel inspect mode        0
IDP sessions detected CPU usage crossed intel inspect CPU threshold     0
IDP sessions detected mem drop below intel inspect low mem threshold    0
```

Meaning

The output displays the IDP counter flow status is displayed properly for the tenant system **TSYS1**.

ALG for Tenant Systems

IN THIS SECTION

- Understanding ALG Support for Tenant System | **670**
- Enabling and Disabling ALG for Tenant System | **671**
- Example: Configuring ALG in Tenant System | **675**

An Application Layer Gateway (ALG) in tenant systems enables the gateway to parse application layer payloads and take decisions whether to allow or deny traffic to the application server. ALGs supports the applications such as Transfer Protocol (FTP) and various IP protocols that use the application layer payload to communicate the dynamic Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) ports on which the applications open data connections. For more information, see the following topics:

Understanding ALG Support for Tenant System

An Application Layer Gateway (ALG) enables the gateway to parse application layer payloads and take decisions whether to allow or deny traffic to the application server.

Starting in Junos OS Release 18.3R1, the ALG feature supported on logical systems is now extended on tenants systems.

The tenant systems administrator can configure the ALG features for the tenant systems. The master administrator can configure the ALG features and display the ALG information for all tenants. The tenant systems administrator can only apply configurations and display information in its own tenant.

Each tenant system displays the ALG counters to monitor the traffic. For example, use commands **show security alg sip counters tenants TN1** to get SIP counters in tenant systems and **show security alg sip counters tenants all** to get SIP counters in all existing tenant systems.

Enabling the security log for the tenant generates the ALG logs per tenant.

NOTE: When you upgrade to Junos OS Release 18.3R1, the ALG status for each tenant system might be different depending on the default configuration or configuration in a release prior to Junos OS Release 18.3R1. We recommend you to change the ALG configurations for tenant systems as per your requirements after an upgrade to latest Junos OS version.

Enabling and Disabling ALG for Tenant System

This topic shows how to enable or disable the ALG status for each tenant system.

1. By Default IKE ALG is disabled on the tenant system. To enable this ALG, use the following command.
   - Enable IKE and ESP ALG with NAT.

     ```
     [edit]
     user@host# set tenants TN1 security alg ike-esp-nat enable
     ```

2. By default, the DNS, FTP, PPTP, SIP, SUNRPC and TWAMP ALGs are enabled on the tenant system. To disable these ALGs, use the following commands.
   - Disable DNS ALG.

     ```
     [edit]
     user@host# set tenants TN1 security alg dns disable
     ```

   - Disable FTP ALG.

     ```
     [edit]
     user@host# set tenants TN1 security alg ftp disable
     ```

   - Disable H323 ALG.

     ```
     [edit]
     user@host# set tenants TN1 security alg h323 disable
     ```

   - Disable MGCP ALG.

     ```
     [edit]
     user@host# set tenants TN1 security alg mgcp disable
     ```

- Disable MSRPC ALG.

```
[edit]
user@host# set tenants TN1 security alg msrpc disable
```

- Disable PPTP ALG.

```
[edit]
user@host# set tenants TN1 security alg pptp disable
```

- Disable RSH ALG.

```
[edit]
user@host# set tenants TN1 security alg rsh disable
```

- Disable RTSP ALG.

```
[edit]
user@host# set tenants TN1 security alg rtsp disable
```

- Disable SCCP ALG.

```
[edit]
user@host# set tenants TN1 security alg sccp disable
```

- Disable SIP ALG.

```
[edit]
user@host# set tenants TN1 security alg sip disable
```

- Disable SQL ALG.

```
[edit]
user@host# set tenants TN1 security alg sql disable
```

- Disable SUNRPC ALG.

```
[edit]
user@host# set tenants TN1 security alg sunrpc disable
```

- Disable TALK ALG.

```
[edit]
user@host# set tenants TN1 security alg talk disable
```

- Disable TFTP ALG.

```
[edit]
user@host# set tenants TN1 security alg tftp disable
```

3. Configuring ALG functions in tenant systems.
   - Configure DNS ALG.

```
[edit]
user@host# set tenants TN1 security alg dns
```

   - Configure FTP ALG.

```
[edit]
user@host# set tenants TN1 security alg ftp
```

   - Configure H323 ALG.

```
[edit]
user@host# set tenants TN1 security alg h323
```

   - Configure IKE and ESP ALG with NAT.

```
[edit]
user@host# set tenants TN1 security alg ike-esp-nat
```

   - Configure MGCP ALG.

```
[edit]
user@host# set tenants TN1 security alg mgcp
```

   - Configure MSRPC ALG.

```
[edit]
user@host# set tenants TN1 security alg msrpc
```

   - Configure PPTP ALG.

```
[edit]
user@host# set tenants TN1 security alg pptp
```

- Configure RSH ALG.

```
[edit]
user@host# set tenants TN1 security alg rsh
```

- Configure RTSP ALG.

```
[edit]
user@host# set tenants TN1 security alg rtsp
```

- Configure SCCP ALG.

```
[edit]
user@host# set tenants TN1 security alg sccp
```

- Configure SIP ALG.

```
[edit]
user@host# set tenants TN1 security alg sip
```

- Configure SQL ALG.

```
[edit]
user@host# set tenants TN1 security alg sql
```

- Configure SUNRPC ALG.

```
[edit]
user@host# set tenants TN1 security alg sunrpc
```

- Configure TALK ALG.

```
[edit]
user@host# set tenants TN1 security alg talk
```

- Configure TFTP ALG.

```
[edit]
user@host# set tenants TN1 security alg tftp
```

- Configure TWAMP ALG.

```
[edit]
user@host# set tenants TN1 security alg twamp
```

- Configure extended function for FTP ALG.

```
[edit]
user@host# set tenants TN1 security alg ftp allow-mismatch-ip-address
```

- Configure extended function for MSRPC ALG.

```
[edit]
user@host# set tenants TN1 security alg msrpc map-entry-timeout 10
```

- Configure extended function for SUNRPC ALG.

```
[edit]
user@host# set tenants TN1 security alg sunrpc map-entry-timeout 10
```

- Configure extended function for SIP ALG.

```
[edit]
user@host# set tenants TN1 security alg sip retain-hold-resource
```

Example: Configuring ALG in Tenant System

IN THIS SECTION

- Requirements | 676
- Overview | 676
- Configuration | 676
- Verification | 680

This example shows how to configure ALGs in tenant system and send traffic based on FTP ALG configuration of the tenant system individually.

Requirements

This example uses the following hardware and software components:

- An SRX device
- Junos OS Release 18.3R1

Before you begin:

- Read the ALG Support for Tenant System to understand how and where this procedure fits in the overall tenant support for ALGs.

No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, the ALG for FTP is configured to monitor and allow FTP traffic to be exchanged between the clients and the server on a tenant system.

By default, the FTP ALG is enabled on the tenant system.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set system security-profile p1 policy maximum 100
set system security-profile p1 policy reserved 50
set system security-profile p1 zone maximum 100
set system security-profile p1 zone reserved 50
set system security-profile p1 flow-session maximum 6291456
set system security-profile p1 flow-session reserved 50
set system security-profile p1 flow-gate maximum 524288
set system security-profile p1 flow-gate reserved 50
set tenants TN1 routing-instances VR_TN1 instance-type vpls
set tenants TN1 routing-instances VR_TN1 interface lt-0/0/0.0
set system security-profile p1 tenant TN1
set tenants TN1 security zones security-zone TN1_Czone host-inbound-traffic system-services all
set tenants TN1 security zones security-zone TN1_Czone host-inbound-traffic protocols all
set tenants TN1 security zones security-zone TN1_Czone interfaces ge-0/0/0
set tenants TN1 security zones security-zone TN1_Szone host-inbound-traffic system-services all
set tenants TN1 security zones security-zone TN1_Szone host-inbound-traffic protocols all
```

```
set tenants TN1 security zones security-zone TN1_Szone interfaces ge-0/0/1
set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match source-address
    any
set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match destination-address
    any
set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match application
    junos-ftp
set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match application
    junos-ping
set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 then permit
set tenants TN1 security policies default-policy deny-all
```

Configuring FTP ALG in a Tenant System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure an ALG on a tenant system:

1. Configure a security profile p1 for tenant.

```
[edit]
set system security-profile p1 policy maximum 100
set system security-profile p1 policy reserved 50
set system security-profile p1 zone maximum 100
set system security-profile p1 zone reserved 50
set system security-profile p1 flow-session maximum 6291456
set system security-profile p1 flow-session reserved 50
set system security-profile p1 flow-gate maximum 524288
set system security-profile p1 flow-gate reserved 50
```

2. Configure interfaces and routing instances to the TN1.

```
[edit]
user@host# set tenants TN1 routing-instances VR_TN1 instance-type vpls
user@host# set tenants TN1 routing-instances VR_TN1 interface lt-0/0/0.0
```

3. Configure a security profile p1 and assign it to the tenant system TN1.

```
[edit]
user@host# set system security-profile p1 tenant TN1
```

4. Configure security zones and assign interfaces to each zone.

```
[edit]
user@host# set tenants TN1 security zones security-zone TN1_Czone host-inbound-traffic system-services
    all
user@host# set tenants TN1 security zones security-zone TN1_Czone host-inbound-traffic protocols all
user@host# set tenants TN1 security zones security-zone TN1_Czone interfaces ge-0/0/0
user@host# set tenants TN1 security zones security-zone TN1_Szone host-inbound-traffic system-services
    all
user@host# set tenants TN1 security zones security-zone TN1_Szone host-inbound-traffic protocols all
user@host# set tenants TN1 security zones security-zone TN1_Szone interfaces ge-0/0/1
```

5. Configure a security policy that permits FTP traffic from the TN1_Czone to-zone TN1_Szone.

```
[edit]
user@host# set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match
    source-address any
user@host# set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match
    destination-address any
user@host# set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match
    application junos-ftp
user@host# set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 match
    application junos-ping
user@host# set tenants TN1 security policies from-zone TN1_Czone to-zone TN1_Szone policy p11 then
    permit
user@host# set tenants TN1 security policies default-policy deny-all
```

Results

From configuration mode, confirm your configuration by entering the **show tenants TN1** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TN1
    routing-instances {
        VR_TN1 {
            instance-type vpls;
            interface lt-0/0/0.0;
        }
    }
    security {
        policies {
            from-zone TN1_Czone to-zone TN1_Szone {
```

```
            policy p11 {
                match {
                    source-address any;
                    destination-address any;
                    application [ junos-ftp junos-ping ];
                }
                then {
                    permit;
                }
            }
        }
        default-policy {
            deny-all;
        }
    }
    zones {
        security-zone TN1_Czone {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                ge-0/0/0.0;
            }
        }
        security-zone TN1_Szone {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                ge-0/0/1.0;
            }
        }
    }
}
```

```
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying Intra-Tenant System traffic on ALG | **680**
- Verify ALG status for Tenant System | **680**

To confirm that the configuration is working properly, perform these tasks:

Verifying Intra-Tenant System traffic on ALG

Purpose

Verify the information about active resources, clients, groups, and sessions created through the resource manager.

Action

From operational mode, enter the **show security resource-manager summary** command.

```
user@host> show security resource-manager summary
```

```
Active resource-manager clients   : 0
Active resource-manager groups    : 0
Active resource-manager resources : 0
Active resource-manager sessions  : 0
```

Meaning

The output displays summary information about active resources, clients, groups, and sessions created through the resource manager.

Verify ALG status for Tenant System

Purpose

Verify the ALG status for tenant on the device.

Action

To verify the configuration is working properly, enter the **show security alg status tenant TN1** command.

```
user@host>show security alg status tenant TN1
```

```
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled
  TWAMP    : Disabled
```

Meaning

The output display the alg status for FTP Enabled for the tenant system TN1.

RELATED DOCUMENTATION

Tenant Systems Overview | 495

DHCP for Tenant Systems

IN THIS SECTION

- Understanding DHCP support for Tenant Systems | 682
- Minimum DHCPv6 Relay Agent Configuration for Tenant Systems | 682
- Example: Configuring a DHCPv6 Client for Tenant Systems | 683

Understanding DHCP support for Tenant Systems

Starting in Junos OS Release 18.4R1, a tenant system supports the DHCP client feature to learn IP addresses for interfaces assigned to the tenant systems. Additionally, starting in Junos OS Release 18.4R1, tenant systems support the DHCP relay feature. A DHCP relay agent forwards DHCP requests and responses between the DHCP client and the DHCP server.

An interface of an SRX Series device operating as a DHCP client receives the TCP or IP settings and the IP address from an external DHCP server.

An SRX Series device operating as a DHCP relay agent for tenant systems forwards incoming requests from the DHCP clients to a specified DHCP server. The client requests pass through interfaces on the tenant systems.

Minimum DHCPv6 Relay Agent Configuration for Tenant Systems

The following example describes the minimum configuration required to configure an SRX Series device as a DHCPv6 relay agent for the tenant system.

Before you begin determine the following:

- The DHCP routing instance name, the DHCP relay group and the DHCP active server-group for the tenant system.

1. Create a DHCPv6 relay group that includes at least one interface for the tenant system.

```
user@host# set tenants TSYS1 routing-instances R1 interface ge-0/0/0.0
```

2. Specify the DHCP group and add interfaces belonging to the group.

```
user@host# set tenants TSYS1 routing-instances R1 forwarding-options dhcp-relay dhcpv6 group inf interface
    ge-0/0/0.0
```

3. Specify the name of the server-group and add the IP address for the DHCP servers belonging to the same group.

```
user@host# set tenants TSYS1 routing-instances R1 forwarding-options dhcp-relay dhcpv6 server-group
    server6 2001:db8::1/64
```

4. Specify the name of the active server-group.

```
user@host# set tenants TSYS1 routing-instances R1 forwarding-options dhcp-relay dhcpv6
  active-server-group server6
```

5. Confirm your configuration by entering the **show tenants TSYS1 routing-instances R1** command.

```
[edit]
user@host# show tenants TSYS1 routing-instances R1
forwarding-options {
    dhcp-relay {
        dhcpv6 {
            group inf {
                interface ge-0/0/0.0;
            }
            server-group {
                server6 {
                    2001:db8::1/64;
                }
            }
            active-server-group server6;
        }
    }
}
```

Example: Configuring a DHCPv6 Client for Tenant Systems

IN THIS SECTION

- Requirements | **684**
- Overview | **684**
- Configuration | **684**
- Verification | **688**

This example shows how to configure a device as a DHCPv6 client for tenant systems.

Requirements

This example uses the following hardware and software components:

- An SRX Series device
- Junos OS Release 18.4R1

Before you begin:

- Read the "Understanding DHCP support for Tenant Systems" on page 682 to understand how and where this procedure fits in the overall tenant systems support for DHCP.

  No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, a tenant system administrator configures an SRX Series device as a DHCPv6 client for a tenant system.

The DHCPv6 client for a tenant system includes the following features:

- Identity association for non-temporary addresses (IA_NA)
- Identity association for prefix delegation (IA_PD)
- Autoconfig or stateful mode
- DHCP unique identifier (DUID)

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TSYS1 security zones security-zone trust host-inbound-traffic system-services all
set tenants TSYS1 security zones security-zone trust host-inbound-traffic protocols all
set tenants TSYS1 security zones security-zone trust interfaces ge-0/0/0.0
set tenants TSYS1 routing-instances r1 instance-type virtual-router
set tenants TSYS1 routing-instances r1 interface ge-0/0/0.0
set tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-type autoconfig
set tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-type stateful
set tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-ia-type ia-na
set tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-ia-type ia-pd
set tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client client-identifier duid-type duid-ll
```

```
set tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client req-option dns-server
set protocols router-advertisement interface ge-0/0/0.0
```

Configuring DHCPv6 Client in a Tenant System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

1. Configure security zones to permit traffic for a tenant system.

```
[edit tenants TSYS1 security zones]
user@host# set security-zone trust host-inbound-traffic system-services all
user@host# set security-zone trust host-inbound-traffic protocols all
user@host# set security-zone trust interfaces ge-0/0/0.0
```

2. Create a routing instance and assign the routing instance type to a tenant system.

```
[edit tenants TSYS1]
user@host# set routing-instances r1 instance-type virtual-router
```

3. Specify the interface name for the routing instance.

```
[edit tenants TSYS1]
user@host# set routing-instances r1 interface ge-0/0/0.0
```

4. Configure the DHCPv6 client type. The client type can be **autoconfig** or **stateful** for a tenant system.

   - To enable DHCPv6 auto configuration mode, configure the client type as **autoconfig**.

```
[edit tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-type autoconfig
```

   - For stateful address assignment, configure the client type as **stateful**.

```
[edit tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-type stateful
```

5. Specify the identity association type.

   - To configure identity association for nontemporary address (IA_NA) assignment, specify the **client-ia type** as **ia-na**.

```
[edit tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-ia-type ia-na
```

- To configure identity association for prefix delegation (IA_PD), specify the **client-ia-type** as **ia-pd**.

```
[edit tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-ia-type ia-pd
```

6. Configure the DHCPv6 client identifier by specifying the DHCP unique identifier (DUID) type for the tenant system. The following DUID type is supported:

   - Link Layer address (duid-ll)

```
[edit tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set client-identifier duid-type duid-ll
```

7. Specify the DHCPv6 client requested option as **dns-server** for the tenant system.

```
[edit tenants TSYS1 interfaces ge-0/0/0 unit 0 family inet6 dhcpv6-client]
user@host# set req-option dns-server
```

8. Configure the router advertisement.

```
[edit]
user@host# set protocols router-advertisement interface ge-0/0/0.0
```

Results

- From configuration mode, confirm your configuration by entering the **show tenants TSYS1** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TSYS1
interfaces {
   ge-0/0/0 {
      unit 0 {
         family inet6 {
            dhcpv6-client {
               client-type stateful;
               client-ia-type ia-na;
               client-ia-type ia-pd;
               client-identifier duid-type duid-ll;
```

```
                req-option dns-server;
            }
        }
    }
}
routing-instances {
    r1 {
        instance-type virtual-router;
        interface ge-0/0/0.0;
    }
}
security {
    zones {
        security-zone trust {
            host-inbound-traffic {
                system-services {
                    all;
                }
                protocols {
                    all;
                }
            }
            interfaces {
                ge-0/0/0.0;
            }
        }
    }
}
```

- From configuration mode, confirm your configuration by entering the **show protocols** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show protocols
router-advertisement {
    interface ge-0/0/0.0;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the DHCPv6 Client for the Tenant System | 688
- Verifying the DHCPv6 Client Binding for the Tenant System | 688
- Verifying the DHCPv6 Client Statistics Information for the Tenant System | 689

To confirm that the configuration is working properly, perform these tasks:

Verifying the DHCPv6 Client for the Tenant System

Purpose

Verify that the DHCPv6 client information is configured.

Action

From the operational mode, enter the **show dhcpv6 client binding tenant TSYS1** command.

```
user@host> show dhcpv6 client binding tenant TSYS1
```

```
IP/prefix      Expires     State      ClientType     Interface      Client DUID
         2000::17/128    67762    BOUND      STATEFUL         ge-0/0/6.0
LL0x3-10:0e:7e:49:25:86
         2000:100::/64   67762    BOUND      STATEFUL         ge-0/0/6.0
LL0x3-10:0e:7e:49:25:86
```

Meaning

The output displays the address binding information for the tenant system.

Verifying the DHCPv6 Client Binding for the Tenant System

Purpose

Verify that the DHCPv6 client binding information is configured.

Action

From the operational mode, enter the **show dhcpv6 client binding detail tenant TSYS1** command.

```
user@host> show dhcpv6 client binding detail tenant TSYS1
```

```
Client Interface/Id: ge-0/0/6.0
     Hardware Address:             10:0e:7e:49:25:86
     State:                        BOUND(DHCPV6_CLIENT_STATE_BOUND)
     ClientType                    STATEFUL
     Lease Expires:                2018-11-09 07:11:47 UTC
     Lease Expires in:             67760 seconds
     Lease Start:                  2018-11-08 07:11:47 UTC
     Bind Type:                    IA_NA IA_PD
     Preferred prefix length       0
     Sub prefix length             0
     Client DUID:                  LL0x3-10:0e:7e:49:25:86
     Rapid Commit:                 Off
     Server Identifier:            fe80::46f4:77ff:fed6:670a

     Client IP Address:            2000::17/128
     Client IP Prefix:             2000:100::/64


     DHCP options:

     Name: server-identifier, Value: VENDOR0x00000583-0x34343a34
```

Meaning

The output displays the detailed client binding information for the tenant system.

Verifying the DHCPv6 Client Statistics Information for the Tenant System

Purpose

Verify that the DHCP client statistics information is configured.

Action

From the operational mode, enter the **show dhcpv6 client statistics tenant TSYS1** command.

```
user@host> show dhcpv6 client statistics tenant TSYS1 routing-instance R1
```

```
Dhcpv6 Packets dropped:
    Total              3
    Bad Send           3

    Messages received:
    DHCPV6_ADVERTISE          1
```

```
DHCPV6_REPLY                1
DHCPV6_RECONFIGURE          0

Messages sent:
DHCPV6_DECLINE              0
DHCPV6_SOLICIT              1
DHCPV6_INFORMATION_REQUEST  0
DHCPV6_RELEASE              0
DHCPV6_REQUEST              1
DHCPV6_CONFIRM              0
DHCPV6_RENEW                0
DHCPV6_REBIND               0
```

Meaning

The output displays the information about the number of packets discarded, the number of messages received and the number of messages sent by the DHCP client for the tenant system.

Security Log for Tenant Systems

IN THIS SECTION

- Understanding of Security Log for Tenant Systems | **691**
- Example: Configure Security Log for Tenant Systems | **692**
- Understanding On-Box Reporting for Tenant Systems | **697**
- Configuring On-Box Reporting for Tenant Systems | **698**
- Understanding On-Box and Off-Box Logging for Tenant System | **699**
- Configuring On-Box Binary Security Log Files for Tenant System | **700**
- Configuring Off-Box Binary Security Log Files for Tenant System | **703**

Security logs for tenant systems include security events to control system's data planes. Security logs are sent in binary format to an external server from a tenant system interface. Security logs are generated per tenant system.

Understanding of Security Log for Tenant Systems

Junos OS generates separate log messages to record events that occur on the system's control and data planes. The data plane logs, also called security logs, primarily include security events that are handled inside the data plane. Security logs can be in text or binary format and they can be saved locally (event mode) or sent to an external server (stream mode). The binary format is required for stream mode and recommended to conserve log space in event mode.

If you configure security logs per tenant, then security logs are generated per tenant.

Security logs for a tenant system are sent from a tenant system interface. You can configure the assigned routing instances and the interfaces that belong to the routing tables within a tenant system.

A security profile should be defined with the number of maximum and reserved policies when you configure the stream number for a tenant system. The master administrator can use the security profiles to specify resource allocation.

If a tenant system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available and not allocated to other tenant systems. The maximum allowed quota for stream number specifies the portion of the free global resources that the tenant system can use. The maximum allowed quota does not ensure that the amount specified for the resource in the security profile is available. A reserved quota ensures that the resource amount specified is always available to the tenant system. Table 43 on page 691 shows the comparison of logging stream number capacity.

Table 43: Comparison of Logging Stream Number

Platform	Logging Stream Number Capacity for Tenant System + Logical System	Reserved Logging Stream Number Quota for Tenant System	Maximum Allowed Stream Number Quota for Tenant System	Maximum Allowed Stream Number Quota for Global
SRX5400, SRX5600, and SRX5800	64	0	8	64
SRX4600	300	0	8	600
SRX4100 and 4200	200	0	8	400
SRX1500	50	0	8	100

If a device is configured for a tenant system, security logs generated within the context have the **_LS** suffix in the log name, which is the same as the logical system. The following security log shows the attributes of the RT_FLOW_SESSION_CLOSE_LS log for a device that is configured for a tenant system:

```
<14>1 2018-03-12T22:50:09.596Z user RT_FLOW_SESSION_CLOSE_LS [junos@2636.1.1.1.2.137
 logical-system-name="TSYS1" reason="Some reason" source-address="192.0.2.1"
source-port="7000" destination-address="198.51.100.2" destination-port="32768"
connection-tag="0" service-name="Fake service" nat-source-address="192.0.2.1"
nat-source-port="7000" nat-destination-address="198.51.10 0.2"
nat-destination-port="32768" nat-connection-tag="0" src-nat-rule-type="Fake src
nat rule" src-nat-rule-name="Fake src nat rule" dst-nat-rule-type="Fake dst nat
rule" dst-nat-rule-name="Fake dst nat rule" protocol-id="17" policy-name="Fake
policy" source-zone-name="Fake src zone" destination-zone-name="Fake dst zone"
session-id-32="1" packets-from-client="4294967295" bytes-from-client="4294967293"
 packets-from-server="4294967294" bytes-from-server="4294967292"
elapsed-time="4294967291" application="Fake application" nested-application="Fake
 nested application" username="Fake username" roles="Fake UAC roles"
packet-incoming-interface="Fake packet incoming if" encrypted="Fake info telling
if the traffic is encrypted" application-category="Fake application category"
application-sub-category="Fake application subcategory" application-risk="-1"]
```

In the above example, security log includes **TSYS1** as the first attribute.

Starting in Junos OS Release 19.1R1, on-box reporting configurations are supported for each tenant system and logs are handled based on these configurations. Configure the **set security log report** and **set security log mode stream** commands to enable the on-box reporting. The on-box reporting feature with stream mode is also supported on tenant systems.

You can view Syslog messages in the System Log Explorer.

Example: Configure Security Log for Tenant Systems

IN THIS SECTION

- Requirements | **693**
- Overview | **693**
- Configuration | **693**
- Verification | **696**

This example shows how to configure security logs for a tenant system.

Requirements

This example uses the following hardware and software components:

- An SRX Series device.
- Junos OS Release 18.3R1 and later releases.

Before you begin:

- Understand how to configure a tenant system. See "Example: Configuring Tenant Systems" on page 516
- Understand how to create security profiles for the master logical system and two tenant systems. See "Example: Configuring Tenant Systems Security Profiles (Master Administrators Only)" on page 532.

Overview

SRX Series devices have two types of log: system logs and security logs. System logs record control plane events, for example, admin login to the device. Security logs, also known as traffic logs, record data plane events regarding specific traffic handling, for example when a security policy denies certain traffic due to some violation of the policy.

The two types of logs can be collected and saved either on-box or off-box. The procedure below explains how to configure security logs in binary format for off-box (stream-mode) logging.

For off-box logging, security logs for a tenant system are sent from a tenant system interface. If the tenant system interface is already configured in a routing instance, then configure **routing-instance *routing-instance-name*** at **edit tenants *tenant-name* security log stream *log-stream-name* host** hierarchy. If the interface is not configured in routing instance, then no routing instance should be configured at **set tenants *tenant-name* security log stream *log-stream-name* host** hierarchy.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

```
set tenants TSYS1 security log mode stream
set tenants TSYS1 security log stream TN1_s format binary host 1.3.54.22
set tenants TSYS1 security log source-address 2.3.45.66
set tenants TSYS1 security log transport protocol tls
set tenants TSYS1 routing-instances TN1_ri instance-type virtual-router
```

```
set tenants TSYS1 routing-instances TN1_ri interface ge-0/0/3
set tenants TSYS1 security log stream TN1_s host routing-instance TN1_ri
set system security-profile p1 security-log-stream-number reserved 1
set system security-profile p1 security-log-stream-number maximum 2
set system security-profile p1 tenant TSYS1
```

Step-by-Step Procedure

The following procedure specifies how to configure security logs for a tenant system.

1. Specify the logging mode and the format for the log file. For off-box, stream-mode logging.

```
[edit ]
user@host# set tenants TSYS1 security log mode stream
user@host# set tenants TSYS1 security log stream TN1_s format binary host 1.3.54.22
```

2. For off-box security logging, specify the source address, which identifies the SRX Series device that generated the log messages. The source address is required.

```
[edit ]
user@host# set tenants TSYS1 security log source-address 2.3.45.66
```

3. Specify the routing instance and define the interface.

```
[edit ]
user@host# set tenants TSYS1 routing-instances TN1_ri instance-type virtual-router
user@host# set tenants TSYS1 routing-instances TN1_ri interface ge-0/0/3
```

4. Define routing instance for a tenant system. If the interface is already configured in routing instance, then configure **routing-instance *routing-instance-name*** at **edit tenants *tenant-name* security log stream *log-stream-name* host** hierarchy. If the interface is not configured in routing instance, then no routing instance should be configured at **set tenants *tenant-name* security log stream *log-stream-name* host** hierarchy.

```
[edit ]
user@host# set tenants TSYS1 security log stream TN1_s host routing-instance TN1_ri
```

5. Specify the security log transport protocol for the device.

```
[edit ]
```

```
user@host# set tenants TSYS1 security log transport protocol tls
```

Step-by-Step Procedure

The following procedure specifies how to configure a security profile for a tenant system.

1. Configure a security profile and specify the number of maximum and reserved policies.

```
[edit ]
user@host# set system security-profile p1 security-log-stream-number reserved 1
user@host# set system security-profile p1 security-log-stream-number maximum 2
```

2. Assign the configured security profile to TSYS1.

```
[edit ]
user@host# set system security-profile p1 tenant TSYS1
```

Results

From configuration mode, confirm your configuration by entering the **show system security-profile**, **show tenants TSYS1 security log**, and **show tenants TSYS1 routing-instances** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show tenants TSYS1 security log
mode stream;
source-address 2.3.45.66;
transport {
   protocol tls;
}
stream TN1_s {
   format binary;
   host {
      1.3.54.22;
      routing-instance TN1_ri;
   }
}
```

```
[edit]
user@host# show tenants TSYS1 routing-instances
TN1_ri {
```

```
    instance-type virtual-router;
    interface ge-0/0/3.0;
}
```

```
[edit]
user@host# show system security-profile
p1 {
    security-log-stream-number {
        maximum 2;
        reserved 1;
    }
    tenant TSYS1;
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Verifying Detailed Output for Security Log

Purpose

Verify that the output displays the resource information for all tenant systems.

Action

From operational mode, enter the **show system security-profile security-log-stream-number tenant all** command.

```
logical-system tenant name  security profile name  usage    reserved    maximum

root-logical-system         Default-Profile           0          0         8
TSYS1                       p1                        1          1         2
```

Meaning

The output displays the resource information for tenant systems.

Understanding On-Box Reporting for Tenant Systems

Starting in Junos OS Release 19.1R1, on-box reporting configurations are supported for tenant systems and logs are handled based on these configurations.

Stream mode is a set of logging services that includes:

- Off-box logging (SRX Series)
- On-box logging and reporting (SRX1500, SRX4100, SRX4200, and SRX4600 Series)

Per tenant system configuration is supported for the off-box logging and logs are handled based on these configurations. The tenant system logs for off-box logging can only be generated from the tenant system interface.

On-box reporting mechanism is an enhancement to the existing logging functionality. The existing logging functionality is modified to collect system traffic logs, analyzes the logs, and generate reports of these logs. On-box reporting feature is intended to provide a simple and easy to use interface for viewing security logs.

Configure the **set security log report** and **set security log mode stream** commands to enable the on-box reporting feature on the device for tenant systems. The on-box reporting feature with stream mode is also supported on tenant systems.

The on-box reporting feature supports:

- Generating reports based on the requirements. For example: count or volume of the session, types of logs for activities such as IDP, UTM, and IPsec VPN.
- Capturing real-time events within a specified time range.
- Capturing all the network activities in a logical, organized, and easy-to-understand format based on various CLI specified conditions.

Configuring On-Box Reporting for Tenant Systems

SRX Series devices supports different types of reports for tenant system users.

Reports are stored locally on the SRX Series device and there is no requirement for separate devices or tools for logs and reports storage. The on-box reports provides a simple and easy-to-use interface for viewing the security logs.

Before you begin:

- Understand how to configure security log for tenant systems. See Example: Configure Security Log for Tenant Systems.

To configure on-box reporting for tenant system:

1. Define the tenant system name as TSYS1.

```
user@host# set tenants TSYS1
```

2. Create report within security log per tenant system.

```
user@host# set tenants TSYS1 security log report
```

3. Confirm your configuration by entering the **show tenants TSYS1** command.

```
user@host# show tenants TSYS1
security {
    log {
        report;
    }
}
```

NOTE: By default the **report** option is disabled.

Understanding On-Box and Off-Box Logging for Tenant System

SRX Series devices have two types of log: system logs and security logs. System logs record control plane events, for example admin login to the device. Security logs, also known as traffic logs, record data plane events regarding specific traffic handling, for example when a security policy denies certain traffic due to some violation of the policy.

Starting in Junos OS Release 19.2R1, on-box logging configurations are supported for each tenant system and logs are handled based on these configurations.

The two types of log can be collected and saved either on-box or off-box.

Stream mode is a set of logging services that includes:

- Off-box logging (SRX Series)
- On-box logging (SRX1500, SRX4100, SRX4200, and SRX4600 Series)

Per tenant system configuration is supported for the off-box logging and logs are handled based on these configurations. The tenant system logs for off-box logging can only be generated from the tenant system interface.

Configure the security files in **binary/syslog/sd-syslog/welf** format for stream-mode and binary format for event-mode by using the log statement at the **[set tenants TSYS1 security]** hierarchy level.

> **NOTE:** You cannot configure the security log file path for Tenant System.

For on-box logging with stream mode with binary format log, the **set security log stream *stream-name* file** command is configured per tenant system. The file name must be end with **.bin**. For example **TSYS1_f1.bin** in tenant system TSYS1. A new file **TSYS1_f1.bin** is created in the **/var/traffic-log/tenant-systems/*TSYS1*** directory.

For on-box logging with stream mode with other format logs, the **set security log stream *stream-name* file** command is configured per tenant system. For example tenant system TSYS1. A new file with the name configured is created in the **/var/traffic-log/tenant-systems/*TSYS1*** directory.

Configuring On-Box Binary Security Log Files for Tenant System

SRX Series devices support two types of log: system logs and security logs.

The two types of log are collected and saved either on-box or off-box. The following procedure explains how to configure security logs in binary format for on-box (event-mode and stream-mode) logging for tenant system.

The following procedure specifies binary format for event-mode security logging, and defines the log filename, path, and log file characteristics for tenant system.

1. Specify the logging mode and the format for the log file. For on-box, event-mode logging:

```
[edit]
user@host# set tenants TSYS1 security log mode event
user@host# set tenants TSYS1 security log format binary
```

2. (Optional) Specify a log filename.

```
[edit]
user@host# set tenants TSYS1 security log file name security-binary-log
```

> **NOTE:** Security log filename is not mandatory. If security log filename is not configured, by default the file bin_messages is created in the /var/log directory.

3. Confirm your configuration by entering the **show tenants TSYS1** command.

```
[edit]
user@host# show tenants TSYS1
security {
    log {
        mode event;
        format binary;
        file {
            name security-binary-log;
        }
    }
}
```

The following procedure specifies binary format for stream-mode security logging, and defines the log filename and log file characteristics for tenant system.

1. Specify the logging mode and the format for the log file. For on-box, stream-mode logging:

```
[edit]
user@host# set tenants TSYS1 security log mode stream
user@host# set tenants TSYS1 security log stream s1 format binary
```

2. (Optional) Specify a log filename.

```
[edit]
user@host# set tenants TSYS1 security log stream s1 file name f1.bin
```

3. Confirm your configuration by entering the **show tenants TSYS1** command.

```
[edit]
user@host# show tenants TSYS1
security {
    log {
        mode stream;
        stream s1 {
            format binary;
            file {
                name f1.bin;
            }
        }
    }
}
```

Configuring Off-Box Binary Security Log Files for Tenant System

SRX Series devices support two types of log: system logs and security logs.

The two types of log can be collected and saved either on-box or off-box. The procedure below explains how to configure security logs in binary format for off-box (stream-mode) logging.

The following procedure specifies binary format for stream-mode security logging, and defines the logging mode, source address, and host name characteristics for tenant system.

1. Specify the logging mode and the format for the log file. For off-box, stream-mode logging:

```
[edit]
user@host# set tenants TSYS1 security log mode stream s1 format binary
```

2. Specify the source address for off-box security logging.

```
[edit]
user@host# set tenants TSYS1 security log source-address 100.0.0.1
```

3. Specify the host name.

```
[edit]
user@host# set tenants TSYS1 security log stream s1 host 100.0.0.2
```

4. Confirm your configuration by entering the **show tenants TSYS1** command.

```
[edit]
user@host# show tenants TSYS1
security {
    log {
        mode stream;
        source-address 100.0.0.1;
        stream s1 {
            format binary;
            host {
                100.0.0.2;
            }
        }
    }
}
```

Release History Table

Release	Description
19.2R1	Starting in Junos OS Release 19.2R1, on-box logging configurations are supported for each tenant system and logs are handled based on these configurations

AppQoS for Tenant Systems

IN THIS SECTION

- Application Quality of Service for Tenant Systems Overview | **705**
- Example: Configure Application Quality of Service for Tenant Systems | **706**

Application quality of service (AppQoS) enable you to identify and control access to specific applications and provides the granularity of the stateful firewall rule base to match and enforce quality of service (QoS) at the application layer. AppQoS feature expands the capability of Junos OS class of service (CoS) for tenant systems.

Application Quality of Service for Tenant Systems Overview

The application quality of service (AppQoS) feature expands the capability of Junos OS class of service (CoS) for tenant systems. This includes marking DSCP values based on Layer-7 application types, honoring application-based traffic through loss priority settings, and controlling transfer rates on egress PICs based on Layer-7 application types.

When a network experiences congestion and delay, some packets must be dropped. Junos OS CoS allows you to divide traffic into classes and offer various levels of throughput and packet loss when congestion occurs. This allows packet loss to happen according to the rules you configure.

Tenant system enables you to partition a single device into multiple domains to perform security and routing functions.

Starting in Junos OS Release 19.3R1, AppQoS is supported when the SRX Series device is configured with tenant system. You can configure a default AppQoS rule set to manage the application- traffic-control within the tenant system. AppQoS provides the ability to prioritize and meter the application traffic to provide better service to business-critical or high-priority application traffic.

AppQoS rule sets are included in the tenant system to implement application-aware quality-of-service control. You can configure a rule set with rules under the application-traffic-control option, and attach the AppQoS rule set to a tenant system as an application service. If the traffic matches the specified application the application-aware quality of service is applied for tenant system.

For AppQoS, traffic is grouped based on rules that associate a defined forwarding class with selected applications for tenant system. The match criteria for the rule includes one or more applications. When traffic from a matching application encounters the rule, the rule action sets the forwarding class, and remarks the DSCP value and loss priority to values appropriate for the application.

The AppQoS DSCP rewriter conveys a packet's quality of service through both the forwarding class and a loss priority. The AppQoS rate-limiting parameters control the transmission speed and volume for its associated queues for tenant system. The default AppQoS rule set is leveraged from one of the existing AppQoS rule sets, which are configured under the **[edit class-of-service application-traffic-control]** hierarchy level.

Rate limiters are applied in rules based on the application of the traffic for tenant system. Two rate limiters are applied for each session: **client-to-server** and **server-to-client**. This usage allows traffic in each direction to be provisioned separately.

Example: Configure Application Quality of Service for Tenant Systems

IN THIS SECTION

- Requirements | **706**
- Overview | **707**
- Configuration | **707**
- Verification | **710**

This example shows how to enable application quality of service (AppQoS) within a tenant system to provide prioritization and rate limiting for the traffic.

Requirements

This example uses the following hardware and software components:

- An SRX Series device configured with tenant systems.
- Junos OS Release 19.3R1 and later releases.

Before you begin:

- Read the "Application Quality of Service for Tenant Systems Overview" on page 705 to understand how and where this procedure fits in the overall support for AppQos.

  No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, you configure an AppQoS rule set and invoke AppQoS as an application service in the tenant systems. You configure the class of service (CoS) for tenant systems. The AppQoS rule sets are included in the tenant systems to implement application-aware quality-of-service control.

Configuration

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter commit from configuration mode.

```
set tenants TSYS1 class-of-service application-traffic-control rate-limiters HTTP-BW-RL bandwidth-limit 512
set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 match application junos:HTTP
set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then forwarding-class
    best-effort
set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then dscp-code-point
    001000
set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then loss-priority high
set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then log
set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then rate-limit server-to-client
    HTTP-BW-RL
set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet match source-address
    any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet match
    destination-address any
set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet match application any
set tenants TSYS1 security policies from-zone trust to-zone trust policy p1 match dynamic-application junos:web
set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet then permit
    application-services application-traffic-control rule-set RS1
```

Configuring AppQoS with a Tenant System

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the Junos OS CLI User Guide.

To configure AppQoS for a tenant system:

1. Configure the AppQoS real-time run information about application rate limiting of current or recent sessions for tenant system TSYS1.

```
user@host# set tenants TSYS1 class-of-service application-traffic-control rate-limiters HTTP-BW-RL
    bandwidth-limit 512
```

2. Configure the AppQoS rules and application match criteria for tenant system TSYS1.

```
user@host# set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 match
    application junos:HTTP
```

3. Configure the AppQoS rules and the forwarding class for tenant system TSYS1.

```
user@host# set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then
    forwarding-class best-effort
```

4. Configure the AppQoS rules and the dscp-code-point for tenant system TSYS1.

```
user@host# set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then
    dscp-code-point 001000
```

5. Configure the AppQoS rules and the loss priority for tenant system TSYS1.

```
user@host# set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then
    loss-priority high
```

6. Assign the rate limiters for rule-sets.

```
user@host# set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then log
user@host# set tenants TSYS1 class-of-service application-traffic-control rule-sets RS1 rule RL1 then
    rate-limit server-to-client HTTP-BW-RL
```

7. Assign the class-of-service rule set to the security policy for tenant system TSYS1.

```
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet match
   source-address any
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet match
   destination-address any
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet match
   application any
user@host# set tenants TSYS1 security policies from-zone trust to-zone trust policy p1 match
   dynamic-application junos:web
user@host# set tenants TSYS1 security policies from-zone untrust to-zone trust policy from_internet then
   permit application-services application-traffic-control rule-set RS1
```

Results

From configuration mode, confirm your configuration by entering the **show tenants TSYS1** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@host# show tenants TSYS1
security {
    policies {
        from-zone untrust to-zone trust {
            policy from_internet {
                match {
                    source-address any;
                    destination-address any;
                    application any;
                }
                then {
                    permit {
                        application-services {
                            application-traffic-control {
                                rule-set RS1;
                            }
                        }
                    }
                }
            }
        }
        from-zone trust to-zone trust {
            policy p1 {
                match {
                    dynamic-application junos:web;
                }
```

```
        }
      }
    }
  }
  class-of-service {
    application-traffic-control {
      rate-limiters HTTP-BW-RL {
        bandwidth-limit 512;
      }
      rule-sets RS1 {
        rule RL1 {
          match {
            application junos:HTTP;
          }
          then {
            forwarding-class best-effort;
            dscp-code-point 001000;
            loss-priority high;
            rate-limit {
              server-to-client HTTP-BW-RL;
            }
            log;
          }
        }
      }
    }
  }
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the class-of-service application-traffic-control counter | **711**
- Verifying the class-of-service application-traffic-control statistics rate-limiter | **711**

To confirm that the configuration is working properly, perform the below tasks:

Verifying the class-of-service application-traffic-control counter

Purpose

Verify the class-of-service application-traffic-control counter for tenant systems.

Action

To verify the configuration is working properly, enter the **show class-of-service application-traffic-control counter tenant TSYS1** command.

```
user@host>show class-of-service application-traffic-control counter tenant TSYS1
```

```
Tenant System: TSYS1

pic: 0/0
  Counter type                                                  Value
 Sessions processed                                             1
 Sessions marked                                                0
 Sessions honored                                               0
 Sessions rate limited                                          0
 Client-to-server flows rate limited                            0
 Server-to-client flows rate limited                            0
 Session default ruleset hit                                    0
 Session ignored no default ruleset                             0
```

Meaning

The output displays AppQoS DSCP marking and honoring statistics based on Layer 7 application classifiers.

Verifying the class-of-service application-traffic-control statistics rate-limiter

Purpose

Verify the class-of-service application-traffic-control statistics rate-limiter for tenant systems.

Action

To verify the configuration is working properly, enter the **show class-of-service application-traffic-control statistics rate-limiter tenant TSYS1** command.

```
user@host>show class-of-service application-traffic-control statistics rate-limiter tenant TSYS1
```

```
Tenant System: TSYS1

pic: 0/0
```

Meaning

The output displays AppQoS real-time run information about application rate limiting of current or recent sessions.

Application Security for Tenant Systems

IN THIS SECTION

- Application Identification Services for Tenant Systems Overview | **712**

Application Security in tenant systems identifies application traffic traversing your network regardless of port, protocol, and encryption, and thereby provides greater visibility to control network traffic. The application security controls network traffic by setting and enforcing security policies based on accurate application information.

Application Identification Services for Tenant Systems Overview

Predefined and custom application signatures identify an application by matching patterns in the first few packets of a session. Identifying applications provides the following advantages:

- Allows Intrusion Detection and Prevention (IDP) to apply appropriate attack objects to applications running on nonstandard ports.
- Improves performance by narrowing the scope of attack signatures for applications without decoders.
- Enables you to create detailed reports using AppTrack on applications passing through the device.

With tenant systems, predefined and custom application signatures are global resources that are shared by all tenant systems. Application identification (AppID) is enabled by default for a tenant system. The following are the privileges and responsibilities of the master administrator over AppID:

- Download and install the predefined Juniper Networks application signatures.
- Create custom application and nested application signatures to identify applications that are not a part of the predefined database.
- View or clear the application identification statistics and counters for all tenant systems.
- Uninstall application signature package.

The application system cache (ASC) saves the mapping between an application type and the corresponding destination IP address, destination port, protocol type, and service. Each tenant system has its own ASC. A tenant system or the master administrator can view or clear ASC entries for any tenant system.

The AppID support for tenant systems include two options to view or clear tenant system statistics and tenant system counters for their own tenant system. Because the statistics reset time is common across the tenant systems, when you configure a new tenant system for the very first time, the statistics for that tenant system may get cleared even before the configured statistics reset time.

The custom signatures configured by the master administrator can be configured in the tenant system security policies.

As a master administrator or a tenant system user, you can use the commands **show services application-identification status** and **show services application-identification version** to view the status and version information about the AppID signature package.

4

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address-book (System)

Syntax

```
address-book {
    maximum amount;
    reserved amount;
}
```

Hierarchy Level

```
[edit system security-profile security-profile-name]
```

Release Information
Statement introduced in Junos OS Release 11.2.

Description
Address book entries include any combination of IPv4 addresses, IPv6 addresses, DNS names, wildcard addresses, and address range. You define addresses and address sets in an address book and then use those addresses when configuring different features, such as security policies and NAT.

Specify the number of address books that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options
- **maximum *amount***—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.
- **reserved *amount***—A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Understanding Address Books*

address-name

Syntax

```
address-name name {
    description description;
    profile {
        category name {
            feed feed;
            property name {
                string name;
            }
        }
        feed-name name;
    }
}
```

Hierarchy Level

```
[edit security dynamic-address]
[edit logical-systems logical-system-name security dynamic-address]
[edit tenants tenant-name security dynamic-address]
```

Release Information

Statement introduced in Junos OS Release 18.4R1.

Description

Specify the security dynamic address name for IPv4 and IPv6 networks within a logical system and tenant system.

Options

- **profile**—Information to categorize feed data into this dynamic address.
  - **feed-name**— Name of feed in feed-server for the dynamic address.
    - **source-feed-name**— Name of feed in feed-server which is mapped to this dynamic address.
  - **category**—Name of category for the dynamic address.
    - **GeoIP** —A list giving you the ability to filter traffic to and from specific geographies in the world.
      - **feed**—Feed to match.
        - **feed-name**—Name of feed (fd1).
    - **ip-filter** —A list of addresses and ranges of malicious sites that can send junk data.

- **feed**—Feed to match.
  - **feed-name**—Name of feed (fd1).

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

anti-spam (Logical System Security Feature Profile)

Syntax

```
anti-spam {
    sbl {
        profile (Security Antispam SBL) name {
            address-blacklist address-blacklist;
            address-whitelist address-whitelist;
            custom-tag-string custom-tag-string;
            (sbl-default-server | no-sbl-default-server);
            spam-action (block | tag-header | tag-subject);
        }
    }
}
```

Hierarchy Level

```
[edit logical-systems logical-system-name security utm feature-profile]
[edit tenants tenant-name security utm feature-profile]
```

Release Information

Statement introduced in Junos OS Release 18.3R1.
Support for configuration in tenant systems introduced in Junos OS Release 19.2R1.

Description

Configures the UTM antispam feature for logical systems. The antispam feature examines transmitted e-mail messages to identify e-mail spam. When the device detects a message deemed to be spam, it blocks the e-mail message or tags the e-mail message header or subject with a preprogrammed string. Antispam filtering uses both a third-party server-based Spam Block List (SBL), and optionally created local whitelists (benign) and blacklists (malicious) for filtering against e-mail messages.

You can also configure the default UTM configuration for antispam feature profile. If you do not configure any option in the antispam feature profile, the values configured in the default UTM configuration are applied. In the default UTM profile, the antispam type is configured as SBL instead of none. This configuration enables the SBL option. However, to use this feature, enable the SBL server using the **[edit security utm default-configuration anti-spam sbl sbl-default-server]** command.

> **NOTE:** A license check for the antispam configuration is performed at the time of commit and provides a warning if a valid license is not installed on the device. Once a valid license is installed on the device then the custom antispam profile or the default antispam profile is able to process the traffic. If a license is expired or is not installed, the antispam service does not process the traffic.

Options

anti-spam—Configures the UTM antispam feature for logical system.

address-blacklist—Enter an address blacklist custom object for local list spam filtering.

address-whitelist—Enter an address whitelist custom object for local list spam filtering.

sbl—Antispam filtering allows you to use both a third-party server-based SBL, and optionally created local whitelists and blacklists for filtering against e-mail messages.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Antispam Filtering Overview

utm default-configuration

anti-virus (Logical System Security Feature Profile)

Syntax

```
anti-virus {
    profile name {
        fallback-options (Security Antivirus Sophos Engine) {
            content-size (Security Antivirus Sophos Engine) (block | log-and-permit | permit);
            decompress-err (block | log-and-permit | permit);
            default (Security Antivirus Sophos Engine) (block | log-and-permit | permit);
            engine-not-ready (Security Antivirus Sophos Engine) (block | log-and-permit | permit);
            out-of-resources (Security Antivirus Sophos Engine) (block | log-and-permit | permit);
            timeout (Security Antivirus Fallback Options Sophos Engine) (block | log-and-permit | permit);
            too-many-requests (Security Antivirus Fallback Options Sophos Engine) (block | log-and-permit | permit);
        }
        mime-whitelist {
            exception exception;
            list list;
        }
        notification-options (Security Antivirus) {
            fallback-block (Security Antivirus) {
                custom-message (Security Fallback Block) custom-message;
                custom-message-subject (Security Fallback Block) custom-message-subject;
                (notify-mail-sender (Security Fallback Block) | no-notify-mail-sender (Security Fallback Block));
                type (Security Fallback Block) (message | protocol-only);
            }
            fallback-non-block (Security Antivirus) {
                custom-message (Security Fallback Non-Block) custom-message;
                custom-message-subject (Security Fallback Non-Block) custom-message-subject;
                (notify-mail-recipient | no-notify-mail-recipient);
            }
            virus-detection (Security Antivirus) {
                custom-message (Security Virus Detection) custom-message;
                custom-message-subject (Security Virus Detection) custom-message-subject;
                (notify-mail-sender (Security Virus Detection) | no-notify-mail-sender (Security Virus Detection));
                type (Security Virus Detection) (message | protocol-only);
            }
        }
        url-whitelist url-whitelist;
    }
}
```

Hierarchy Level

[edit logical-systems *logical-systems-name* security utm feature-profile]
[edit tenants *tenant-name* security utm feature-profile]

Release Information

Statement introduced in Junos OS Release 18.3R1.
Support for configuration in tenant systems introduced in Junos OS Release 19.2R1.

Description

Configures the UTM Sophos Antivirus feature for logical systems. You can also configure the default UTM configuration for antivirus feature profile. If you do not configure any option in the antivirus feature profile, the values configured in the default UTM configuration are applied.

NOTE: A license check for the antivirus configuration is performed at the time of a commit and will provide a warning if a valid license is not installed on the device. Once a valid license is installed on the device then a custom antivirus profile or the antivirus default profile is able to process traffic. If a license is expired or is not installed, the antivirus service does not process the traffic.

Options

anti-virus—Configures the UTM antivirus feature for logical systems.

mime-whitelist—This is the comprehensive list for those MIME types that can bypass antivirus scanning.

sophos-engine—The antivirus engine that is used on the device. You can only have one engine type running and you must restart the device if you change engines.

fallback-options—Fallback options helps the system how to handle the errors.

notification-options—There are multiple notification options you can configure to trigger when a virus is detected.

fallback-non-block—Notifications for fallback nonblocking actions.

virus-detection—Notifications to send when a virus is detected.

scan-options—Antivirus sophos-engine scan options.

trickling —HTTP trickling is a mechanism used to prevent the HTTP client or server from timing-out during a file transfer or during antivirus scanning.

url-whitelist—Antivirus URL white list is a unique custom list that includes the URLs or IP addresses category to bypass the antivirus scanning.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Unified Threat Management Overview

utm default-configuration

auth-entry

Syntax

```
auth-entry {
    maximum amount;
    reserved amount;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of firewall authentication entries that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

- **maximum *amount***—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.
- **reserved *amount***—A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

content-filtering (Logical System Security Feature Profile)

Syntax

```
content-filtering {
    profile name {
        block-command block-command;
        block-content-type {
            activex;
            exe;
            http-cookie;
            java-applet;
            zip;
        }
        block-extension block-extension;
        block-mime {
            exception (Security Content Filtering) exception;
            list (Security Content Filtering Block Mime) list;
        }
        notification-options (Security Content Filtering) {
            custom-message (Security Content Filtering) custom-message;
            (notify-mail-sender (Security Content Filtering Notification Options) | no-notify-mail-sender (Security Content
                Filtering Notification Options));
            type (Security Content Filtering Notification Options) (message | protocol-only);
        }
        permit-command permit-command;
    }
}
```

Hierarchy Level

```
[edit logical-systems logical-systems-name security utm feature-profile]
[edit tenants tenant-name security utm feature-profile]
```

Release Information

Statement introduced in Junos OS Release 18.3R1.
Support for configuration in tenant systems introduced in Junos OS Release 19.2R1.

Description

Configures the UTM content-filtering feature for logical systems. The content filtering feature controls file transfers across the gateway by checking traffic against configured filter lists. It evaluates the traffic

before all other UTM features, except Web filtering. You can also configure the default UTM configuration for content filtering feature profile. If you do not configure any option in the content filtering feature profile, the values configured in the default UTM configuration are applied.

> **NOTE:** A license check for the content filtering configuration is performed at the time of commit and provides a warning if a valid license is not installed on the device. Once a valid license is installed on the device then the custom content filtering profile or the default content filtering profile is able to process the traffic. If a license is expired or license is not installed, the content filtering service does not process the traffic.

Options

block-command—Protocol block command custom-objects to the content-filtering profile.

block-content-type—Blocks other available content such as exe, http-cookie, java-applet. This is for HTTP only.

block-extension—Block extensions to the content-filtering profile.

block-mime—MIME pattern list custom-objects to the content-filtering profile for blocking MIME types.

notification-options—A message notification to trigger when a content filter is matched.

permit-command—Protocol permit command custom-objects to the content-filtering profile.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Content Filtering Overview

utm default-configuration

cpu

Syntax

```
cpu {
    reserved percent;
}
```

Hierarchy Level

[edit system security-profile]

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Specify the percentage of CPU utilization that is always available for a logical system. The available CPU space percentage value is configured in a security profile that is bound to a logical system.

Only the master administrator can create security profiles and bind them to logical systems.

NOTE: The **cpu-control** option at the [**edit system security-profile resources**] hierarchy level must be specified for the **reserved** value to take effect.

Options

reserved ***percent***—A reserved quota that guarantees that the percentage of CPU specified is always available to the logical system.

Range: 0 through 100 percent (decimal point allowed).

Default: 1 percent for the master logical system and 0 percent for user logical systems.

CAUTION: The master logical system must not be bound to a security profile that is configured with a 0 percent reserved CPU quota as traffic loss could occur.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

dslite-softwire-initiator

Syntax

```
dslite-softwire-initiator {
    maximum amount;
    reserved amount;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 12.1.

Description

Specifies the number of IPv6 dual-stack lite (DS-Lite) softwire initiators that connects to the softwire concentrator configured in either a user logical system or the master logical system. The option is configured in the security profile that is bound to the logical system.

Only the master administrator can create security profiles and bind them to logical systems. The master administrator:

- Uses security profiles to provision logical systems with resources
- Binds security profiles to user logical systems and the master logical system
- Configures more than one security profile, specifying different amounts of resource allocations in various profiles

Options

- **maximum *amount***—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources. The default is the system maximum.
- **reserved *amount***—A reserved quota that guarantees that the resource amount specified is always available to the logical system. The default is 0.

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding IPv6 Dual-Stack Lite in Logical Systems | 340

dynamic-address

Syntax

```
dynamic-address {
    address-name name {
        description description;
        profile {
            category name {
                feed feed;
                property name {
                    string name;
                }
            }
            feed-name name;
        }
    }
    feed-server feed-server-name {
        url url);
        description description;
        feed-name name {
            description description;
            hold-interval seconds;
            path path;
            update-interval seconds;
        }
        hold-interval seconds;
        hostname hostname;
        update-interval seconds;
    }
    traceoptions {
        file <filename> <files files> <match match> <size size> <(world-readable | no-world-readable)>;
        flag name;
        level (all | error | info | notice | verbose | warning);
        no-remote-trace;
    }
}
```

Hierarchy Level

```
[edit security]
[edit logical-systems logical-system-name security]
[edit tenants tenant-name security ]
```

Release Information

Statement introduced in Junos OS Release 18.4R1.

Description

Configure security dynamic address for IPv4 and IPv6 networks within a logical system and tenant system. Each dynamic address belongs to only one instance. Within that instance is a set of categories to which the dynamic address further belongs. A dynamic address entry provides dynamic IP address information to the security policies.

Options

address-name—Security dynamic address name.

feed-server—Security dynamic address feed-server.

traceoptions—Security dynamic address tracing options.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

firewall-authentication (tenants)

Syntax

```
firewall-authentication {
    pass-through {
        default-profile default-profile;
        ftp {
            banner (Access FTP HTTP Telnet Authentication) {
                fail fail;
                login login;
                success success;
            }
        }
        ftp {
            banner (Access FTP HTTP Telnet Authentication) {
                fail fail;
                login login;
                success success;
            }
        }
        ftp {
            banner (Access FTP HTTP Telnet Authentication) {
                fail fail;
                login login;
                success success;
            }
        }
    }
    traceoptions {
        file <filename> <files files> <match match> <size size> <(world-readable | no-world-readable)>;
        flag name;
        no-remote-trace;
    }
    web-authentication {
        banner {
            success success;
        }
        default-profile default-profile;
        timeout timeout;
    }
}
```

Hierarchy Level

[edit logical-systems *name* tenants *name* access],
[edit tenants *name* access]

Release Information

Statement introduced in Junos OS Release 18.3R1

Description

Define the type of firewall authentication on tenant system.

Required Privilege Level

access

RELATED DOCUMENTATION

- Firewall Authentication for Tenant Systems | **584**
- show security firewall-authentication history | **916**
- show security firewall-authentication users | **919**
- firewall-authentication | **736**

web-authentication

Syntax

```
web-authentication {
    banner {
        success success;
    }
    default-profile default-profile;
    timeout timeout;
}
```

Hierarchy Level

[edit logical-systems *name* tenants *name* access **firewall-authentication**],
[edit tenants *name* access **firewall-authentication**]

Release Information
Statement introduced in Junos OS Release 18.3R1.

Description
Define Web-authentication settings for tenant systems.

Options
default-profile—Name of profile to use for web-authentication

timeout—Web-authentication timeout value in seconds

Range: 5 through 60

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
flow-tap

RELATED DOCUMENTATION

pass-through | 739

pass-through

Syntax

```
pass-through {
    default-profile default-profile;
    ftp {
        banner (Access FTP HTTP Telnet Authentication) {
            fail fail;
            login login;
            success success;
        }
    }
    ftp {
        banner (Access FTP HTTP Telnet Authentication) {
            fail fail;
            login login;
            success success;
        }
    }
    ftp {
        banner (Access FTP HTTP Telnet Authentication) {
            fail fail;
            login login;
            success success;
        }
    }
}
```

Hierarchy Level

```
[edit logical-systems name tenants name access firewall-authentication],
[edit tenants name access firewall-authentication]
```

Release Information

Statement introduced in Junos OS Release 18.3R1.

Description

Pass-through firewall authentication settings

Options

default-profile—Name of profile to use if not specified in policy

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
flow-tap

RELATED DOCUMENTATION

firewall-authentication | 736

flow-gate

Syntax

```
flow-gate {
    maximum amount;
    reserved amount;
}
```

Hierarchy Level

[edit system security-profile]

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specifies the number of flow gates, also known as **pinholes**, that user logical system administrators and master logical system administrators can configure for their logical systems, if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum *amount*— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 1000000

reserved *amount*— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

flow-session

Syntax

```
flow-session {
    maximum amount;
    reserved amount;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specifies the number of flow sessions that user logical system administrators and master logical system administrators configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum *amount*— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 1000000

reserved *amount*— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

NOTE: An IPv6 session consumes twice the memory of an IPv4 session. Therefore the number of sessions available for IPv6 is half the reserved and maximum quotas configured for the flow session resource in a security profile. Use the vty command **show usp flow resource usage cp-session** to check flow session usage.

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

idp (logical-systems)

Syntax

```
idp (default | off | on);
```

Hierarchy Level

```
[edit logical-systems name security]
```

Release Information
Statement introduced in Junos OS Release 11.4

Description
Configure IDP on master and user logical systems.

Options
default-policy— Set the active policy.

max-sessions— Maximum number of IDP sessions.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
security

RELATED DOCUMENTATION

- show security idp logical system | 936
- Understanding IDP Features in Logical Systems | 266
- IDP in Logical Systems Overview | 263

idp-policy

Syntax

```
idp-policy idp-policy;
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information
Statement introduced in Junos OS Release 11.4.

Description
Specify the IDP policy for the security profile.

Options
idp-policy-name– Name of the IDP policy.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Intrusion Detection and Prevention Overview

log (Security)

Syntax

```
log {
    cache (Security Log) {
        exclude (Security Log) name {
            destination-address destination-address;
            destination-port destination-port;
            event-id event-id;
            failure;
            interface-name interface-name;
            policy-name policy-name;
            process process;
            protocol protocol;
            source-address source-address;
            source-port source-port;
            success;
            username username;
        }
        limit (Security Log) limit;
    }
    host name {
        class <alg-logs> <ha-logs <close-synchronized> <open-synchronized>> <ids-logs> <nat-logs
            <deterministic-nat-configuration-log>> <packet-logs> <pcp-logs <debug> <map> > <session-logs <close>
            <open>> <stateful-firewall-logs> <urlf-logs>;
        contents services {
        }
        facility-override (authorization | daemon | ftp | kernel | local0 | local1 | local2 | local3 | local4 | local5 | local6 |
            local7 | lpr | mail | news | privileged | syslog | user | uucp);
        log-prefix log-prefix;
        port port;
        source-address source-address;
        tcp-log {
            source-address source-address;
            ssl-profile ssl-profile;
            vrf-name vrf-name;
        }
    }
    message-rate-limit messages per second;
}
```

Hierarchy Level

[edit security]
[edit **logical-systems** *name* security]
[edit **tenants** *tenant-name* security]

Release Information

Statement introduced in Junos OS Release 9.2.
The [edit **logical-systems** *name* security] and [edit **tenants** *tenant-name* security] hierarchy levels introduced in Junos OS Release 19.1R1.

Description

Configure security log. Set the mode of logging (event for traditional system logging or stream for streaming security logs through a revenue port to a server). You can also specify all the other parameters for security logging.

Options

cache—Cache security log events in the audit log buffer.

disable—Disable the security logging for the device.

event-rate *rate*—Limit the rate at which logs are streamed per second.

Range: 0 through 1500

Default: 1500

facility-override—Alternate facility for logging to remote host.

file—Specify the security log file options for logs in binary format.

Values:

- ***max-file-number***—Maximum number of binary log files.
  - The range is 2 through 10 and the default value is 10.
- ***file-name***—Name of binary log file.
- ***binary-log-file-path***—Path to binary log files.
- ***maximum-file-size***—Maximum size of binary log file in megabytes.
  - The range is 1 through 10 and the default value is 10.

format—Set the security log format for the device.

max-database-record—The following are the disk usage range limits for the database:

Range:

- SRX1500, SRX4100, and SRX4200: 0 through 15,000,000
- vSRX: 0 through 1,000,000

Default:

- SRX1500, SRX4100, and SRX4200: 15,000,000
- vSRX: 1,000,000

NOTE: Be sure there is enough free space in **/var/log/hostlogs/**, otherwise logs might be dropped when written into the database.

mode—Control how security logs are processed and exported.

rate-cap *rate-cap-value*—Work with event mode only. This option limits the rate at which data plane logs are generated per second.

Range: 0 through 5000 logs per second

Default: 5000 logs per second

source-address ***source-address***—Specify a source IP address or IP address used when exporting security logs, which is mandatory to configure *stream host*.

source-interface ***interface-name***—Specify a source interface name, which is mandatory to configure *stream host*.

> **NOTE:** The **source-address** and **source-interface** are alternate values. Using one of the options is mandatory.

stream—Every stream can configure file or host.

- ***category***— Type of events that might be logged.
- ***file name***—Specify the filename.
- ***file size***—Specify the file size.
  - SRX1500, SRX4100, and SRX4200—The default value is 25 MB and the range is 10 MB through 50 MB.
  - vSRX - The default value is 2 MB and the range is 1 MB through 3 MB.
- ***rotation***—Configure the maximum file number for rotation.
  - The default value is 10 and the range is 2 through 19.
- ***rate-limit***—Rate-limit for security logs.
  - The range is 1 through 65,535 logs per second and the default value is 65,535 .
- ***filter***—Selects the filter to filter the logs to be logged.
- ***format***—Specify the log stream format.
- ***host***—Destination to send security logs.
- ***severity***—Severity threshold for security logs.

traceoptions—Specify security log daemon trace options.

transport—Set security log transport settings.

utc-timestamp—Specify to use UTC time for security log timestamps.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

security—To view this statement in the configuration.

security-control—To add this statement to the configuration.

log (Logical Systems and Tenant Systems)

Syntax

```
log {
    disable;
    facility-override (authorization | daemon | ftp | kernel | local0 | local1 | local2 | local3 | local4 | local5 | local6
      | local7 | user);
    mode (event | stream);
    format (binary | sd-syslog | syslog);
    source-address;
    source-interface;
    stream name {
      category name;
      filter name;
      host (Security Log) {
        ipaddr;
        port port;
        routing-instance routing-instance;
      }
      rate-limit rate;
    }
    transport {
      protocol (tcp | tls |udp);
      tls-profile;
    }
  }
}
```

Hierarchy Level

```
[edit logical-systems name security]
[edit tenants name security]
```

Release Information

Statement introduced in Junos OS Release 18.2R1 for logical systems.
Statement introduced in Junos OS Release 18.3R1 for tenant systems.
The **routing-instance** option introduced in Junos OS Release 18.3R1 for tenant systems.

Description

Configure security log for logical systems and tenant systems. Set the mode of logging (event for traditional system logging or stream for streaming security logs through a revenue port to a server). You can also specify all the other parameters for security logging.

Options

disable—Disable the security logging for the device.

facility-override —Alternate facility for logging to remote host.

Values:

- **authorization** —Authorization system
- **daemon** —Various system processes
- **ftp** —FTP process
- **kernel** —Kernel
- **local0** —Local logging option number 0
- **local1** —Local logging option number 1
- **local2** —Local logging option number 2
- **local3** —Local logging option number 3
- **local4** —Local logging option number 4
- **local5** —Local logging option number 5
- **local6** —Local logging option number 6
- **local7** —Local logging option number 7
- **user** —User processes

format—Set security log format for the device.

Values:

- **binary** —Binary log
- **binarysd-syslog** —Structured syslog
- **syslog** —Traditional syslog

mode—Controls how security logs are processed and exported.

Values:

- **event** —Process security logs in the control plane
- **stream** —Process security logs directly in the forwarding plane

source-address —Specify a source IP address or IP address used when exporting security logs, which is mandatory to configure *stream host*.

source-interface —Specify a source interface name, which is mandatory to configure *stream host*.

stream—Set security log stream settings.

transport—Set security log transport settings.

Values:

- tcp—TCP transfer for log
- tls—TLS transfer for log
- udp—UDP transfer for log

utc-timestamp—Specify to use UTC time for security log timestamps.

The following options are not supported under logical system and tenant system:

- **event-rate** and **rate-cap**— Use to limit the log rate between Packet Forwarding Engine (PFE) and Routing Engine (RE).
- **file**— Use to store binary log with event mode.
- **max-database-record** and **report**— Use to enable SQLite Version 3 (sqlite3) database for local log management daemon (llmd).
- **traceoptions**— Specify security log daemon trace options.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Security Logs and Logical Systems | 472

logical-system (System Security Profile)

Syntax

```
logical-system logical-system;
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information
Statement introduced in Junos OS Release 11.2.

Description
Specify the user logical system to bind the security profile.

The master administrator uses security profiles to provision logical systems with resources. You can bind security profiles to user logical systems and the master logical system. The master administrator can configure more than one security profile allocating different amounts of a resource in various ones.

Only the master administrator can create security profiles and bind them to logical systems.

Options
logical-system-name–Name of the logical system.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

logical-domain-identity-management

Syntax

```
logical-domain-identity-management {
    active {
        authentication-entry-timeout minutes;
        filter {
            domain name;
            exclude-ip {
                address-book book-name;
                address-set address-set;
            }
            include-ip {
                address-book book-name;
                address-set address-set;
            }
        }
        invalid-authentication-entry-timeout minutes;
        ip-query {
            query-delay-time seconds;
        }
        query-server name {
            batch-query {
                items-per-batch items-per-batch;
                query-interval seconds;
            }
            connection{
                connect-method (http | https);
                port port;
                primary {
                    address address;
                    ca-certificate ca-certificate;
                    client-id client-id;
                    client-secret client-secret;
                }
                query-api query-api;
                secondary {
                    address address;
                    ca-certificate ca-certificate;
                    client-id client-id;
                    client-secret client-secret;
                }
                token-api token-api;
```

```
        }
      }
    }
    traceoptions {
      file <filename> <files files> <match match> <size size> <(world-readable | no-world-readable)>;
      flag name;
      level (all | error | info | notice | verbose | warning);
      no-remote-trace;
    }
}
```

Hierarchy Level

```
[edit services]
```

Release Information

Statement introduced in Junos OS Release 19.3R1.

Description

Specify the logical domain identity management configuration for both logical systems and tenant systems.

Options

active— Displays the active mode for logical domain identity management module.

traceoptions— Displays the tracing options.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Integrated User Firewall support in a Logical System | 192
Understanding Integrated User Firewall Support in a Tenant System | 600

logical-systems (All)

Syntax

```
logical-systems {
    logical-system-name {
        ...logical-system-configuration...
    }
}
```

Hierarchy Level

```
[edit]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Configure a logical system. Only the master administrator can configure a logical system at [**edit**] hierarchy level.

You can include several of the hierarchies that can be included at the [**edit**] hierarchy level. For descriptions of the applicable statements, see the appropriate hierarchies.

> **NOTE:** The **logical-systems** configuration statement can be used only by the master administrator.

Options

logical-system-name—Name of the logical system.

Required Privilege Level

all—To view this statement in the configuration.
all—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

nat

Syntax

```
nat {
    destination {
        pool pool-name {
            address ip-address {
                (port port-number | to ip-address);
            }
            description text;
            routing-instance routing-instance-name;
        }
        rule-set rule-set-name {
            description text;
            from {
                interface [interface-name];
                routing-instance [routing-instance-name];
                zone [zone-name];
            }
            rule rule-name {
                description text;
                match {
                    (destination-address <ip-address> | destination-address-name <address-name>);
                    destination-port port-number;
                    protocol [protocol-name-or-number];
                    source-address [ip-address];
                    source-address-name [address-name];
                }
                then {
                    destination-nat (off | pool pool-name);
                }
            }
        }
    }
    proxy-arp {
        interface interface-name {
            address ip-address {
                to ip-address;
            }
        }
    }
    proxy-ndp {
        interface interface-name {
```

```
        address ip-address {
            to ip-address;
        }
    }
}
```

```
source {
    address-persistent;
    interface {
        port-overloading {
            off;
        }
    }
    pool pool-name {
        address ip-address {
            to ip-address;
        }
        description text;
        host-address-base ip-address;
        overflow-pool (interface | pool-name);
        port {
            (no-translation | port-overloading-factor number | range port-low <to port-high>);
        }
        routing-instance routing-instance-name;
    }
    pool-default-port-range lower-port-range to upper-port-range;
    pool-utilization-alarm {
        clear-threshold value;
        raise-threshold value;
    }
    port-randomization {
        disable;
    }
    port-round-robin {
        disable;
    }
    rule-set rule-set-name {
        description text;
        from {
            interface [interface-name];
            routing-instance [routing-instance-name];
            zone [zone-name];
        }
        rule rule-name {
            description text;
            match {
                (destination-address <ip-address> | destination-address-name <address-name>);
                destination-port port-number;
                protocol [protocol-name-or-number];
                source-address [ip-address];
```

```
            source-address-name [address-name];
        }
        then {
            source-nat {
                interface {
                    persistent-nat {
                        address-mapping;
                        inactivity-timeout seconds;
                        max-session-number value;
                        permit (any-remote-host | target-host | target-host-port);
                    }
                }
                off;
                pool {
                    persistent-nat {
                        address-mapping;
                        inactivity-timeout seconds;
                        max-session-number number;
                        permit (any-remote-host | target-host | target-host-port);
                    }
                    pool-name;
                }
            }
        }
    }
    to {
        interface [interface-name];
        routing-instance [routing-instance-name];
        zone [zone-name];
    }
  }
}
```

```
    static {
        rule-set rule-set-name {
            description text;
            from {
                interface [interface-name];
                routing-instance [routing-instance-name];
                zone [zone-name];
            }
            rule rule-name {
                description text;
                match {
                    (destination-address ip-address | destination-address-name address-name);
                }
                then {
                    static-nat {
                        inet {
                            routing-instance (default | routing-instance-name);
                        }
                        prefix {
                            address-prefix;
                            routing-instance (default | routing-instance-name);
                        }
                        prefix-name {
                            address-prefix-name;
                            routing-instance (default | routing-instance-name);
                        }
                    }
                }
            }
        }
    }
    traceoptions {
        file {
            filename;
            files number;
            match regular-expression;
            size maximum-file-size;
            (world-readable | no-world-readable);
        }
        flag flag;
        no-remote-trace;
    }
}
```

Hierarchy Level

[edit security]
[edit tenants *tenant-name* security]

Release Information

Statement modified in Junos OS Release 9.6.
The **description** option added in Junos OS Release 12.1.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Configure Network Address Translation (NAT) for NFX Series and SRX Series devices.

Options

destination—Configure Destination NAT.

natv6v4—Configure NAT between IPv6 and IPv4 options.

proxy-arp—Configure Proxy ARP.

proxy-ndp—Configure Proxy NDP.

source—Configure Source NAT.

static—Configure Static NAT.

traceoptions—Configure NAT traceoptions.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Introduction to NAT

Understanding Logical Systems Network Address Translation | 142

nat-cone-binding

Syntax

```
nat-cone-binding {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of NAT cone binding configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 65536

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Introduction to NAT

nat-destination-pool

Syntax

```
nat-destination-pool {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
[edit tenant tenant-name security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Specify the number of NAT destination pool configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 8192

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Introduction to NAT

nat-destination-rule

Syntax

```
nat-destination-rule {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
[edit tenant tenant-name system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Specify the number of NAT destination rule configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 8192

reserved— A reserved quota that guarantees that the resource amount specified is always available.

Default: 0

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Introduction to NAT

nat-interface-port-ol (System)

Syntax

```
nat-interface-port-ol {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Specify the security NAT interface port overloading the quota of a logical system.

Options

maximum *amount*—Specify the maximum allowed quota value.

Range: 0 through 64

reserved *amount*—Specify a reserved quota value that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Introduction to NAT

nat-nopat-address

Syntax

```
nat-nopat-address {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of NAT without port address translation configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 4194304

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Introduction to NAT*

nat-pat-address

Syntax

```
nat-pat-address {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of NAT with port address translation (PAT) configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 2048

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Network Address Translation | 142

Introduction to NAT

nat-pat-portnum

Syntax

```
nat-pat-portnum {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Specify the maximum quantity and the reserved quantity of ports for the logical system as part of its security profile. The total number of PAT pools must not exceed the configured maximum ports for the logical system.

Options

maximum— Specify the maximum number of ports allowed for a logical system. The maximum quantity is not guaranteed and is shared among multiple logical systems.

Range: 0 through 134217728

reserved— Specify the number of resources guaranteed for a logical system.

Range: For SRX5600 and SRX5800 devices, up to 402,653,184 ports are supported. Pool specifications for logical systems can be viewed using the **show security nat source summary logical-system all** command.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.
system—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

nat-port-ol-ipnumber

Syntax

```
nat-port-ol-ipnumber {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

[edit system security-profile]

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of NAT port overloading IP number configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 16

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

nat-rule-referenced-prefix (System)

Syntax

```
nat-rule-referenced-prefix {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

[edit system **security-profile**]

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Specify the security NAT rule referenced IP prefix quota of a logical system.

Options

maximum— Specify the maximum allowed quota value.

Range: 0 through 1048576

reserved— Specify a reserved quota value that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

nat-source-pool

Syntax

```
nat-source-pool {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
[edit tenant tenant-name system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Specify the NAT source pool configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 2048

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

nat-source-rule

Syntax

```
nat-source-rule {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
[edit tenant tenant-name system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Specify the NAT source rule configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 8192

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

nat-static-rule

Syntax

```
nat-static-rule {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
[edit tenant tenant-name system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Specify the number of NAT static rule configurations that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum— A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 8192

reserved— A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

policy (System Security Profile)

Syntax

```
policy {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of security policies that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 80000

reserved—A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

policy-with-count

Syntax

```
policy-with-count {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of security policies with a count that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 1024

reserved—A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

protocols (Tenant Systems)

Syntax

```
protocols (bgp | ospf | ospf3);
```

Hierarchy Level

```
edit tenants tenant-name routing-instances instance_name
```

Release Information
Statement introduced in Junos OS Release 18.3R1.

Description
Specify the types of routing protocol traffic that can reach a tenant system supported device.

Options
Tenant system supports the following routing protocols:

bgp—Enable incoming BGP traffic.

ospf—Enable incoming OSPF traffic.

ospf3—Enable incoming OSPF version 3 traffic.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Tenant Systems Overview | 495

purging

Syntax

```
purging;
```

Hierarchy Level

```
[edit system arp]
```

Release Information
Statement introduced in Junos OS Release 9.6.

Description
Purge obsolete ARP entries from the cache when an interface or link goes offline.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

root-authentication

Syntax

```
root-authentication {
    encrypted-password "password";
    no-public-keys
    ssh-ecdsa name {
        from from;
    }
    ssh-ed25519 name {
        from from;
    }
    ssh-rsa name {
        from from;
    }
}
```

Hierarchy Level

```
[edit system]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 8.5 for SRX Series.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

Configure the authentication methods for the root-level user, whose username is **root**.

You can use the **ssh-ecdsa**, **ssh-ed25519**, or **ssh-rsa** statements to directly configure SSH ECDSA, ED25519, or RSA keys to authenticate root logins. You can configure more than one public key for SSH authentication of root logins as well as for user accounts. When a user logs in as root, the public keys are referenced to determine whether the private key matches any of them.

Options

encrypted-password "*password*"—Specify the MD5 or other password. You can specify only one encrypted password. You cannot configure a blank password using blank quotation marks (" "). You must configure a password whose number of characters range from 1 through 128 characters and enclose the password in quotation marks.

no-public-keys—Disable SSH public key-based authentication.

ssh-ecdsa *name* from *from*—Use an SSH ECDSA public key. You can specify one or more public keys.

ssh-ed25519 *name* from *from*—Use an SSH ED25519 public key. You can specify one or more public keys.

ssh-rsa *name* from *from*—Use an SSH RSA public key. You can specify one or more public keys.

Required Privilege Level
admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *class (Defining Login Classes)*
>
> *user (Access)*

root-logical-system

Syntax

```
root-logical-system;
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information
Statement introduced in Junos OS Release 11.2.

Description
Specify root-logical-system to bind the security profile to the master logical system.

The master administrator uses security profiles to provision logical systems with resources. The security profile containing this statement must be bound to root-logical-system only.

Only the master administrator can create security profiles and bind them to logical systems.

Options
none

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

secure-wire (System Security Profile)

Syntax

```
secure-wire {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 19.3R1.

Description

Specify maximum and reserved quota of a user logical system. If the user logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if the resources are available—that is, if they are not allocated to other user logical systems.

Options

maximum—A maximum allowed quota of a user logical system.

Range: 0 through 255

reserved—A reserved quota of a user logical system.

Default: 0

Required Privilege Level

admin

RELATED DOCUMENTATION

Secure Wire for Logical Systems | 222

scheduler (System Security Profile)

Syntax

```
scheduler {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the number of schedulers that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 64

reserved—A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems for SRX Series Services Gateways | 29

screen (Security)

Syntax

```
screen {
    ids-option name {
        aggregation {
            destination-prefix-mask destination-prefix-mask;
            destination-prefix-v6-mask destination-prefix-v6-mask;
            source-prefix-mask source-prefix-mask;
            source-prefix-v6-mask source-prefix-v6-mask;
        }
        alarm-without-drop;
        description (Security Screen) description;
        icmp (Security Screen) {
            flood (Security ICMP) <threshold ICMP packets per second>;
            fragment;
            icmpv6-malformed;
            ip-sweep <threshold microseconds in which 10 ICMP packets are detected>;
            large;
            ping-death;
        }
        ip (Security Screen) {
            bad-option;
            block-frag;
            ipv6-extension-header {
                AH-header;
                destination-header {
                    home-address-option;
                    ILNP-nonce-option;
                    line-identification-option;
                    tunnel-encapsulation-limit-option;
                    user-defined-option-type name {
                        to type-high;
                    }
                }
                ESP-header;
                fragment-header;
                HIP-header;
                hop-by-hop-header {
                    CALIPSO-option;
                    jumbo-payload-option;
                    quick-start-option;
                    router-alert-option;
```

```
        RPL-option;
        SMF-DPD-option;
        user-defined-option-type name {
            to type-high;
        }
    }
    mobility-header;
    no-next-header;
    routing-header;
    shim6-header;
    user-defined-header-type name {
        to type-high;
    }
}
ipv6-extension-header-limit ipv6-extension-header-limit;
ipv6-malformed-header;
loose-source-route-option;
record-route-option;
security-option;
source-route-option;
spoofing;
stream-option;
strict-source-route-option;
tear-drop;
timestamp-option;
```

```
    tunnel (Security Screen) {
        bad-inner-header;
        gre {
            gre-4in4;
            gre-4in6;
            gre-6in4;
            gre-6in6;
        }
        ip-in-udp {
            teredo;
        }
        ipip {
            dslite;
            ipip-4in4;
            ipip-4in6;
            ipip-6in4;
            ipip-6in6;
            ipip-6over4;
            ipip-6to4relay;
            isatap;
        }
    }
    unknown-protocol;
}
```

```
limit-session {
    by-destination {
        by-protocol {
            icmp {
                maximum-sessions maximum-sessions;
                packet-rate packet-rate;
                session-rate session-rate;
            }
            tcp {
                maximum-sessions maximum-sessions;
                packet-rate packet-rate;
                session-rate session-rate;
            }
            udp {
                maximum-sessions maximum-sessions;
                packet-rate packet-rate;
                session-rate session-rate;
            }
        }
        maximum-sessions maximum-sessions;
        packet-rate packet-rate;
        session-rate session-rate;
    }
    by-source {
        by-protocol {
            icmp {
                maximum-sessions maximum-sessions;
                packet-rate packet-rate;
                session-rate session-rate;
            }
            tcp {
                maximum-sessions maximum-sessions;
                packet-rate packet-rate;
                session-rate session-rate;
            }
            udp {
                maximum-sessions maximum-sessions;
                packet-rate packet-rate;
                session-rate session-rate;
            }
        }
        maximum-sessions maximum-sessions;
        packet-rate packet-rate;
        session-rate session-rate;
```

```
        }
        destination-ip-based destination-ip-based;
        source-ip-based source-ip-based;
    }
    match-direction (input | input-output | output);
    tcp (Security Screen) {
        fin-no-ack;
        land;
        port-scan <threshold microseconds in which 10 attack packets are detected>;
        syn-ack-ack-proxy <threshold un-authenticated connections>;
        syn-fin;
        syn-flood {
            alarm-threshold requests per second;
            attack-threshold proxied requests per second;
            destination-threshold SYN pps;
            source-threshold SYN pps;
            timeout (Security Screen) seconds;
            white-list name {
                destination-address [ destination-address ... ];
                source-address [ source-address ... ];
            }
        }
        syn-frag;
        tcp-no-flag;
        tcp-sweep <threshold microseconds in which 10 TCP packets are detected>;
        winnuke;
    }
    udp (Security Screen) {
        flood (Security UDP) {
            threshold UDP packets per second;
            white-list [ white-list ... ];
        }
        port-scan <threshold microseconds in which 10 attack packets are detected>;
        udp-sweep <threshold microseconds in which 10 UDP packets are detected>;
    }
}
traceoptions (Security Screen) {
    file <filename> <files files> <match match> <size size> <(world-readable | no-world-readable)>;
    flag name;
    no-remote-trace;
}
trap <interval seconds>;
```

```
    white-list name {
        address [ address ... ];
    }
}
```

Hierarchy Level

```
[edit security]
[edit tenant tenant-name security]
```

Release Information

Statement introduced in Junos OS Release 8.5.
The **description** option added in Junos OS Release 12.1.
The **tenant** option is introduced in Junos OS Release 18.3R1.

Description

Configure the security screen options. For every security zone, you can enable a set of predefined screen options that detect and block various kinds of traffic that the device determines as potentially harmful.

Options

ids-options *screen-name*—Name of the screen configured at the **security screen ids-options** level. Define screens for the intrusion detection service (IDS).

trap—Configure trap interval. Enable or disable the sending of Simple Network Management Protocol (SNMP) notifications when the state of the connection changes. Traps are unsolicited messages sent from an SNMP agent to remote network management systems or trap receivers.

white-list—Set of IP addresses for white list. Configure a whitelist of IP addresses that are to be exempt from the SYN cookie and SYN proxy mechanisms that occur during the SYN flood screen protection process. A whitelist contains known trusted IP addresses and URLs. Content downloaded from locations on the whitelist does not have to be inspected for malware.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Attack Detection and Prevention Overview

security-profile

Syntax

```
security-profile {
    profile name {
        address-book (System) {
            maximum maximum;
            reserved reserved;
        }
        advanced-anti-malware-policy {
            maximum maximum;
            reserved reserved;
        }
        auth-entry {
            maximum maximum;
            reserved reserved;
        }
        cpu {
            reserved percent;
        }
        dslite-softwire-initiator {
            maximum maximum;
            reserved reserved;
        }
        flow-gate {
            maximum maximum;
            reserved reserved;
        }
        flow-session {
            maximum maximum;
            reserved reserved;
        }
        icap-redirect-profile {
            maximum maximum;
            reserved reserved;
        }
        idp-policy idp-policy;
        logical-system (System Security Profile) logical-system;
        nat-cone-binding {
            maximum maximum;
            reserved reserved;
        }
        nat-destination-pool {
```

```
    maximum maximum;
    reserved reserved;
}
nat-destination-rule {
    maximum maximum;
    reserved reserved;
}
nat-interface-port-ol (System) {
    maximum maximum;
    reserved reserved;
}
nat-nopat-address {
    maximum maximum;
    reserved reserved;
}
nat-pat-address {
    maximum maximum;
    reserved reserved;
}
nat-pat-portnum {
    maximum maximum;
    reserved reserved;
}
nat-port-ol-ipnumber {
    maximum maximum;
    reserved reserved;
}
nat-rule-referenced-prefix (System) {
    maximum maximum;
    reserved reserved;
}
nat-source-pool {
    maximum maximum;
    reserved reserved;
}
nat-source-rule {
    maximum maximum;
    reserved reserved;
}
nat-static-rule {
    maximum maximum;
    reserved reserved;
}
```

```
        policy (System Security Profile) {
            maximum maximum;
            reserved reserved;
        }
        policy-with-count {
            maximum maximum;
            reserved reserved;
        }
        root-logical-system;
        scheduler (System Security Profile) {
            maximum maximum;
            reserved reserved;
        }
        secintel-policy {
            maximum maximum;
            reserved reserved;
        }
        secure-wire {
            maximum maximum;
            reserved reserved;
        }
        security-log-stream-number {
            maximum maximum;
            reserved reserved;
        }
        tenant tenant;
        user-auth-entry {
            maximum maximum;
            reserved reserved;
        }
        vrf-group {
            maximum maximum;
            reserved reserved;
        }
        zone (System Security Profile) {
            maximum maximum;
            reserved reserved;
        }
    }
    resources {
        cpu-control;
        cpu-control-target percent;
    }
}
```

Hierarchy Level

```
[edit system]
[edit tenants <tenant-name>]
```

Release Information

Statement introduced in Junos OS Release 11.2.
The **dslite-softwire-initiator** option introduced in Junos OS Release 12.1.
The **security-profile** option added under the **tenants** hierarchy in Junos OS Release 18.3R1.
The icap redirect profile option is introduced in Junos OS Release 18.3R1.
secure-wire option introduced in Junos OS Release 19.3R1.

Description

Create a security profile and specify the kinds and amounts of resources to allocate to a logical system to which the security profile is bound.

As a master administrator, you can create a security profile and bind it to more than one logical system if you want to allocate the same kinds and amounts of resources to them. For details on how many security profiles you can create, see "Understanding Logical Systems Security Profiles (Master Administrators Only)" on page 88. When you reach the limit, you must delete a security profile and commit the configuration before you can create and commit the configuration for another security profile.

Only the master administrator can create security profiles.

Options

profile-name—Name of the security profile.

resources—Name of the resources.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

security-profile-resources

Syntax

```
security-profile-resources {
    cpu-control;
    cpu-control-target percent;
}
```

Hierarchy Level

```
[edit system]
```

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Configure global settings that apply to all logical systems in the device.

Options

cpu-control—Enable CPU utilization control.

cpu-control-target *percent*—Specify the upper limit for CPU utilization on the device under normal operating conditions.

Range: 0 through 100 percent (decimal point allowed).

Default: 80 percent.

> **NOTE:** The **cpu-control** option must be specified for the **cpu-control-target** value to take effect.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Logical Systems Security Profiles (Master Administrators Only) | 88

Example: Configuring Logical Systems Security Profiles (Master Administrators Only) | 94

stream (Logical Systems and Tenant Systems)

Syntax

```
stream name {
    category name;
    filter name;
    host (Security Log) {
        ipaddr;
        port port;
        routing-instance routing-instance;
    }
    rate-limit rate;
}
```

Hierarchy Level

```
[edit logical-systems name security log]
[edit tenants name security log]
```

Release Information

Statement introduced in Junos OS Release 18.2R1 for logical Systems.
Statement introduced in Junos OS Release 18.3R1 for tenant Systems.
The **routing-instance** option introduced in Junos OS Release 18.3R1 for tenant systems.

Description

Define security log stream options for a logical and tenant system. When the logging mode is set to **stream**, security logs generated in the data plane are streamed out a revenue traffic port directly to a remote server. All the categories can be configured for sending specific category logs to different log servers for stream mode log forwarding.

Options

category—Type of logged events.

Values:

- aamw—AAMW events are logged.
- alg—Alg events are logged.
- all—All events are logged.
- appqos—Appqos events are logged.
- content-security—Content security events are logged.
- flow—Flow events are logged.

- fw-auth—Fw-auth events are logged.
- gtp—Gtp events are logged.
- idp—Idp events are logged.
- ipsec—Ipsec events are logged.
- nat—Nat events are logged.
- pst-ds-lite—Pst-ds-lite events are logged.
- rtlog—Rtlog events are logged.
- screen—Screen events are logged.
- sctp—Sctp events are logged.
- secintel—Secintel events are logged.

filter—Selects the filter to filter the logs to be logged.

Values:

- **threat-attack** — Threat attack security events are logged.

host—Destination to send security logs.

- *ip-address*—Specify IP address of the host.
- **port** *port-number*—Specify host port number.
- **routing-instance** *routing-instance*—Specify the routing instance.

rate-limit—Rate-limit for security logs.

Range: 1 through 65535

Default: 65535

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

logical-systems security log

softwires

Syntax

```
softwires {
    rule-set name {
        match-direction (input | output);
        rule name {
            then {
                v6rd v6rd;
            }
        }
    }
    softwire-name name {
        ipv4-prefix ipv4-prefix;
        mtu-v4 mtu-v4;
        softwire-concentrator softwire-concentrator;
        softwire-type (IPv4-in-IPv6 | v6rd);
        v6rd-prefix v6rd-prefix;
    }
    traceoptions (Security Softwires) {
        file <filename> <files files> <match match> <size size> <(world-readable | no-world-readable)>;
        flag name;
        no-remote-trace;
    }
}
```

Hierarchy Level

```
[edit logical-systems name security],
[edit security]
[edit services]
```

Release Information

Statement introduced before Junos OS Release 12.1.

Description

Configure softwires for IPv6 dual-stack lite (DS-Lite). DS-Lite allows migration to an IPv6 access network without changing end-user software. IPv4 users can continue to access IPv4 internet content using their current hardware, while IPv6 users are able to access IPv6 content.

Options

map-e—Name of the map-e rules configuration.

softwire-name—Name of the softwire configuration.

traceoptions—Traceoptions for Network Security DS-Lite.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

url

Syntax

```
url url;
```

Hierarchy Level

```
[edit security dynamic-address feed-server feed-server-name]
```

Release Information
Statement introduced in Junos OS Release 19.3R1.

Description
URL of the bundle file for feed server configuration. Use a browser to verify the URL validity. Examples of URLs are shown below:

- **example.url.com/my_file.tgz**
- **example.url.com/my_file.bundle**

Required Privilege Level
security

RELATED DOCUMENTATION

Dynamic Address Groups in Security Policies

web-filtering (Logical System Security Feature Profile)

Syntax

```
web-filtering {
    juniper-enhanced {
        profile name {
            base-filter base-filter;
            block-message {
                type custom-redirect-url;
                url url;
            }
            category name {
                action (block | log-and-permit | permit | quarantine);
                custom-message custom-message;
            }
            custom-block-message custom-block-message;
            default (block | log-and-permit | permit | quarantine);
            fallback-settings {
                default (block | log-and-permit);
                server-connectivity (block | log-and-permit);
                timeout (block | log-and-permit);
                too-many-requests (block | log-and-permit);
            }
            no-safe-search;
            quarantine-custom-message quarantine-custom-message;
            quarantine-message {
                type custom-redirect-url;
                url url;
            }
            site-reputation-action {
                fairly-safe (block | log-and-permit | permit | quarantine);
                harmful (block | log-and-permit | permit | quarantine);
                moderately-safe (block | log-and-permit | permit | quarantine);
                suspicious (block | log-and-permit | permit | quarantine);
                very-safe (block | log-and-permit | permit | quarantine);
            }
            timeout seconds;
        }
    }
    juniper-local {
        profile name {
            block-message {
                type custom-redirect-url;
```

```
            url url;
        }
        category name {
            action (block | log-and-permit | permit | quarantine);
            custom-message custom-message;
        }
        custom-block-message custom-block-message;
        default (block | log-and-permit | permit);
        fallback-settings {
            default (block | log-and-permit);
            server-connectivity (block | log-and-permit);
            timeout (block | log-and-permit);
            too-many-requests (block | log-and-permit);
        }
        quarantine-custom-message quarantine-custom-message;
        quarantine-message {
            type custom-redirect-url;
            url url;
        }
        timeout seconds;
    }
}
```

```
    websense-redirect {
        profile name {
            account account;
            block-message {
                type custom-redirect-url;
                url url;
            }
            category name {
                action (block | log-and-permit | permit | quarantine);
                custom-message custom-message;
            }
            custom-block-message custom-block-message;
            fallback-settings {
                default (block | log-and-permit);
                server-connectivity (block | log-and-permit);
                timeout (block | log-and-permit);
                too-many-requests (block | log-and-permit);
            }
            quarantine-custom-message quarantine-custom-message;
            quarantine-message {
                type custom-redirect-url;
                url url;
            }
            server {
                host host;
                port port;
                routing-instance routing-instance;
            }
            sockets sockets;
            timeout seconds;
        }
    }
}
```

Hierarchy Level

```
[edit logical-systems logical-systems-name security utm feature-profile]
[edit tenants tenant-name security utm feature-profile]
```

Release Information

Statement introduced in Junos OS Release 18.3R1.

Support for configuration in tenant systems introduced in Junos OS Release 19.2R1.

Description

Configures the UTM Web filtering feature for logical systems. The Web filtering allows you to manage Internet usage by preventing access to inappropriate Web content. The potential policies conflict check of the Web filtering feature is independent of the content filtering, antivirus, and antispam features. You can also configure the default UTM configuration for Web filtering feature profile. If you do not configure any option in the Web filtering feature profile, the values configured in the default UTM configuration are applied.

Options

juniper-enhanced—Enables Enhanced Web Filtering (EWF) on the device.

base-filter—A base filter is an object that contains a category-action pair for all categories defined in the category file.

block-message—Juniper enhanced block message settings.

category—Select a custom URL category list you created (custom objects) for filtering against.

custom-block-message—Enter a custom message to be sent when HTTP requests are blocked.

default—Specify an action for the profile, for requests that experience internal errors in the Web filtering module.

fallback-settings—Fallback settings helps the system how to handle errors.

no-safe-search— Do not perform safe-search for Juniper enhanced protocol. Safe-search redirect supports HTTP only. Therefore it is not possible to generate a redirect response for HTTPS search URLs. Safe-search redirects can be disabled by using the CLI option **no-safe-search**.

quarantine-custom-message—Juniper enhanced quarantine custom message.

quarantine-message—Juniper enhanced quarantine message settings.

server—Set server parameters by entering the server name or IP address.

site-reputation-action—Specify the action to be taken depending on the site reputation returned for all types of URLs whether it is categorized or uncategorized.

timeout—Enter a timeout limit for requests. Once this limit is reached, fail mode settings are applied.
Range: 1 through 1800

juniper-local—Enables Juniper Networks local URL filtering on the device.

block-message—Juniper local block message settings.

websense-redirect—Web filtering websense redirect engine. Websense occasionally releases new EWF categories. EWF classifies websites into categories according to host, URL, or IP address and performs filtering based on the categories.

type—Type of Web filtering solution or URL filtering solution used by the device.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Unified Threat Management Overview

utm default-configuration

zone (System Security Profile)

Syntax

```
zone {
    maximum maximum;
    reserved reserved;
}
```

Hierarchy Level

```
[edit system security-profile]
```

Release Information

Statement introduced in Junos OS Release 11.2.

Description

Specify the zones that user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems.

The master administrator:

- uses security profiles to provision logical systems with resources.
- binds security profiles to user logical systems and the master logical system.
- can configure more than one security profile, specifying different amounts of resource allocations in various profiles.

Only the master administrator can create security profiles and bind them to logical systems.

Options

maximum—A maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Range: 0 through 4000

reserved—A reserved quota that guarantees that the resource amount specified is always available to the logical system.

Default: 0

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

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5

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clear class-of-service application-traffic-control counter

Syntax

```
clear class-of-service application-traffic-control counter
<all-logical-systems-tenants>
<logical-system logical-system-name>
<node>
<root-logical-system>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 19.3R1.

Description

Clears the application traffic control counters.

Options

all-logical-systems-tenants—(Optional) Clears the application traffic control counters of logical systems and tenant systems.

logical-system *logical-system-name*—(Optional) Clears the application traffic control counters of a specified logical system.

node—(Optional) Clears the application traffic control counters of a specified node.

root-logical-system—(Optional) Clears the application traffic control counters of the root logical-system (default).

tenant *tenant-name*—(Optional) Clears the application traffic control counters of a specified tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show class-of-service application-traffic-control counter

List of Sample Output

clear class-of-service application-traffic-control counter on page 827

Output Fields

This command produces no output.

Sample Output

clear class-of-service application-traffic-control counter

```
user@host>clear class-of-service application-traffic-control counter
```

clear class-of-service application-traffic-control rate-limiters

Syntax

```
clear class-of-service application-traffic-control rate-limiters
```

Release Information

Command introduced in Junos OS Release 11.4.

Description

Clears the application traffic control rate limiters information.

Required Privilege Level

clear

RELATED DOCUMENTATION

show class-of-service application-traffic-control rate-limiters | 867

List of Sample Output

clear class-of-service application-traffic-control rate-limiters on page 828

Output Fields

This command produces no output.

Sample Output

clear class-of-service application-traffic-control rate-limiters

```
user@host>clear class-of-service application-traffic-control rate-limiters
```

clear class-of-service application-traffic-control statistics rule

Syntax

```
clear class-of-service application-traffic-control statistics rule
<all-logical-systems-tenants>
<logical-system logical-system-name>
<node>
<root-logical-system>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 19.3R1.

Description

Clears the application traffic control rule hit statistics. AppQoS counters identifying rule hits.

Options

all-logical-systems-tenants— Clears the application traffic control rule hit statistics of logical systems and tenant systems.

logical-system *logical-system-name*—(Optional) Clears the application traffic control rule hit statistics of a specified logical-system.

node—(Optional) Clears the application traffic control rule hit statistics of a specified node.

root-logical-system—(Optional) Clears the application traffic control rule hit statistics of the root logical system (default).

tenant *tenant-name*—(Optional) Clears the application traffic control rule hit statistics of a specified tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show class-of-service application-traffic-control statistics rule

List of Sample Output

clear class-of-service application-traffic-control statistics rule on page 830

Output Fields

This command produces no output.

Sample Output

clear class-of-service application-traffic-control statistics rule

```
user@host> clear class-of-service application-traffic-control statistics rule
```

clear security application-firewall rule-set statistics logical-system

Syntax

The master, or root, administrator can issue the following statements:

```
clear security application-firewall rule-set statistics [logical-system logical-system-name | all | root-logical-system]
```

The user logical system administrator can issue the following statement:

```
clear security application-firewall rule-set statistics all
```

Release Information

Command introduced in Junos OS Release 11.4.

Description

Clear all security application firewall rule set statistics.

> **NOTE:** User logical system administrators can clear statistics only for the logical systems they can access. For information about master and user administrator roles in logical systems, see "Understanding the Master Logical Systems and the Master Administrator Role" on page 45.

Starting in Junos OS Release 18.2R1 application firewall (AppFW) functionality is deprecated. As a part of this change, the **[edit security application-firewall]** hierarchy and all the configuration options under this hierarchy are deprecated— rather than immediately removed—to provide backward compatibility and a chance to bring your configuration into compliance with the new configuration.

Options

logical-system-name—Name of a specific logical system.

all—(default) Clear all rule set statistics for a specific logical system or all logical systems.

root-logical-system—Clear application firewall rule set statistics on the root logical system (master administrator only).

Required Privilege Level

clear

RELATED DOCUMENTATION

show security application-firewall rule-set logical-system | 893

Output Fields

This command produces no output.

clear security dns-cache

Syntax

```
clear security dns-cache <dns-name dns-name>
```

Release Information

Command introduced in Junos OS Release 12.1X44-D10.

Description

Reset DNS cache information.

> **NOTE:** This command is only available to the master administrator on devices that are configured for logical systems. This command is not available in user logical systems or on devices that are not configured for logical systems.

Options

- **dns-name**—Clear DNS cache information for the specified name.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security dns-cache | 907

Understanding the Master Logical Systems and the Master Administrator Role | 45

clear security firewall-authentication users

Syntax

```
clear security firewall-authentication users
<node (node-id | all | local | primary)>
<address>
<identifier>
<logical-system (logical-system-name | all)>
<root-logical-system (address | auth-type | from-zone | identifier | tenant | to-zone>
<tenant (tenant-name |all)>
```

Release Information

Command introduced in Junos OS Release 8.5. The **node** options added in Junos OS Release 9.0. The **tenant** option introduced in Junos OS Release 18.3R1.

Description

Clear firewall authentication tables for all users.

Options

- **node**—(Optional) For chassis cluster configurations, clear firewall authentication details for all users on a specific node.
  - ***node-id*** —Identification number of the node. It can be 0 or 1.
  - **all** —Clear all nodes.
  - **local** —Clear the local node.
  - **primary**—Clear the primary node.
- address—Display authentication entries based on ip address.
- identifier—Display authentication entries by id.
- logical-system—Display firewall authentication tables based on logical system name.
- **node**—(Optional) For chassis cluster configurations, display firewall authentication details for all users on a specific node.
  - *node-id*—Identification number of the node. It can be 0 or 1.
  - **all**—Display information about all nodes.
  - **local**—Display information about the local node.
  - **primary**—Display information about the primary node.
- root-logical-system—Display firewall authentication tables for root logical system.
- tenant—Display firewall authentication tables based on tenant name.

Required Privilege Level
clear

RELATED DOCUMENTATION

> *Firewall User Authentication Overview*
>
> show security firewall-authentication users | 919

List of Sample Output
clear security firewall-authentication users on page 835
clear security firewall-authentication users node 1 on page 835
clear security firewall-authentication users tenant all on page 836

Output Fields
When you enter this command, you are provided feedback on the status of your request.

This command produces no output.

Sample Output

clear security firewall-authentication users

```
user@host> clear security firewall-authentication users node 1

node0:
--------------------------------------------------------------------------
node1:
--------------------------------------------------------------------------
```

Sample Output

clear security firewall-authentication users node 1

```
user@host> clear security firewall-authentication users node 1

node1:
--------------------------------------------------------------------------
```

clear security firewall-authentication users tenant all

```
user@host> clear security firewall-authentication users tenant all
```

clear security firewall-authentication history

Syntax

```
clear security firewall-authentication history
<node (node-id | all | local | primary)>
<address>
<identifier>
<logical-system (logical-system-name | all)>
<root-logical-system (address | auth-type | from-zone | identifier | tenant | to-zone>
<tenant (tenant-name |all)>
```

Release Information

Command introduced in Junos OSRelease 8.5. The **node** options added in Junos OS Release 9.0. The **tenant** option introduced in Junos OS Release 18.3R1.

Description

Clear all firewall authentication history information.

Options

- **node**—(Optional) For chassis cluster configurations, clear all firewall authentication history on a specific node (device) in the cluster.
  - ***node-id*** —Identification number of the node. It can be 0 or 1.
  - **all** —Clear all nodes.
  - **local** —Clear the local node.
  - **primary**—Clear the primary node.
- address—Display authentication entries based on ip address.
- identifier—Display authentication entries by id.
- logical-system—Display firewall authentication tables based on logical system name.
- **node**—(Optional) For chassis cluster configurations, display firewall authentication details for all users on a specific node.
  - *node-id*—Identification number of the node. It can be 0 or 1.
  - **all**—Display information about all nodes.
  - **local**—Display information about the local node.
  - **primary**—Display information about the primary node.
- root-logical-system—Display firewall authentication tables for root logical system.
- tenant—Display firewall authentication tables based on tenant name.

Required Privilege Level

clear

RELATED DOCUMENTATION

> *Firewall User Authentication Overview*
>
> show security firewall-authentication history | **916**

List of Sample Output

clear security firewall-authentication history on page 838
clear security firewall-authentication history node 1 on page 838
clear security firewall-authentication history tenant all on page 839

Output Fields

When you enter this command, you are provided feedback on the status of your request.

This command produces no output.

Sample Output

clear security firewall-authentication history

```
user@host> clear security firewall-authentication history

node0:
--------------------------------------------------------------------------
node1:
--------------------------------------------------------------------------
```

Sample Output

clear security firewall-authentication history node 1

```
user@host> clear security firewall-authentication history node 1

node1:
--------------------------------------------------------------------------
```

clear security firewall-authentication history tenant all

```
user@host> clear security firewall-authentication history tenant all
```

clear security idp attack table

Syntax

```
clear security idp attack table
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Clears the details of the IDP attack table.

Options

none—Clears the details of the IDP attack table.

logical-system *logical-system-name*—(Optional) Clears the details of the IDP attack table for a specific logical system.

logical-system all—(Optional) Clears the details of the IDP attack table for all logical systems.

tenant *tenant-name*—(Optional) Clears the details of the IDP attack table for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp attack table | 937

Output Fields

This command produces no output.

clear security idp counters ips

Syntax

```
clear security idp counters ips
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the IPS counter values.

Options

none—Resets all the IPS counter values.

logical-system *logical-system-name*—(Optional) Resets all the IPS counter values for a specific logical system.

logical-system all—(Optional) Resets all the IPS counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the IPS counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

ips

show security idp counters ips | 965

Output Fields

This command produces no output.

clear security idp counters pdf-decoder

Syntax

```
clear security idp counters pdf-decoder
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the PDF-Decoder enabled sessions.

Options

none—Resets all the PDF-Decoder enabled sessions.

logical-system *logical-system-name*—(Optional) Resets all the PDF-Decoder enabled sessions for a specific logical system.

logical-system all—(Optional) Resets all the PDF-Decoder enabled sessions for all logical systems.

tenant *tenant-name*—(Optional) Resets all the PDF-Decoder enabled sessions for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters pdf-decoder | 955

Output Fields

This command produces no output.

clear security idp counters ssl-inspection

Syntax

```
clear security idp counters ssl-inspection
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the session encryption and decryption values for IDP counters.

Options

none—Resets all the session encryption and decryption values for IDP counters.

logical-system *logical-system-name*—(Optional) Resets all the session encryption and decryption values for IDP counters for a specific logical system.

logical-system all—(Optional) Resets all the session encryption and decryption values for IDP counters for all logical systems.

tenant *tenant-name*—(Optional) Resets all the session encryption and decryption values for IDP counters for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters ssl-inspection | 951

Output Fields

This command produces no output.

clear security idp counters memory

Syntax

```
clear security idp counters memory
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the memory allocation and reallocation counter values.

Options

none—Resets all the memory allocation and reallocation counter values.

logical-system *logical-system-name*—(Optional) Resets all the memory allocation and reallocation counter values for a specific logical system.

logical-system all—(Optional) Resets all the memory allocation and reallocation counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the memory allocation and reallocation counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters memory | 948

Output Fields

This command produces no output.

clear security idp counters memory

Syntax

```
clear security idp counters memory
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the memory allocation and reallocation counter values.

Options

none—Resets all the memory allocation and reallocation counter values.

logical-system *logical-system-name*—(Optional) Resets all the memory allocation and reallocation counter values for a specific logical system.

logical-system all—(Optional) Resets all the memory allocation and reallocation counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the memory allocation and reallocation counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters memory | 948

Output Fields

This command produces no output.

clear security idp counters tcp-reassembler

Syntax

```
clear security idp counters tcp-reassembler
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the TCP reassembler counter values.

Options

none—Resets all the TCP reassembler counter values.

logical-system *logical-system-name*—(Optional) Resets all the TCP reassembler counter values for a specific logical system.

logical-system all—(Optional) Resets all the TCP reassembler counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the TCP reassembler counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

re-assembler

show security idp counters tcp-reassembler | **1001**

Output Fields

This command produces no output.

clear security idp counters application-identification

Syntax

```
clear security idp counters application-identification
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the application identification counter values.

Options

none—Resets all the application identification counter values.

logical-system *logical-system-name*—(Optional) Resets all the application identification counter values for a specific logical system.

logical-system all—(Optional) Resets all the application identification counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the application identification counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

application-identification

show security idp counters application-identification | 942

Output Fields

This command produces no output.

clear security idp counters action

Syntax

```
clear security idp counters action
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the action counter values.

Options

none—Resets all the action counter values.

logical-system *logical-system-name*—(Optional) Resets all the action counter values for a specific logical system.

logical-system all—(Optional) Resets all the action counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the action counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters action | 939

Output Fields

This command produces no output.

clear security idp counters dfa

Syntax

```
clear security idp counters dfa
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the DFA counter values.

Options

none—Resets all the DFA counter values.

logical-system *logical-system-name*—(Optional) Resets all the DFA counter values for a specific logical system.

logical-system all—(Optional) Resets all the DFA counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the DFA counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters dfa | 971

Output Fields

This command produces no output.

clear security idp counters flow

Syntax

```
clear security idp counters flow
clear security idp counters flow logical-system logical-system
```

Release Information

Command introduced in Junos OS Release 9.2.
Command introduced for user logical systems in Junos OS Release 18.3R1.

Description

Reset all the IDP flow-related counter values.

Required Privilege Level

clear

RELATED DOCUMENTATION

flow (Security IDP)

show security idp counters flow | 974

Output Fields

This command produces no output.

clear security idp counters log

Syntax

```
clear security idp counters log
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the IDP log counter values.

Options

none—Resets all the IDP log counter values.

logical-system *logical-system-name*—(Optional) Resets all the IDP log counter values for a specific logical system.

logical-system all—(Optional) Resets all the IDP log counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the IDP log counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

event-rate

show security idp counters log | **958**

Output Fields

This command produces no output.

clear security idp counters http-decoder

Syntax

```
clear security idp counters http-decoder
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 11.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the HTTP decoder counter values.

Options

none—Resets all the HTTP decoder counter values.

logical-system *logical-system-name*—(Optional) Resets all the HTTP decoder counter values for a specific logical system.

logical-system all—(Optional) Resets all the HTTP decoder counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the HTTP decoder counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters http-decoder | 986

Output Fields

This command produces no output.

clear security idp counters packet-log

Syntax

```
clear security idp counters packet-log
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the IDP counters value for packet log.

Options

none—Resets all the IDP counters value for packet log.

logical-system *logical-system-name*—(Optional) Resets all the IDP counters value for packet log for a specific logical system.

logical-system all—(Optional) Resets all the IDP counters value for packet log for all logical systems.

tenant *tenant-name*—(Optional) Resets all the IDP counters value for packet log for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters packet-log | 989

Output Fields

This command produces no output.

clear security idp counters packet

Syntax

```
clear security idp counters packet
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the IDP packet counter values.

Options

none—Resets all the IDP packet counter values.

logical-system *logical-system-name*—(Optional) Resets all the IDP packet counter values for a specific logical system.

logical-system all—(Optional) Resets all the IDP packet counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the IDP packet counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters packet | 992

Output Fields

This command produces no output.

clear security idp counters policy-manager

Syntax

```
clear security idp counters policy-manager
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Resets all the IDP policies counter values.

Options

none—Resets all the IDP policies counter values.

logical-system *logical-system-name*—(Optional) Resets all the IDP policies counter values for a specific logical system.

logical-system all—(Optional) Resets all the IDP policies counter values for all logical systems.

tenant *tenant-name*—(Optional) Resets all the IDP policies counter values for a specific tenant system.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security idp counters policy-manager | 999

Output Fields

This command produces no output.

clear security flow session tenant

Syntax

```
clear security flow session tenant (tenant-name| all)
```

Release Information

Command introduced in Junos OS Release 18.3R1.

Description

Clears the information about the currently active security flow sessions of the tenant systems on the device. You can either clear the currently active security flow sessions for a specific tenant system or for all the tenant systems.

Options

tenant-name—Name of the tenant system.

all—Clears the security flow session information for all the tenant systems.

Required Privilege Level

clear

RELATED DOCUMENTATION

show security flow session tenant | 933

List of Sample Output

clear security flow session tenant T1 on page 856
clear security flow session tenant all on page 857

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear security flow session tenant T1

```
user@host> clear security flow session tenant T1
```

```
0 active sessions cleared
1 active sessions cleared
0 active sessions cleared
0 active sessions cleared
```

clear security flow session tenant all

user@host> **clear security flow session tenant all**

```
0 active sessions cleared
2 active sessions cleared
0 active sessions cleared
0 active sessions cleared
```

clear services user-identification logical-domain-identity-management counters

Syntax

```
clear services user-identification logical-domain-identity-management counters
```

Release Information

Command introduced in Junos OS Release 19.3R1.

Description

Clears logical domain identity management information.

Options

counters—Clears logical domain identity management query counters.

Required Privilege Level

clear

RELATED DOCUMENTATION

show services user-identification logical-domain-identity-management | 1139

List of Sample Output

clear services user-identification logical-domain-identity-management counters on page 858

Sample Output

clear services user-identification logical-domain-identity-management counters

`user@host>` **clear services user-identification logical-domain-identity-management counters**

```
node0:
--------------------------------------------------------------------------
warning: "There is no logical-domain-identity-management."
```

request security datapath-debug capture start

Syntax

```
request security datapath-debug capture start
```

Release Information

Command introduced in Junos OS Release 10.0.

Description

Start the data path debugging capture.

> **NOTE:** Data path debugging is supported on SRX1400, SRX3400, SRX3600, SRX5400, SRX5600, and SRX5800.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Understanding Data Path Debugging for Logical Systems | 484

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security datapath-debug capture start

`user@host>` **request security datapath-debug capture start**

```
datapath-debug capture started on file
```

request security datapath-debug capture stop

Syntax

```
request security datapath-debug capture stop
```

Release Information

Command introduced in Junos OS Release 10.0.

Description

Stop the data path debugging capture.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Understanding Data Path Debugging for Logical Systems | 484

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security datapath-debug capture stop

```
user@host> request security datapath-debug capture stop

datapath-debug capture successfully stopped, use show security datapath-debug
capture to view
```

set chassis cluster cluster-id node node-number reboot

Syntax

```
set chassis cluster cluster-id cluster-id node  node-number reboot
```

Release Information

Support for extended cluster identifiers (more than 15 identifiers) added in Junos OS Release 12.1X45-D10.

Description

Sets the chassis cluster identifier (ID) and node ID on each device, and reboots the devices to enable clustering. The system uses the chassis cluster ID and chassis cluster node ID to apply the correct configuration for each node (for example, when you use the **apply-groups** command to configure the chassis cluster management interface). The chassis cluster ID and node ID statements are written to the EPROM, and the statements take effect when the system is rebooted.

Setting a cluster ID to 0 is equivalent to disabling a cluster. A cluster ID greater than 15 can only be set when the fabric and control link interfaces are connected back-to-back.

> **NOTE:** If you have a cluster set up and running with an earlier release of Junos OS, you can upgrade to Junos OS Release 12.1X45-D10 or later and re-create a cluster with cluster IDs greater than 16. If for any reason you decide to revert to the previous version of Junos OS that did not support extended cluster IDs, the system comes up with standalone devices after you reboot. If the cluster ID set is less than 16 and you roll back to a previous release, the system comes back with the previous setup.

Options

cluster-id *cluster-id*—Identifies the cluster within the Layer 2 domain.

Range: 0 through 255

node *node*—Identifies a node within a cluster.

Range: 0 through 1

reboot—reboot the specified devices to configure the chassis cluster.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Example: Setting the Chassis Cluster Node ID and Cluster ID

Understanding the Interconnect Logical System and Logical Tunnel Interfaces | 35

Example: Configuring Logical Systems in an Active/Passive Chassis Cluster (Master Administrators Only) | 383

Disabling a Chassis Cluster

set chassis cluster disable reboot

Output Fields

When you enter this command, you are provided feedback on the status of your request.

show chassis cluster status

Syntax

```
show chassis cluster status
<redundancy-group  group-number >
```

Release Information

Support for monitoring failures added in Junos OS Release 12.1X47-D10.

Description

Display the current status of the Chassis Cluster. You can use this command to check the status of chassis cluster nodes, redundancy groups, and failover status.

Options

- none—Display the status of all redundancy groups in the chassis cluster.
- **redundancy-group *group-number***—(Optional) Display the status of the specified redundancy group.

Required Privilege Level

view

RELATED DOCUMENTATION

redundancy-group (Chassis Cluster)

clear chassis cluster failover-count

request chassis cluster failover node

request chassis cluster failover reset

List of Sample Output

show chassis cluster status on page 864
show chassis cluster status with preemptive delay on page 865
show chassis cluster status redundancy-group 1 on page 866

Output Fields

Table 44 on page 864 lists the output fields for the **show chassis cluster status** command. Output fields are listed in the approximate order in which they appear.

Table 44: show chassis cluster status Output Fields

Field Name	Field Description
Cluster ID	ID number (1-15) of a cluster is applicable for releases upto Junos OS Release 12.1X45-D10. ID number (1-255) is applicable for Releases 12.1X45-D10 and later. Setting a cluster ID to 0 is equivalent to disabling a cluster.
Redundancy-Group	You can create up to 128 redundancy groups in the chassis cluster.
Node name	Node (device) in the chassis cluster (**node0** or **node1**).
Priority	Assigned priority for the redundancy group on that node.
Status	State of the redundancy group (**Primary**, **Secondary**, **Lost**, or **Unavailable**). • **Primary**—Redundancy group is active and passing traffic. • **Secondary**—Redundancy group is passive and not passing traffic. • **Lost**—Node loses contact with the other node through the control link. Most likely to occur when both nodes are in a cluster and there is a control link failure, one node cannot exchange heartbeats, or when the other node is rebooted. • **Unavailable**—Node has not received a single heartbeat over the control link from the other node since the other node booted up. Most likely to occur when one node boots up before the other node, or if only one node is present in the cluster.
Preempt	• **Yes**: Primary state can be preempted based on priority. • **No**: Change in priority will not preempt the primary state.
Manual failover	• **Yes**: Primary state is set manually through the CLI with the **request chassis cluster failover node** or **request chassis cluster failover redundancy-group** command. This overrides **Priority** and **Preempt**. • **No**: Primary state is not set manually through the CLI.
Monitor-failures	• **None**: Cluster working properly. • **Monitor Failure code**: Cluster is not working properly and the respective failure code is displayed.

Sample Output

show chassis cluster status

```
user@host> show chassis cluster status
```

```
Monitor Failure codes:
  CS  Cold Sync monitoring        FL  Fabric Connection monitoring
    GR  GRES monitoring             HW  Hardware monitoring
    IF  Interface monitoring        IP  IP monitoring
    LB  Loopback monitoring         MB  Mbuf monitoring
    NH  Nexthop monitoring          NP  NPC monitoring
    SP  SPU monitoring              SM  Schedule monitoring
    CF  Config Sync monitoring

Cluster ID: 1
Node   Priority Status         Preempt Manual   Monitor-failures

Redundancy group: 0 , Failover count: 1
node0  200      primary        no      no       None
node1  1        secondary      no      no       None

Redundancy group: 1 , Failover count: 1
node0  101      primary        no      no       None
node1  1        secondary      no      no       None
```

Sample Output

show chassis cluster status with preemptive delay

user@host> **show chassis cluster status**

```
Cluster ID: 1
Node   Priority Status         Preempt Manual   Monitor-failures
Redundancy group: 0, Failover count: 1
node0  200      primary        no      no       None
node1  100      secondary      no      no       None
Redundancy group: 1, Failover count: 3
node0 200    primary-preempt-hold    yes   no    None node1  100      secondary
        yes     no       None
```

Sample Output

show chassis cluster status redundancy-group 1

user@host> **show chassis cluster status redundancy-group 1**

```
Monitor Failure codes:
    CS  Cold Sync monitoring        FL  Fabric Connection monitoring
    GR  GRES monitoring             HW  Hardware monitoring
    IF  Interface monitoring        IP  IP monitoring
    LB  Loopback monitoring         MB  Mbuf monitoring
    NH  Nexthop monitoring          NP  NPC monitoring
    SP  SPU monitoring              SM  Schedule monitoring
    CF  Config Sync monitoring

Cluster ID: 1
Node   Priority Status         Preempt Manual   Monitor-failures

Redundancy group: 1 , Failover count: 1
node0  101      primary        no      no       None
node1  1        secondary      no      no       None
```

show class-of-service application-traffic-control rate-limiters

Syntax

```
show class-of-service application-traffic-control rate-limiters (rl-all | rl-name | summary)
<all-logical-systems-tenants>
<logical-system (logical-system-name | all)>
<root-logical-system>
<tenant (tenant-name | all)>
```

Release Information

Command introduced in Junos OS Release 11.4.
all-logical-systems-tenants, **logical-system**, **root-logical-system**, and **tenant** options introduced in Junos OS Release 19.3R1.

Description

Displays the application traffic control rate limiters information.

Options

rl-all—(Optional) Displays all application traffic control rate limiters information.

rl-name—(Optional) Displays the application traffic control rate limiters information by name.

summary—(Optional) Displays the application traffic control rate limiters information summary.

all-logical-systems-tenants—(Optional) Displays application traffic control rate limiters information of all logical systems and tenant systems.

logical-system *logical-system-name*—(Optional) Displays application traffic control rate limiters information of a specified logical system.

logical-system all—(Optional) Displays application traffic control rate limiters information of all logical systems.

root-logical-system—(Optional) Displays application traffic control rate limiters information of the root logical system as default.

tenant *tenant-name*—(Optional) Displays application traffic control rate limiters information of a specified tenant system.

logical-system all—(Optional) Displays application traffic control rate limiters information of all tenant systems.

Additional Information

Required Privilege Level
view

RELATED DOCUMENTATION

clear class-of-service application-traffic-control rate-limiters | 828

List of Sample Output

show class-of-service application-traffic-control rate-limiters rl-all on page 870
show class-of-service application-traffic-control rate-limiters rl-name R1 on page 870
show class-of-service application-traffic-control rate-limiters rl-all all-logical-systems-tenants on page 871
show class-of-service application-traffic-control rate-limiters rl-all logical-system all on page 871
show class-of-service application-traffic-control rate-limiters rl-all tenant all on page 872
show class-of-service application-traffic-control rate-limiters rl-all tenant TSYS1 on page 872
show class-of-service application-traffic-control rate-limiters summary
all-logical-systems-tenants on page 872
show class-of-service application-traffic-control rate-limiters summary logical-system all on page 873
show class-of-service application-traffic-control rate-limiters summary tenant TSYS1 on page 874
show class-of-service application-traffic-control rate-limiters rl-all on page 875
show class-of-service application-traffic-control rate-limiters rl-name rt11 on page 875
show class-of-service application-traffic-control rate-limiters summary on page 875
show class-of-service application-traffic-control rate-limiters rl-all on page 876
show class-of-service application-traffic-control rate-limiters rl-name rt1 on page 876
show class-of-service application-traffic-control rate-limiters summary on page 877

Output Fields

Table 45 on page 868 lists the output fields for the **show class-of-service application-traffic-control rate-limiters** command. Output fields are listed in the approximate order in which they appear.

Table 45: show class-of-service application-traffic-control rate-limiters Output Fields

Field Name	Field Description
LSYS/Tenant	Name of the logical system or tenant system.
ID	ID of the rate limiter.
BW-Limit	The bandwidth of the rate limiter.
Burst-Limit	The burst limit of the rate limiter.
PerIP-Burst-Limit	Burst limit per IP.

Table 45: show class-of-service application-traffic-control rate-limiters Output Fields *(continued)*

Field Name	Field Description
Strict-BW-hit	Number of strict bandwidth hit.
Total Session processed	Total number of sessions processed.
Total PerIP_RLs used	Total number of rate limiters used per IP.
PerIP-RLs	Active rate limiters per IP.
Sessions	Number of active sessions.
Pkts-Trans	Number of packets transferred.
Pkts-Drop	Number of packets dropped.
Rate-Trans(bps)	Rate at which packets are transferred.
Rate-Drop(bps)	Rate at which packets are dropped.
Rate-LP(bps)	Rate at which packets with LP are dropped.
RL-Name	Name of the rate limiter
Counter type	Type of the counter.
Rate Limiters	Number of rate limiters.
Sessions Processed	Number of sessions processed.
PerIP RLimiters used	Number of rate limiters used per IP.
Active Sessions	Number of active sessions.
Active perIP RLimiters	Number of active rate limiters per IP.
Sessions discarded strict-bw	Number of sessions discarded based on strict bandwidth.
Sessions discarded no perIP	Number of sessions discarded per IP.
Sessions discarded no memory	Number of sessions discarded due to no memory.
Maximum Rate-Limiters	Number of maximum rate limiters.

Table 45: show class-of-service application-traffic-control rate-limiters Output Fields *(continued)*

Field Name	Field Description
Maximum perIP-RLimiters	Number of maximum rate limiters per IP.
Total Pkts Tx	Number of total packets transferred.
Total Pkts discarded	Number of total packets discarded.
Total Pkts high LP	Number of total high LP packets.
Rate Tx (bps)	Rate at which packets are transferred.
Rate Discard (bps)	Rate at which packets are dropped.
Rate LP (bps)	Rate at which packets with LP are dropped.

Sample Output

show class-of-service application-traffic-control rate-limiters rl-all

```
root@host> show class-of-service application-traffic-control rate-limiters rl-all
```

```
LSYS/Tenant ID   BW-Limit   PerIP-RLs Sessions Pkts-Trans Pkts-Drop Pkts-LP
Rate-Trans(bps) Rate-Drop(bps) Rate-LP(bps) RL-Name
root        3    1000       0         0        0          0         0       0
           0              0            R1
```

show class-of-service application-traffic-control rate-limiters rl-name R1

```
root@host> show class-of-service application-traffic-control rate-limiters rl-name R1
```

```
Logical System: root-logical-system
Counter type                              Value
Name                                      R1
BW-Mode                                   -
ID                                        3
BW-Limit                                  1000
Burst-Limit                               128000
PerIP-BW-Limit                            0
PerIP-Burst-Limit                         0
```

```
Strict-BW-hit                          0
Total Session processed                0
Total PerIP_RLs used                   0
Active-Sessions                        0
Active-PerIP-RL                        0
Total-Pkt-transmit                     0
Total-Pkt-Drop                         0
Total-Pkt-LP                           0
Total-Rate-Transmit(bps)               0
Total-Rate-Drop(bps)                   0
Total-Rate-LP(bps)                     0
RL-Pkt-transmit                        0
RL-Pkt-Drop                            0
RL-Pkt-LP                              0
RL-Rate-Transmit(bps)                  0
RL-Rate-Drop(bps)                      0
RL-Rate-LP(bps)                        0
```

show class-of-service application-traffic-control rate-limiters rl-all all-logical-systems-tenants

root@host> **show class-of-service application-traffic-control rate-limiters rl-all all-logical-systems-tenants**

```
LSYS/Tenant ID BW-Limit PerIP-RLs Sessions Pkts-Trans Pkts-Drop Pkts-LP
Rate-Trans(bps) Rate-Drop(bps)  Rate-LP(bps) RL-Name
root        3  1000     0         0        0          0         0        0
        0               0            R1
TSYS1       1  1000     0         0        0          0         0        0
        0               0            rt11
TSYS2       2  1500     0         0        0          0         0        0
        0               0            rt12
```

show class-of-service application-traffic-control rate-limiters rl-all logical-system all

root@host> **show class-of-service application-traffic-control rate-limiters rl-all logical-system all**

```
LSYS/Tenant ID  BW-Limit PerIP-RLs Sessions Pkts-Trans Pkts-Drop Pkts-LP
Rate-Trans(bps) Rate-Drop(bps) Rate-LP(bps) RL-Name
root        3   1000     0         0        0          0         0       0
        0              0            R1
```

show class-of-service application-traffic-control rate-limiters rl-all tenant all

root@host> **show class-of-service application-traffic-control rate-limiters rl-all tenant all**

```
LSYS/Tenant ID BW-Limit  PerIP-RLs Sessions Pkts-Trans Pkts-Drop Pkts-LP
Rate-Trans(bps) Rate-Drop(bps)  Rate-LP(bps) RL-Name
TSYS1         1  1000      0         0        0          0         0       0
          0              0            rt11
TSYS2         2  1500      0         0        0          0         0       0
          0              0            rt12
```

show class-of-service application-traffic-control rate-limiters rl-all tenant TSYS1

root@host> **show class-of-service application-traffic-control rate-limiters rl-all tenant *TSYS1***

```
LSYS/Tenant ID BW-Limit PerIP-RLs Sessions Pkts-Trans   Pkts-Drop  Pkts-LP
Rate-Trans(bps) Rate-Drop(bps) Rate-LP(bps) RL-Name
TSYS1       1  1000     0         0        0            0          0        0
           0              0            rt11
```

show class-of-service application-traffic-control rate-limiters summary all-logical-systems-tenants

root@host> **show class-of-service application-traffic-control rate-limiters summary all-logical-systems-tenants**

```
Logical System: root-logical-system
Counter type                            Value
Rate Limiters                           1
Sessions Processed                      0
PerIP RLimiters used                    0
Active Sessions                         0
Active perIP RLimiters                  0
Sessions discarded strict-bw            0
Sessions discarded no perIP             0
Sessions discarded no memory            0
Maximum Rate-Limiters                   1000
Maximum perIP-RLimiters                 24000
Total Pkts Tx                           0
Total Pkts discarded                    0
Total Pkts high LP                      0
Rate Tx (bps)                           0
Rate Discard (bps)                      0
Rate LP (bps)                           0
```

```
Logical System: TSYS1
Counter type                            Value
Rate Limiters                           1
Sessions Processed                      0
PerIP RLimiters used                    0
Active Sessions                         0
Active perIP RLimiters                  0
Sessions discarded strict-bw            0
Sessions discarded no perIP             0
Sessions discarded no memory            0
Maximum Rate-Limiters                   1000
Maximum perIP-RLimiters                 24000
Total Pkts Tx                           0
Total Pkts discarded                    0
Total Pkts high LP                      0
Rate Tx (bps)                           0
Rate Discard (bps)                      0
Rate LP (bps)                           0

Logical System: TSYS2
Counter type                            Value
Rate Limiters                           1
Sessions Processed                      0
PerIP RLimiters used                    0
Active Sessions                         0
Active perIP RLimiters                  0
Sessions discarded strict-bw            0
Sessions discarded no perIP             0
Sessions discarded no memory            0
Maximum Rate-Limiters                   1000
Maximum perIP-RLimiters                 24000
Total Pkts Tx                           0
Total Pkts discarded                    0
Total Pkts high LP                      0
Rate Tx (bps)                           0
Rate Discard (bps)                      0
Rate LP (bps)                           0
```

show class-of-service application-traffic-control rate-limiters summary logical-system all

```
root@host> show class-of-service application-traffic-control rate-limiters
summary logical-system all
```

```
Logical System: root-logical-system
Counter type                            Value
Rate Limiters                           1
Sessions Processed                      0
PerIP RLimiters used                    0
Active Sessions                         0
Active perIP RLimiters                  0
Sessions discarded strict-bw            0
Sessions discarded no perIP             0
Sessions discarded no memory            0
Maximum Rate-Limiters                   1000
Maximum perIP-RLimiters                 24000
Total Pkts Tx                           0
Total Pkts discarded                    0
Total Pkts high LP                      0
Rate Tx (bps)                           0
Rate Discard (bps)                      0
Rate LP (bps)                           0
```

show class-of-service application-traffic-control rate-limiters summary tenant TSYS1

`root@host>` **show class-of-service application-traffic-control rate-limiters summary tenant *TSYS1***

```
Logical System: TSYS1
Counter type                            Value
Rate Limiters                           1
Sessions Processed                      0
PerIP RLimiters used                    0
Active Sessions                         0
Active perIP RLimiters                  0
Sessions discarded strict-bw            0
Sessions discarded no perIP             0
Sessions discarded no memory            0
Maximum Rate-Limiters                   1000
Maximum perIP-RLimiters                 24000
Total Pkts Tx                           0
Total Pkts discarded                    0
Total Pkts high LP                      0
Rate Tx (bps)                           0
Rate Discard (bps)                      0
Rate LP (bps)                           0
```

show class-of-service application-traffic-control rate-limiters rl-all

```
root@host:TSYS1> show class-of-service application-traffic-control rate-limiters rl-all
```

```
LSYS/Tenant ID BW-Limit PerIP-RLs Sessions Pkts-Trans Pkts-Drop Pkts-LP
Rate-Trans(bps) Rate-Drop(bps) Rate-LP(bps) RL-Name
TSYS1         1  1000     0         0        0          0         0       0
         0               0           R1
```

show class-of-service application-traffic-control rate-limiters rl-name rt11

```
root@host:TSYS1> show class-of-service application-traffic-control rate-limiters rl-name rt11
```

```
Logical System: TSYS1
Counter type                            Value
Name                                    rt11
BW-Mode                                 -
ID                                      1
BW-Limit                                1000
Burst-Limit                             20000
PerIP-BW-Limit                          0
PerIP-Burst-Limit                       0
Strict-BW-hit                           0
Total Session processed                 0
Total PerIP_RLs used                    0
Active-Sessions                         0
Active-PerIP-RL                         0
Total-Pkt-transmit                      0
Total-Pkt-Drop                          0
Total-Pkt-LP                            0
Total-Rate-Transmit(bps)                0
Total-Rate-Drop(bps)                    0
Total-Rate-LP(bps)                      0
RL-Pkt-transmit                         0
RL-Pkt-Drop                             0
RL-Pkt-LP                               0
RL-Rate-Transmit(bps)                   0
RL-Rate-Drop(bps)                       0
RL-Rate-LP(bps)                         0
```

show class-of-service application-traffic-control rate-limiters summary

```
root@host:TSYS1> show class-of-service application-traffic-control rate-limiters summary
```

```
Logical System: TSYS1
Counter type                              Value
Rate Limiters                             1
Sessions Processed                        0
PerIP RLimiters used                      0
Active Sessions                           0
Active perIP RLimiters                    0
Sessions discarded strict-bw              0
Sessions discarded no perIP               0
Sessions discarded no memory              0
Maximum Rate-Limiters                     1000
Maximum perIP-RLimiters                   24000
Total Pkts Tx                             0
Total Pkts discarded                      0
Total Pkts high LP                        0
Rate Tx (bps)                             0
Rate Discard (bps)                        0
Rate LP (bps)                             0
```

show class-of-service application-traffic-control rate-limiters rl-all

root@host:LSYS1> **show class-of-service application-traffic-control rate-limiters rl-all**

```
LSYS/Tenant ID BW-Limit PerIP-RLs Sessions Pkts-Trans Pkts-Drop Pkts-LP
Rate-Trans(bps) Rate-Drop(bps) Rate-LP(bps) RL-Name
LSYS1       1  1000     0         0         0          0         0       0
       0              0            rt1
```

show class-of-service application-traffic-control rate-limiters rl-name rt1

root@host:LSYS1> **show class-of-service application-traffic-control rate-limiters rl-name *rt1***

```
Logical System: LSYS1
Counter type                              Value
Name                                      rt1
BW-Mode                                   -
ID                                        1
BW-Limit                                  1000
Burst-Limit                               128000
PerIP-BW-Limit                            0
PerIP-Burst-Limit                         0
Strict-BW-hit                             0
Total Session processed                   0
```

```
Total PerIP_RLs used                    0
Active-Sessions                         0
Active-PerIP-RL                         0
Total-Pkt-transmit                      0
Total-Pkt-Drop                          0
Total-Pkt-LP                            0
Total-Rate-Transmit(bps)                0
Total-Rate-Drop(bps)                    0
Total-Rate-LP(bps)                      0
RL-Pkt-transmit                         0
RL-Pkt-Drop                             0
RL-Pkt-LP                               0
RL-Rate-Transmit(bps)                   0
RL-Rate-Drop(bps)                       0
RL-Rate-LP(bps)                         0
```

show class-of-service application-traffic-control rate-limiters summary

root@host:LSYS1> **show class-of-service application-traffic-control rate-limiters summary**

```
Logical System: LSYS1
Counter type                            Value
Rate Limiters                           1
Sessions Processed                      0
PerIP RLimiters used                    0
Active Sessions                         0
Active perIP RLimiters                  0
Sessions discarded strict-bw            0
Sessions discarded no perIP             0
Sessions discarded no memory            0
Maximum Rate-Limiters                   1000
Maximum perIP-RLimiters                 24000
Total Pkts Tx                           0
Total Pkts discarded                    0
Total Pkts high LP                      0
Rate Tx (bps)                           0
Rate Discard (bps)                      0
Rate LP (bps)                           0
```

show log

List of Syntax

Syntax on page 878
Syntax (QFX Series and OCX Series) on page 878
Syntax (TX Matrix Router) on page 878

Syntax

```
show log
<filename | user <username>>
```

Syntax (QFX Series and OCX Series)

```
show log filename
<device-type (device-id | device-alias)>
```

Syntax (TX Matrix Router)

```
show log
<all-lcc | lcc number | scc>
<filename | user <username>>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Option *device-type (device-id | device-alias)* is introduced in Junos OS Release 13.1 for the QFX Series.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

List log files, display log file contents, or display information about users who have logged in to the router or switch.

> **NOTE:** On MX Series routers, modifying a configuration to replace a service interface with another service interface is treated as a catastrophic event. When you modify a configuration, the entire configuration associated with the service interface—including NAT pools, rules, and service sets—is deleted and then re-created for the newly specified service interface. If there are active sessions associated with the service interface that is being replaced, these sessions are deleted and the NAT pools are then released, which leads to the generation of the NAT_POOL_RELEASE system log messages. However, because NAT pools are already deleted as a result of the catastrophic configuration change and no longer exist, the NAT_POOL_RELEASE system log messages are not generated for the changed configuration.

Options

none—List all log files.

<all-lcc | lcc *number* | scc>—(Routing matrix only)(Optional) Display logging information about all T640 routers (or line-card chassis) or a specific T640 router (replace ***number*** with a value from 0 through 3) connected to a TX Matrix router. Or, display logging information about the TX Matrix router (or switch-card chassis).

device-type—(QFabric system only) (Optional) Display log messages for only one of the following device types:

- **director-device**—Display logs for Director devices.
- **infrastructure-device**—Display logs for the logical components of the QFabric system infrastructure, including the diagnostic Routing Engine, fabric control Routing Engine, fabric manager Routing Engine, and the default network Node group and its backup (NW-NG-0 and NW-NG-0-backup).
- **interconnect-device**—Display logs for Interconnect devices.
- **node-device**—Display logs for Node devices.

> **NOTE:** If you specify the **device-type** optional parameter, you must also specify either the **device-id** or **device-alias** optional parameter.

(*device-id* | *device-alias*)—If a device type is specified, display logs for a device of that type. Specify either the device ID or the device alias (if configured).

filename—(Optional) Display the log messages in the specified log file. For the routing matrix, the filename must include the chassis information.

NOTE: The *filename* parameter is mandatory for the QFabric system. If you did not configure a syslog filename, specify the default filename of **messages**.

user <*username*>—(Optional) Display logging information about users who have recently logged in to the router or switch. If you include ***username***, display logging information about the specified user.

Required Privilege Level
trace

RELATED DOCUMENTATION

syslog (System)

List of Sample Output
show log on page 880
show log filename on page 881
show log filename (QFabric System) on page 883
show log user on page 884
show log accepted-traffic (SRX4600, SRX5400, SRX5600, and SRX5800) on page 884

Sample Output

show log

```
user@host> show log
```

```
total 57518
-rw-r--r--  1 root  bin      211663 Oct  1 19:44 dcd
-rw-r--r--  1 root  bin      999947 Oct  1 19:41 dcd.0
-rw-r--r--  1 root  bin      999994 Oct  1 17:48 dcd.1
-rw-r--r--  1 root  bin      238815 Oct  1 19:44 rpd
-rw-r--r--  1 root  bin     1049098 Oct  1 18:00 rpd.0
-rw-r--r--  1 root  bin     1061095 Oct  1 12:13 rpd.1
-rw-r--r--  1 root  bin     1052026 Oct  1 06:08 rpd.2
-rw-r--r--  1 root  bin     1056309 Sep 30 18:21 rpd.3
-rw-r--r--  1 root  bin     1056371 Sep 30 14:36 rpd.4
-rw-r--r--  1 root  bin     1056301 Sep 30 10:50 rpd.5
-rw-r--r--  1 root  bin     1056350 Sep 30 07:04 rpd.6
```

```
-rw-r--r--  1 root  bin     1048876 Sep 30 03:21 rpd.7
-rw-rw-r--  1 root  bin       19656 Oct  1 19:37 wtmp
```

show log filename

user@host> **show log rpd**

```
Oct  1 18:00:18 trace_on: Tracing to ?/var/log/rpd? started
Oct  1 18:00:18 EVENT <MTU> ds-5/2/0.0 index 24 <Broadcast PointToPoint Multicast
Oct  1 18:00:18
Oct  1 18:00:19 KRT recv len 56 V9 seq 148 op add Type route/if af 2 addr 192.0.2.21
 nhop type local nhop 192.0.2.21
Oct  1 18:00:19 KRT recv len 56 V9 seq 149 op add Type route/if af 2 addr 192.0.2.22
 nhop type unicast nhop 192.0.2.22
Oct  1 18:00:19 KRT recv len 48 V9 seq 150 op add Type ifaddr index 24 devindex
43
Oct  1 18:00:19 KRT recv len 144 V9 seq 151 op chnge Type ifdev devindex 44
Oct  1 18:00:19 KRT recv len 144 V9 seq 152 op chnge Type ifdev devindex 45
Oct  1 18:00:19 KRT recv len 144 V9 seq 153 op chnge Type ifdev devindex 46
Oct  1 18:00:19 KRT recv len 1272 V9 seq 154 op chnge Type ifdev devindex 47
...
```

user@host:LSYS1> **show log flow_lsys1.log**

```
Nov  7 07:34:09 07:34:09.491800:CID-0:THREAD_ID-00:LSYS_ID-01:RT:got route table
lock

Nov  7 07:34:09 07:34:09.491809:CID-0:THREAD_ID-00:LSYS_ID-01:RT:released route
table lock

Nov  7 07:34:09 07:34:09.491840:CID-0:THREAD_ID-00:LSYS_ID-01:RT:got route table
lock

Nov  7 07:34:09 07:34:09.491841:CID-0:THREAD_ID-00:LSYS_ID-01:RT:released route
table lock

Nov  7 07:34:09 07:34:09.491854:CID-0:THREAD_ID-00:LSYS_ID-01:RT:cache final sw_nh
 0x0

Nov  7 07:34:09 07:34:09.491868:CID-0:THREAD_ID-00:LSYS_ID-01:RT:got route table
lock

Nov  7 07:34:09 07:34:09.491869:CID-0:THREAD_ID-00:LSYS_ID-01:RT:released route
```

```
table lock

Nov  7 07:34:09 07:34:09.491881:CID-0:THREAD_ID-00:LSYS_ID-01:RT:cache final sw_nh
 0x0
```

user@host:TSYS1> **show log flow_tsys1.log**

```
Nov  7 13:21:47
13:21:47.217744:CID-0:THREAD_ID-05:LSYS_ID-32:RT:<192.0.2.0/0->198.51.100.0/9011;1,0x0>
 :

Nov  7 13:21:47 13:21:47.217747:CID-0:THREAD_ID-05:LSYS_ID-32:RT:packet [84] ipid
 = 39281, @0x7f490ae56d52

Nov  7 13:21:47 13:21:47.217749:CID-0:THREAD_ID-05:LSYS_ID-32:RT:----
flow_process_pkt: (thd 5): flow_ctxt type 0, common flag 0x0, mbuf 0x4882b600,
rtbl7

Nov  7 13:21:47 13:21:47.217752:CID-0:THREAD_ID-05:LSYS_ID-32:RT: flow process pak
 fast ifl 88 in_ifp lt-0/0/0.101

Nov  7 13:21:47 13:21:47.217753:CID-0:THREAD_ID-05:LSYS_ID-32:RT:
lt-0/0/0.101:192.0.2.0->198.51.100.0, icmp, (0/0)

Nov  7 13:21:47 13:21:47.217756:CID-0:THREAD_ID-05:LSYS_ID-32:RT: find flow: table
 0x11d0a2680, hash 20069(0xffff), sa 192.0.2.0, da 198.51.100.0, sp 0, d0

Nov  7 13:21:47 13:21:47.217760:CID-0:THREAD_ID-05:LSYS_ID-32:RT:Found: session
id 0x12. sess tok 28685

Nov  7 13:21:47 13:21:47.217761:CID-0:THREAD_ID-05:LSYS_ID-32:RT:  flow got session.


Nov  7 13:21:47 13:21:47.217761:CID-0:THREAD_ID-05:LSYS_ID-32:RT:  flow session
id 18

Nov  7 13:21:47 13:21:47.217763:CID-0:THREAD_ID-05:LSYS_ID-32:RT: vector bits 0x200
 vector 0x84ae85f0

Nov  7 13:21:47 13:21:47.217764:CID-0:THREAD_ID-05:LSYS_ID-32:RT:set nat
0x11e463550(18) timeout const to 2

Nov  7 13:21:47 13:21:47.217765:CID-0:THREAD_ID-05:LSYS_ID-32:RT: set_nat_timeout
 2 on session 18
```

```
Nov  7 13:21:47 13:21:47.217765:CID-0:THREAD_ID-05:LSYS_ID-32:RT:refresh nat
0x11e463550(18) timeout to 2

Nov  7 13:21:47 13:21:47.217767:CID-0:THREAD_ID-05:LSYS_ID-32:RT:insert usp tag
for apps

Nov  7 13:21:47 13:21:47.217768:CID-0:THREAD_ID-05:LSYS_ID-32:RT:mbuf 0x4882b600,
 exit nh 0xfffb0006
```

show log filename (QFabric System)

user@qfabric> **show log messages**

```
Mar 28 18:00:06 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:06 ED1486
 chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 1, jnxFruL3Index 0,
jnxFruName PIC: 48x 10G-SFP+ @ 0/0/*, jnxFruType 11, jnxFruSlot 0,
jnxFruOfflineReason 2, jnxFruLastPowerOff 0, jnxFruLastPowerOn 2159)
Mar 28 18:00:07 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:07 ED1486
 chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 2, jnxFruL3Index 0,
jnxFruName PIC:  @ 0/1/*, jnxFruType 11, jnxFruSlot 0, jnxFruOfflineReason 2,
jnxFruLastPowerOff 0, jnxFruLastPowerOn 2191)
Mar 28 18:00:07 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:07 ED1492
 chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 1, jnxFruL3Index 0,
jnxFruName PIC: 48x 10G-SFP+ @ 0/0/*, jnxFruType 11, jnxFruSlot 0,
jnxFruOfflineReason 2, jnxFruLastPowerOff 0, jnxFruLastPowerOn 242726)
Mar 28 18:00:07 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:07 ED1492
 chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 2, jnxFruL3Index 0,
jnxFruName PIC:  @ 0/1/*, jnxFruType 11, jnxFruSlot 0, jnxFruOfflineReason 2,
jnxFruLastPowerOff 0, jnxFruLastPowerOn 242757)
Mar 28 18:00:16 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:16 ED1486 file:
 UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:00:27 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:27 ED1486 file:
 UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:00:50 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:50
_DCF_default___NW-INE-0_RE0_ file: UI_COMMIT: User 'root' requested 'commit'
operation (comment: none)
Mar 28 18:00:50 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:50
_DCF_default___NW-INE-0_RE0_ file: UI_COMMIT: User 'root' requested 'commit'
operation (comment: none)
```

```
Mar 28 18:00:55 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:55 ED1492 file:
 UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:01:10 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:01:10 ED1492 file:
 UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:02:37 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:02:37 ED1491
 chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 1, jnxFruL3Index 0,
jnxFruName PIC: 48x 10G-SFP+ @ 0/0/*, jnxFruType 11, jnxFruSlot 0,
jnxFruOfflineReason 2, jnxFruLastPowerOff 0, jnxFruLastPowerOn 33809)
```

show log user

user@host> **show log user**

```
usera    mg2546                  Thu Oct  1 19:37   still logged in
usera    mg2529                  Thu Oct  1 19:08 - 19:36  (00:28)
usera    mg2518                  Thu Oct  1 18:53 - 18:58  (00:04)
root     mg1575                  Wed Sep 30 18:39 - 18:41  (00:02)
root     ttyp2    aaa.bbbb.com   Wed Sep 30 18:39 - 18:41  (00:02)
userb    ttyp1    192.0.2.0      Wed Sep 30 01:03 - 01:22  (00:19)
```

show log accepted-traffic (SRX4600, SRX5400, SRX5600, and SRX5800)

user@host> **show log accepted-traffic**

```
Jul 17 20:26:04  sourpunch RT_FLOW: RT_FLOW_SESSION_CREATE: session created
3.3.3.5/2->4.4.4.2/63 0x0 None 3.3.3.5/2->4.4.4.2/63 0x0 N/A N/A N/A N/A 17 p2
TRUST UNTRUST 2617282058 N/A(N/A) xe-7/0/0.0 UNKNOWN UNKNOWN UNKNOWN N/A N/A -1
N/A N/A N/A
Jul 17 20:26:04  sourpunch RT_FLOW: RT_FLOW_SESSION_CREATE: session created
3.3.3.4/4->4.4.4.2/63 0x0 None 3.3.3.4/4->4.4.4.2/63 0x0 N/A N/A N/A N/A 17 p2
TRUST UNTRUST 2550162754 N/A(N/A) xe-7/0/0.0 UNKNOWN UNKNOWN UNKNOWN N/A N/A -1
N/A N/A N/A
Jul 17 20:26:04  sourpunch RT_FLOW: RT_FLOW_SESSION_CREATE: session created
3.3.3.4/1->4.4.4.2/63 0x0 None 3.3.3.4/1->4.4.4.2/63 0x0 N/A N/A N/A N/A 17 p2
TRUST UNTRUST 2550162755 N/A(N/A) xe-7/0/0.0 UNKNOWN UNKNOWN UNKNOWN N/A N/A -1
N/A N/A N/A
Jul 17 20:26:04  sourpunch RT_FLOW: RT_FLOW_SESSION_CREATE: session created
3.3.3.3/0->4.4.4.2/63 0x0 None 3.3.3.3/0->4.4.4.2/63 0x0 N/A N/A N/A N/A 17 p2
TRUST UNTRUST 2550162752 N/A(N/A) xe-7/0/0.0 UNKNOWN UNKNOWN UNKNOWN N/A N/A -1
N/A N/A N/A
Jul 17 20:26:04  sourpunch RT_FLOW: RT_FLOW_SESSION_CREATE: session created
```

```
3.3.3.5/5->4.4.4.2/63 0x0 None 3.3.3.5/5->4.4.4.2/63 0x0 N/A N/A N/A N/A 17 p2
TRUST UNTRUST 2550162751 N/A(N/A) xe-7/0/0.0 UNKNOWN UNKNOWN UNKNOWN N/A N/A -1
N/A N/A N/A
Jul 17 20:26:04  sourpunch RT_FLOW: RT_FLOW_SESSION_CREATE: session created
3.3.3.3/3->4.4.4.2/63 0x0 None 3.3.3.3/3->4.4.4.2/63 0x0 N/A N/A N/A N/A 17 p2
TRUST UNTRUST 2550162753 N/A(N/A) xe-7/0/0.0 UNKNOWN UNKNOWN UNKNOWN N/A N/A -1
N/A N/A N/A
```

show route tenant

Syntax

```
show route tenant
< (all | tenant-name)>
```

Release Information

Statement introduced in Junos OS Release 18.3R1.

Description

Displays the routing table information for the tenant systems.

A tenant system is a logical partitioning of the device into multiple security domains similar to logical systems, to provide high scalability. A routing instance is a collection of routing tables, interfaces, and routing protocol parameters. A set of interfaces that belong to the routing instances and the routing protocol parameters control the information in the routing tables. A tenant system can configure the assigned routing instances and the interfaces within a tenant system.

Options

all—Displays the summary statistics about the all entries in the routing table.

tenant-name—Specify the tenant system name.

Required Privilege Level

view

List of Sample Output

show route tenant tenant1 on page 887

Output Fields

Table 46 on page 886 lists the output fields for the **show route tenant** command. Output fields are listed in the approximate order in which they appear.

Table 46: show route summary Output Fields

Field Name	Field Description
routing-table-name	Name of the routing table (for example, inet.o).
destinations	Number of destinations that correspond to the routes in the routing table.

Table 46: show route summary Output Fields *(continued)*

Field Name	Field Description
routes	Number of routes in the routing table: • **active**—Number of routes that are active. • **holddown**—Number of routes that are in the hold-down state before being declared inactive. • **hidden**—Number of routes that are not used because of routing policy.
Direct	Routes on the directly connected network.
Local	Specify the local routes.
OSPF	Name of the protocol from which the route was learnt.

Sample Output

show route tenant tenant1

```
user@host> show route tenant tenant1
```

```
tenant1.inet.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
12.1.1.0/24        *[Direct/0] 00:33:07
> via ge-0/0/0.0
12.1.1.1/32        *[Local/0] 00:33:07
Local via ge-0/0/0.0
224.0.0.5/32       *[OSPF/10] 00:30:31, metric 1
MultiRecv
tenant1.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
ff02::2/128        *[INET6/0] 00:33:33
MultiRecv
```

show security application-firewall rule-set

Syntax

```
show security application-firewall rule-set (<rule-set-name> | all)
show security application-firewall rule-set (rule-set-name | all) | (logical-system logical-system-name  | all) |
   all-logical-systems-tenants | root-logical-system | tenant (tenant-name  | all)
```

Release Information

Command introduced in Junos OS Release 11.1. Updated in Junos OS Release 12.1X44-D10 with output format changes. Updated in Junos OS Release 12.1X45-D10 with redirection counters.
The **tenant** and **all-logical-systems-tenants** options are introduced in Junos OS Release 18.4R1.

Description

Display information about the specified rule set defined in the application firewall.

The application firewall is defined by a collection of rule sets. A rule set defines the rules that specify match criteria, including dynamic applications, and the action to be taken for matching traffic.

Starting in Junos OS Release 18.2R1, the application firewall (AppFW) functionality is deprecated. As a part of this change, the **[edit security application-firewall]** hierarchy and all the configuration options under this hierarchy are deprecated— rather than immediately removed—to provide backward compatibility and an opportunity to bring your configuration into compliance with the new configuration.

Options

rule-set-name— Display the name of the rule set.

all—(default) Display all rule sets for all logical systems. The user logical system administrator can display all rule sets only for the logical system they can access.

logical-system-name— Display application firewall rule set information for a specific logical system.

root-logical-system— Display application firewall rule set information for the root logical system (master administrator only).

all-logical-systems-tenants— Display application firewall rule set information for all the logical systems and tenants.

tenant—Display application firewall rule set information for the tenant systems.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security application-firewall rule-set statistics

List of Sample Output

show security application-firewall rule-set my_ruleset1 on page 890
show security application-firewall rule-set all on page 890
show security application-firewall rule-set ruleset1 tenant all on page 891

Output Fields

Table 47 on page 889 lists the output fields for the **show security application-firewall rule-set** command. Output fields are listed in the approximate order in which they appear.

Table 47: show security application-firewall rule-set Output Fields

Field Name	Field Description
Rule-set	Name of the rule set.
Logical system	Name of the logical system of the rule set.
Tenant	Name of the tenant system of the rule set.
Profile	The redirect profile to be used for rules requiring redirection for reject or deny actions.

Rule	Name of the rule
	• **Dynamic applications**—Name of the applications.
	• **Dynamic application groups**—Name of the application groups.
	• **SSL-Encryption**—Setting for SSL traffic.
	• **Action**—The action taken with respect to a packet that matches the application firewall rule set. Actions include the following:
	  ◦ **permit**
	  ◦ **deny**
	  ◦ **reject**
	  ◦ **redirect**
	• **Number of sessions matched**—Number of sessions matched with the application firewall rule.
	• **Number of sessions redirected**—Number of sessions redirected by the application firewall rule.

Table 47: show security application-firewall rule-set Output Fields *(continued)*

Field Name	Field Description
Default rule	The default rule applied when the identified application is not specified in any rules of the rule set. • **Number of sessions matched**—Number of sessions matched with the application firewall default rule. • **Number of sessions redirected**—Number of sessions redirected by the application firewall rule.
Number of sessions with appid pending	Number of sessions that are pending application identification processing

Sample Output

show security application-firewall rule-set my_ruleset1

user@host>**show security application-firewall rule-set my_ruleset1**

```
Rule-set: my_ruleset1
     Rule: rule1
         Dynamic Applications: junos:FACEBOOK-ACCESS, junos:YMSG
         Dynamic Application Groups: junos:web, junos:chat
         SSL-Encryption: any
         Action: deny or redirect
         Number of sessions matched: 10
         Number of sessions redirected: 10
     Default rule: permit
         Number of sessions matched: 200
         Number of sessions redirected: 0
     Number of sessions with appid pending: 2
```

Sample Output

show security application-firewall rule-set all

user@host> **show security application-firewall rule-set all**

```
Rule-set: ls-product-design-rs1
    Logical system: ls-product-design
    Rule: r1
        Dynamic Applications: junos:TELNET
        Action:permit
        Number of sessions matched: 10
Default rule:deny
        Number of sessions matched: 100
Number of sessions with appid pending: 2

Rule-set: ls-product-design-rs1
    Logical system: ls-product-design
    Rule: r2
        Dynamic Application Groups: junos:web
        Action:permit
        Number of sessions matched: 20
Default rule:deny
        Number of sessions matched: 200
Number of sessions with appid pending: 4

Rule-set: ls-product-design-rs2
    Logical system: ls-product-design
    Rule: r1
        Dynamic Applications: junos:FACEBOOK-ACCESS
        Action:deny
        Number of sessions matched: 40
Default rule:permit
        Number of sessions matched: 400
Number of sessions with appid pending: 10
```

Sample Output

show security application-firewall rule-set ruleset1 tenant all

`user@host>` **show security application-firewall rule-set ruleset1 tenant all**

```
Rule-set: ruleset1
    Logical system: root-logical-system
    Tenant: TSYS1
    Rule: rule1
```

```
        Dynamic Applications: junos:HTTP, junos:FTP
        SSL-Encryption: any
        Action:permit
        Number of sessions matched: 0
        Number of sessions redirected: 0
Default rule:permit
        Number of sessions matched: 0
        Number of sessions redirected: 0
Number of sessions with appid pending: 0
```

show security application-firewall rule-set logical-system

Syntax

The master, or root, administrator can issue the following statements:

```
show security application-firewall rule-set all
show security application-firewall rule-set rule-set-name | all | logical-system logical-system-name | all |
    root-logical-system [logical-system-name | all ]
```

The user logical system administrator can issue the following statement:

```
show security application-firewall rule-set all
```

Release Information

Command introduced in Junos OS Release 11.4.

Description

Display information about application firewall rule set(s) associated with a specific logical system, all logical systems, or the root logical system configured on a device.

> **NOTE:** The master administrator can configure and view application firewall rule sets for the root logical system and all user logical systems configured on the device. User logical system administrators can configure and view application firewall rule set information only for the user logical systems for which they have access. For information about master and user administrator roles in logical systems, see "Understanding Logical Systems for SRX Series Services Gateways" on page 29.

Starting in Junos OS Release 18.2R1, the application firewall (AppFW) functionality is deprecated. As a part of this change, the **[edit security application-firewall]** hierarchy and all the configuration options under this hierarchy are deprecated— rather than immediately removed—to provide backward compatibility and an opportunity to bring your configuration into compliance with the new configuration.

Options

rule-set-name—Name of a specific rule set.

logical-system-name—Name of a specific logical system.

all—(default) Display all rule sets for all logical systems. The user logical system administrator can display all rule sets only for the logical system they can access.

root-logical-system—Display application firewall rule set information for the root logical system (master administrator only).

Required Privilege Level
view

RELATED DOCUMENTATION

clear security application-firewall rule-set statistics logical-system | 831

List of Sample Output
show security application-firewall rule-set logical-system all on page 895
show security application-firewall rule-set all on page 895

Output Fields
Table 48 on page 894 lists the output fields for the **show security application-firewall rule-set logical-system** command. Output fields are listed in the approximate order in which they appear.

Table 48: show security application-firewall rule-set logical-system Output Fields

Field Name	Field Description
Rule-set	Name of the rule set.
Logical system	Name of the logical system.

Rule	Name of the rule.
	• **Dynamic applications**—Name of the applications.
	• **Dynamic application groups**—Name of the application groups.
	• **Action**—The action taken with respect to a packet that matches the application firewall rule set. Actions include the following:
	  ◦ **permit**
	  ◦ **deny**
	• **Number of sessions matched**—Number of sessions matched with the application firewall rule.

Default rule	The default rule applied when the identified application is not specified in any rules of the rule set. • **Number of sessions matched**—Number of sessions matched with the application firewall default rule.
Number of sessions with appid pending	Number of sessions that are pending with the application ID processing.

Sample Output

show security application-firewall rule-set logical-system all

root@host> **show security application-firewall rule-set logical-system all**

```
Rule-set: root_rs1
    Logical system: root-logical-system
    Rule: r1
        Dynamic Applications: junos:FTP
        Action:permit
        Number of sessions matched: 10
Default rule:deny
        Number of sessions matched: 100
Number of sessions with appid pending: 4

Rule-set: root-rs2
    Logical system: root-logical-system
    Rule: r1
        Dynamic Application Groups: junos:web
        Action:permit
        Number of sessions matched: 20
Default rule:deny
        Number of sessions matched: 100
Number of sessions with appid pending: 10
```

show security application-firewall rule-set all

root@host> **show security application-firewall rule-set all**

```
Rule-set: ls-product-design-rs1
    Logical system: ls-product-design
    Rule: r1
        Dynamic Applications: junos:TELNET
        Action:permit
        Number of sessions matched: 10
Default rule:deny
        Number of sessions matched: 100
Number of sessions with appid pending: 2

Rule-set: ls-product-design-rs1
```

```
    Logical system: ls-product-design
    Rule: r2
        Dynamic Application Groups: junos:web
        Action:permit
        Number of sessions matched: 20
Default rule:deny
        Number of sessions matched: 200
Number of sessions with appid pending: 4

Rule-set: ls-product-design-rs2
    Logical system: ls-product-design
    Rule: r1
        Dynamic Applications: junos:FACEBOOK-ACCESS
        Action:deny
        Number of sessions matched: 40
Default rule:permit
        Number of sessions matched: 400
Number of sessions with appid pending: 10
```

show security application-tracking counters

Syntax

```
show security application-tracking counters
```

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display the status of AppTrack counters.

Required Privilege Level

view

RELATED DOCUMENTATION

> *Understanding AppTrack*
>
> *Example: Configuring AppTrack*

Output Fields

Table 49 on page 897 lists the output fields for the **show security application-tracking counters** command. Output fields are listed in the approximate order in which they appear.

Table 49: show security application-tracking counters

Field Name	Field Description
Session create messages	The number of log messages generated when a session was created.
Session close messages	The number of log messages generated when a session was closed.
Session volume updates	The number of log messages generated when an update interval was exceeded.
Session route updates	The number of log messages generated when an egress interface was selected based on application carried in the session by APBR.
Failed messages	The number of messages that were not generated due to memory or session constraints.

Sample Output

show security application-tracking counters

```
user@host> show security application-tracking counters
```

```
Application tracking counters:

    AppTrack counter type                              Value
 Session create messages                                 1
 Session close messages                                  1
 Session volume updates                                  0
 Session route updates                                   1
 Failed messages                                         0
```

show security alg status logical-system

Syntax

```
show security alg status logical-system
<logical-system-name>
```

Release Information

Statement introduced in Junos OS Release 18.2R1.

Description

Display the ALG status for a specific logical system or for all logical systems on the device.

Options

logical-system-name—Display ALG status for specific logical system.

all—Display ALG status for all logical systems.

Additional Information

The **show security alg status** command is used to view the ALG status in root logical system. The **show security alg status logical-system lsys1** command is used to view the ALG status in logical system lsys1. The **show security alg status logical-system all** command is used to view the ALG status of all existing logical systems.

> **NOTE:** Only users under root logical system can view the ALG status for all logical systems. The keyword logical-system is not required in the command **show security alg status logical-system lsys1** when you log in to a particular logical system.

Required Privilege Level

view

RELATED DOCUMENTATION

Understanding Application Layer Gateway (ALG) in Logical Systems | 290

alg

Example: Enabling FTP ALG in a Logical System | 296

List of Sample Output

show security alg status logical-system all on page 900

show security alg status logical-system LSYS1 on page 901

Output Fields

Sample Output

show security alg status logical-system all

`user@host>` **show security alg status logical-system all**

```
Logical system: root-logical-system
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled

Logical system: LSYS2
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
```

```
  IKE-ESP  : Disabled

Logical system: LSYS0
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled

Logical system: LSYS1
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled

{secondary:node0}
```

show security alg status logical-system LSYS1

`user@host>` **show security alg status logical-system LSYS1**

```
ALG Status:
  DNS      : Enabled
  FTP      : Enabled
  H323     : Disabled
  MGCP     : Disabled
  MSRPC    : Enabled
  PPTP     : Enabled
  RSH      : Disabled
  RTSP     : Disabled
  SCCP     : Disabled
  SIP      : Disabled
  SQL      : Disabled
  SUNRPC   : Enabled
  TALK     : Enabled
  TFTP     : Enabled
  IKE-ESP  : Disabled

{secondary:node0}
```

show security datapath-debug capture

Syntax

```
show security datapath-debug capture
```

Release Information

Command introduced in Junos OS Release 10.0.

Description

Display details of the data path debugging capture file.

Required Privilege Level

view

RELATED DOCUMENTATION

- show security datapath-debug counter | 905
- Understanding Data Path Debugging for Logical Systems | 484

List of Sample Output

show security datapath—debug capture on page 903

Output Fields

Output fields are listed in the approximate order in which they appear.

Sample Output

show security datapath—debug capture

```
user@host> show security datapath-debug capture
```

```
Packet 1, len 120: (C0/F0/P0/SEQ:71:lbt)
91 00 00 47 11 00 10 00 9a 14 00 19 03 00 00 00
00 00 00 00 00 01 00 47 10 00 00 00 00 00 00 00
00 1f 12 f8 dd 29 00 21 59 84 f4 01 81 00 02 1e
08 00 45 60 01 f4 00 00 00 00 3f 06 73 9f 01 01
01 02 03 01 01 02 d4 31 d4 31 00 00 00 00 00 00
00 00 50 02 00 00 ff ad 00 00 00 00
Packet 2, len 120: (C0/F0/P0/SEQ:71:lbt)
```

```
90 00 00 47 04 00 00 00 00 00 00 00 02 02 00 47
10 00 00 00 00 00 00 00 50 00 a6 1c 00 00 00 00
00 00 00 0a 00 00 00 00 00 00 09 d9 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 1f 12 f8
dd 29 00 21 59 84 f4 01 81 00 02 1e
```

show security datapath-debug counter

Syntax

```
show security datapath-debug counter
```

Release Information

Command introduced in Junos OS Release 10.0.

Description

Display details of the data path debugging counter.

Required Privilege Level

view

RELATED DOCUMENTATION

- show security datapath-debug capture | 903
- Understanding Data Path Debugging for Logical Systems | 484

List of Sample Output

show security datapath-debug counter on page 905

Output Fields

Output fields are listed in the approximate order in which they appear.

Sample Output

show security datapath-debug counter

`user@host>` **show security datapath-debug counter**

```
Datapath debug counters
Packet Filter 1:
np-ingress
Chassis 0 FPC 4 : 1
np-ingress
Chassis 0 FPC 3 : 0
np-egress
Chassis 0 FPC 4 : 1
```

```
np-egress
Chassis 0 FPC 3 : 0
jexec
Chassis 0 FPC 0 PIC 1: 0
jexec
Chassis 0 FPC 0 PIC 0: 1
lbt
Chassis 0 FPC 0 PIC 1: 0
lbt
Chassis 0 FPC 0 PIC 0: 2
pot
Chassis 0 FPC 0 PIC 1: 0
pot
```

show security dns-cache

Syntax

```
show security dns-cache <dns-name dns-name>
```

Release Information

Command introduced in Junos OS Release 12.1X44-D10.

Description

Display DNS cache information.

> **NOTE:** This command is only available to the master administrator on devices that are configured for logical systems. This command is not available in user logical systems or on devices that are not configured for logical systems.

Options

- **dns-name**—Display DNS cache information for the specified name.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security dns-cache | 833

List of Sample Output

show security dns-cache on page 908
show security dns-cache dns-name dns2.test.com on page 908

Output Fields

Table 50 on page 907 lists the output fields for the **show security dns-cache** command. Output fields are listed in the approximate order in which they appear.

Table 50: show security dns-cache Output Fields

Field Name	Field Description
DNS Name	DNS name.

Table 50: show security dns-cache Output Fields *(continued)*

Field Name	Field Description
Address Family	IPv4 or IPv6.
TTL	Time-to-live value.
IP Address	IP address for the DNS name.

Sample Output

show security dns-cache

```
user@host> show security dns-cache
```

```
DNS Name: dns1.test.com:
  Address Family: IPv4, TTL: 10
    IP Address: 1.1.1.1
  Address Family: IPv6: TTL = 15
    IP Address: 2001:1.1.1.1
DNS Name: dns2.test.com:
  Address Family: IPv4, TTL: 20
    IP Address: 2.2.2.2
    IP Address: 2.2.2.3
```

Sample Output

show security dns-cache dns-name dns2.test.com

```
user@host> show security dns-cache dns-name dns2.test.com
```

```
DNS Name: dns2.test.com:
  Address Family: IPv4, TTL: 20
    IP Address: 2.2.2.2
    IP Address: 2.2.2.3
```

show security dynamic-address

Syntax

```
show security dynamic-address
<summary>
<category-name (Blacklist | CC | GeoIP | IPFilter | Infected-Hosts | JWAS | Whitelist) >
<family inet | inet6>
<feed-name (feed-name) >
<address-name (address-name) >
<ip-start (starting-IP-address) >
<ip-end (ending-IP-address) >
<instance (advanced-anti-malware | default | geoip) >
<logical-system (logical-system-name | all)>
<tenant (tenant-name | all)>
```

Release Information

Command introduced in Junos OS Release 12.1X46-D25.
Command **<family inet | inet6>** introduced in Junos OS Release 18.1.
The **logical-system** and **tenant** options are introduced in Junos OS Release 18.4R1.

Description

Displays information about dynamic addresses. Each dynamic address belongs to only one instance. Within that instance is a set of categories to which the dynamic address further belongs.

A dynamic address entry provides dynamic IP address information to security policies. A dynamic address entry is a group of IP addresses, not just a single IP prefix, that can be imported in from external sources. These IP addresses are for specific domains or for entities that have a common attribute such as a particular undesired location that poses a threat. The administrator can then configure security policies to use the DAE within a security policy.

Options

none—Display source category (feed) and dynamic address name for all nodes (primary and backup nodes in case of HA.) The same as the **show security dynamic-address ip-start 1.0.0.0 ip-end 255.255.255.255** command.

summary—(Optional) Display basic information of dynamic-address including their name, feeds, properties and number of IPv4 and IPv6 entries.

category-name (*category-name*)—(Optional) Display the source category (feed) and dynamic address name for the specified threat type (category name). A category is basically a list of feeds of the same type. The type defines SRX Series enforcement point criteria for feed lookup and enforcement. Supported category names are:

- Blacklist—A list of locations (IP addresses, URLs, etc.) that you do not trust. A blacklist allows everyone access except for the members on the blacklist.
- CC—A list of known C&C servers that are able to send commands to members of a botnet.
- GeoIP—A list giving you the ability to filter traffic to and from specific geographies in the world.
- IPFilter—A list of addresses and ranges of malicious sites that can send junk data.
- Infected-Hosts—A lists of hosts within your network that may have been compromised and require attention. This list is generated from Juniper Sky ATP based on hosts that have downloaded malware.
- JWAS—A list from the WebApp Secure product that identified possible attackers.
- Whitelist—A list of locations (IP addresses, URLs, etc.) that you trust. A whitelist denies everyone access except for the members on the whitelist.

family—(Optional) Show the dynamic-address for specified protocol-family. Both IPv4 and IPv6 are displayed if no family is specified. 'inet' and 'inet6' can be combined with other options of the show command. For example, show security dynamic-address family inet6 ip-start 1111::1 ip-end 3333::3.

feed-name—(Optional) User-defined name of the source feed. For example, if you create a JWAS list named jwas1, then jwas1 is the feed-name.

address-name—(Optional) The dynamic address name. If you do not specify an **address-name**, then information related to all dynamic addresses downloaded to this SRX Series device is displayed.

ip-start—(Optional) The numerical minimum IP address where you want to investigate. Specifying **ip-start** and optionally **ip-end** (it is not required to specify **ip-end** if you use **ip-start**) is helpful to filter the output to a specific range instead of having to review the entire list which can be very long.

ip-end—(Optional) The numerical maximum IP address where you want to investigate. Specifying **ip-start** and optionally **ip-end** is helpful to filter the output to a specific range instead of having to review the entire list which can be very long. If you specify **ip-end**, you must specify **ip-start**.

instance (*instance-name*)—(Optional) The physically separated database. Supported instance names are:

- advanced-anti-malware—The IP-based whitelists and blacklists.
- default—The default instance holds the following data: blacklist, whitelist, C&C, infected host, and IPfilter.
- geoip—The geoip data.

logical-system (logical-system-name | all)— Perform this operation on all logical systems or on a particular logical system.

tenant (tenant-name | all)— Perform this operation on all tenant systems or on a particular tenant system.

Required Privilege Level

View

List of Sample Output

show security dynamic-address summary on page 912
show security dynamic-address instance advanced-anti-malware on page 913
show security dynamic-address instance geoip on page 913
show security dynamic-address category-name Infected-Hosts on page 913
show security dynamic-address logical-system LSYS1 on page 914
show security dynamic-address logical-system all on page 914
show security dynamic-address tenant TSYS1 on page 914
show security dynamic-address tenant all on page 914

Output Fields

Table 51 on page 911 describes the output fields for the **show security dynamic-address** command. Output fields are listed in the approximate order in which they appear.

Table 51: show security dynamic-address Output Fields

Field Name	Field Description
Address name	Dynamic address entry name.
Address ID	Internal ID used to uniquely identify the dynamic address entry.
IPv4 entries	The number of IPv4 entries in the specific dynamic address.
IPv6 entries	The number of IPv6 entries in the specific dynamic address.
Category/feed	The threat type associated with the dynamic address. See description of **category-name** and **feed-name** above.
Total number of IPv4 entries	The number of IPv4 entries in the database.
Total number of IPv4 entries from feed	The number of IPv4 entries in the feed. An entry in a feed can correspond to multiple entries in the database.
Total number of IPv6 entries	The number of IPv6 entries in the database.
Total number of IPv6 entries from feed	The number of IPv6 entries in the feed. An entry in a feed can correspond to multiple entries in the database.
Instance default	Total number of default matching entries.
Instance geoip	Total number of geoip data matching entries.

Table 51: show security dynamic-address Output Fields *(continued)*

Field Name	Field Description
Instance advanced-anti-malware	Total number of the IP-based whitelists and blacklists matching entries.

Sample Output

show security dynamic-address summary

`user@host>` **show security dynamic-address summary**

```
node1:
--------------------------------------------------------------------------


    Address name          : a1
    Address id            : 11
      IPv4 entries        : 13778
      IPv6 entries        : 0
      Category/feed       : GeoIP   / ---
            property name : country
                    value : AU
                    value : CN


    Address name          : a2
    Address id            : 12
      IPv4 entries        : 0
      IPv6 entries        : 0
      Category/feed       : IPFilter / ---
            property name : test
                    value : test


Total number of IPv4 entries           : 13778
Total number of IPv4 entries from feed : 0
Total number of IPv4 except entries    : 0
Total number of IPv6 entries           : 0
Total number of IPv6 entries from feed : 0
```

show security dynamic-address instance advanced-anti-malware

```
user@host> show security dynamic-address instance advanced-anti-malware
```

```
node1:
--------------------------------------------------------------------------
No.      IP-start        IP-end          Feed             Address
1        5.5.0.0         5.5.0.10        global_whitelist ID-00000003
2        11.11.0.0       11.11.0.10      global_blacklist ID-00000004
```

show security dynamic-address instance geoip

```
user@host> show security dynamic-address instance geoip
```

```
node1:
--------------------------------------------------------------------------
No.      IP-start        IP-end          Feed             Address
1        1.0.0.0         1.0.0.255       geoip_country    a1
2        1.0.1.0         1.0.1.255       geoip_country    a1
3        1.0.2.0         1.0.3.255       geoip_country    a1
4        1.0.4.0         1.0.7.255       geoip_country    a1
5        1.0.8.0         1.0.15.255      geoip_country    a1
6        1.0.32.0        1.0.63.255      geoip_country    a1
7        1.1.0.0         1.1.0.255       geoip_country    a1
8        1.1.1.0         1.1.1.255       geoip_country    a1
9        1.1.2.0         1.1.3.255       geoip_country    a1
10       1.1.4.0         1.1.7.255       geoip_country    a1
11       1.1.8.0         1.1.15.255      geoip_country    a1
12       1.1.16.0        1.1.31.255      geoip_country    a1
13       1.1.32.0        1.1.63.255      geoip_country    a1
14       1.2.0.0         1.2.1.255       geoip_country    a1
```

show security dynamic-address category-name Infected-Hosts

```
user@host> show security dynamic-address category-name Infected-Hosts
```

```
node1:
--------------------------------------------------------------------------
No.       IP-start         IP-end       Feed               Address
1      1.0.0.7     1.0.0.7      Infected-Hosts/1   ID-21500011
2    1.0.0.10    1.0.0.10   Infected-Hosts/1   ID-21500011
3    1.0.0.21    1.0.0.21   Infected-Hosts/1   ID-21500011
4    1.0.0.11    1.0.0.11   Infected-Hosts/1   ID-21500012
```

```
5    1.0.0.12    1.0.0.12   Infected-Hosts/1   ID-21500012
6    1.0.0.22    1.0.0.22   Infected-Hosts/1   ID-21500012
7    1.0.0.6     1.0.0.6    Infected-Hosts/1   ID-21500013
8    1.0.0.9     1.0.0.9    Infected-Hosts/1   ID-21500013
9    1.0.0.13    1.0.0.13   Infected-Hosts/1   ID-21500013
10    1.0.0.23    1.0.0.23   Infected-Hosts/1   ID-21500013
```

show security dynamic-address logical-system LSYS1

```
user@host> show security dynamic-address logical-system LSYS1
```

```
Instance default Total number of matching entries: 0
Instance geoip   Total number of matching entries: 0
Instance advanced-anti-malware Total number of matching entries: 0
```

show security dynamic-address logical-system all

```
user@host> show security dynamic-address logical-system all
```

```
Instance default Total number of matching entries: 0
Instance geoip   Total number of matching entries: 0
Instance advanced-anti-malware Total number of matching entries: 0
```

show security dynamic-address tenant TSYS1

```
user@host> show security dynamic-address tenant TSYS1
```

```
Instance default Total number of matching entries: 0
Instance geoip   Total number of matching entries: 0
Instance advanced-anti-malware Total number of matching entries: 0
```

show security dynamic-address tenant all

```
user@host> show security dynamic-address tenant all
```

```
Instance default Total number of matching entries: 0
```

```
Instance geoip   Total number of matching entries: 0
Instance advanced-anti-malware Total number of matching entries: 0
```

show security firewall-authentication history

Syntax

```
show security firewall-authentication history
<address (address)>
<from-zone (from-zone)>
<identifier (identifier)>
<logical-system (logical-system-name | all)>
<node (node-id | all | local | primary)>
<root-logical-system (address | from-zone | identifier | tenant | to-zone)>
<tenant (tenant-name | all)>
<to-zone (to-zone)>
```

Release Information

Command introduced in Junos OS Release 8.5. The **node** option is added in Junos OS Release 9.0. The **tenant** option is introduced in Junos OS Release 18.3R1.

Description

Displays security firewall authentication user history information and verify the number of firewall users who successfully authenticated and the number of firewall users who failed to log in.

Options

- none—Display history of firewall authentication information.
- address—Display authentication entries based on IP address.
- from-zone—Display authentication entries matching the given source zone, null for web-authentication and userfw-authentication.
- identifier—Display authentication entries by user identifier.
- logical-system—Display firewall authentication tables based on logical system name.
- **node**—(Optional) For chassis cluster configurations, display all firewall authentication history on a specific node (device) in the cluster.
  - ***node-id*** —Identification number of the node. It can be 0 or 1.
  - **all**—Display information about all nodes.
  - **local**—Display information about the local node.
  - **primary**—Display information about the primary node.
- root-logical-system—Display firewall authentication tables for root logical system.

- tenant—Display firewall authentication tables based on tenant name.
- to-zone—Display authentication entry matching the given destination zone, null for web-auth and userfw-auth.

Required Privilege Level
view

RELATED DOCUMENTATION

> Understanding Logical System Firewall Authentication | **186**
>
> *Firewall User Authentication Overview*

List of Sample Output
show security firewall-authentication history on page 918
show security firewall-authentication history node all on page 918
show security firewall-authentication history tenant tn1 on page 918

Output Fields
Table 52 on page 917 lists the output fields for the **show security firewall-authentication history** command. Output fields are listed in the approximate order in which they appear.

Table 52: show security firewall-authentication history Output Fields

Field Name	Field Description
Authentications	Number of authentications.
Id	Identification number.
Source IP	IP address of the authentication source.
Date	Authentication date.
Time	Authentication time.
Duration	Authentication duration.
Status	Authentication status success or failure.
User	Name of the user.

Sample Output

show security firewall-authentication history

```
user@host> show security firewall-authentication history
```

```
History of firewall authentication data:
  Authentications: 1
          Id Source Ip       Date       Time     Duration   Status   User
           1 203.0.113.1     2007-04-03 11:43:06 00:00:45   Success  hello
```

Sample Output

show security firewall-authentication history node all

```
user@host> show security firewall-authentication history node all
```

```
node0:
--------------------------------------------------------------------------
History of firewall authentication data:
Authentications: 2
Id Source Ip       Date       Time     Duration   Status   User
1 203.0.113.1      2008-01-04 12:00:10 0:05:49    Success  local1
2 203.0.113.1      2008-01-04 14:36:52 0:01:03    Success  local1
node1:
--------------------------------------------------------------------------
History of firewall authentication data:
  Authentications: 1
          Id Source Ip       Date       Time     Duration   Status   User
           203.0.113.1       2008-01-04 14:59:43 1193046:06: Success local1
```

show security firewall-authentication history tenant tn1

```
user@host> show security firewall-authentication history tenant tn1
```

```
History of firewall authentication data:
  Authentications: 0
```

show security firewall-authentication users

Syntax

```
show security firewall-authentication users
<address (ip-address )>
<auth-type (pass-through | user-firewall | web-authentication)>
<from-zone (from-zone)>
<identifier (identifier )>
<logical-system (logical-system-name | all)>
<node (node-id | all | local | primary)>
<root-logical-system (address | auth-type | from-zone | identifier | tenant | to-zone>
<tenant (tenant-name |all)>
<to-zone (to-zone )>
```

Release Information

Command introduced in Junos OS Release 8.5. The **node** options added in Junos OS Release 9.0. The **tenant** option is introduced in Junos OS Release 18.3R1.

Description

Display firewall authentication details about all users and verify the number of firewall users who successfully authenticated and firewall users who failed to log in.

Options

- none—Display details about all firewall authentication users.
- address—Display authentication entries based on ip address.
- auth-type—Display authentication entries matching the given auth-type.
- from-zone—Display authentication entries matching the given source zone, null for web-auth and userfw-auth.
- identifier—Display authentication entries by id.
- logical-system—Display firewall authentication tables based on logical system name.
- **node**—(Optional) For chassis cluster configurations, display firewall authentication details for all users on a specific node.
  - *node-id*—Identification number of the node. It can be 0 or 1.
  - **all**—Display information about all nodes.
  - **local**—Display information about the local node.
  - **primary**—Display information about the primary node.
- root-logical-system—Display firewall authentication tables for root logical system.

- tenant—Display firewall authentication tables based on tenant name.
- to-zone—Display authentication entry matching the given destination zone, null for web-auth and userfw-auth.

Required Privilege Level
view

RELATED DOCUMENTATION

Firewall User Authentication Overview

List of Sample Output
show security firewall-authentication users on page 921
show security firewall-authentication users node 0 on page 921
show security firewall-authentication users node all on page 921

Output Fields
Table 53 on page 920 lists the output fields for the **show security firewall-authentication users** command. Output fields are listed in the approximate order in which they appear.

Table 53: show security firewall-authentication users Output Fields

Field Name	Field Description
Total users in table	Gives count of how many entries/users the command will display.
Id	Identification number.
Source IP	IP address of the authentication source.
Src zone	User traffic received from the zone.
Dst zone	User traffic destined to the zone.
Profile	Name of profile used for authentication.
Age	Idle timeout for the user.
Status	Authentication status success or failure.
User	Name of the user.

Sample Output

show security firewall-authentication users

```
user@host> show security firewall-authentication users
```

```
Firewall authentication data:
  Total users in table: 1
          Id Source Ip       Src zone Dst zone Profile    Age Status   User
           1 192.0.2.5/24         z1       z2       p1       0 Success  local1
```

Sample Output

show security firewall-authentication users node 0

```
user@host> show security firewall-authentication users node 0
```

```
node0:
--------------------------------------------------------------------------
Firewall authentication data:
  Total users in table: 1
          Id Source Ip       Src zone Dst zone Profile    Age Status   User

           3 192.0.2.5/24        z1       z2       p1           1 Success  local1
```

Sample Output

show security firewall-authentication users node all

```
user@host> show security firewall-authentication users node all
```

```
node0:
--------------------------------------------------------------------------
Firewall authentication data:
  Total users in table: 1
          Id Source Ip       Src zone Dst zone Profile    Age Status   User
           3 192.0.2.5        z1       z2       p1           1 Success  local1
```

```
node1:
--------------------------------------------------------------------------
Firewall authentication data:
  Total users in table: 1
          Id Source Ip       Src zone Dst zone Profile    Age Status   User
           2 192.0.2.5       z1       z2       p1           1 Success  local1
```

show security firewall-authentication users tenant all

user@host> **show security firewall-authentication users tenant all**

```
Firewall authentication data:
  Total users in table: 1
          Id Source Ip                          Src zone Dst zone Profile    Age
Status   User
           2 192.0.2.10                        N/A      N/A      test-rad     1
Success  b1
```

show security flow session

Syntax

show security flow session [<filter>] [brief | extensive | summary]
<node (***node-id*** | all | local | primary)>

Release Information

Command introduced in Junos OS Release 8.5. Support for filter and view options added in Junos OS Release 10.2.
Application firewall, dynamic application, and logical system filters added in Junos OS Release 11.2.
Policy ID filter added in Junos OS Release 12.3X48-D10.
Support for connection tag added in Junos OS Release 15.1X49-D40.
The **tenant** option introduced in Junos OS Release 18.3R1.

Description

Display information about all currently active security sessions on the device.

> **NOTE:** For the normal flow sessions, the **show security flow session** command displays byte counters based on IP header length. However, for sessions in Express Path mode, the statistics are collected from the IOC2 (SRX5K-MPC), IOC3 (SRX5K-MPC3-100G10G and SRX5K-MPC3-40G10G), and IOC4 (SRX5K-IOC4-MRAT and SRX5K-IOC4-10G) ASIC hardware engines and include full packet length with L2 headers. Because of this, the output displays slightly larger byte counters for sessions in Express Path mode than for the normal flow session.

Options

- *filter*—Filter the display by the specified criteria.

  The following filters reduce the display to those sessions that match the criteria specified by the filter. Refer to the specific **show** command for examples of the filtered output.

  advanced-anti-malware—Show advanced-anti-malware sessions. For details on the **advanced-anti-malware** option, see the Sky Advanced Threat Prevention CLI Reference Guide.

  all-logical-systems-tenants—All multitenancy systems.

  application—Predefined application name.

  application-firewall—Application firewall enabled.

  application-firewall-rule-set—Application firewall enabled with the specified rule set.

  application-traffic-control—Application traffic control session.

application-traffic-control-rule-set—Application traffic control rule set name and rule name.

conn-tag—Session connection tag (0..4294967295).

destination-port—Destination port.

destination-prefix—Destination IP prefix or address.

dynamic-application—Dynamic application.

dynamic-application-group—Dynamic application.

encrypted—Encrypted traffic.

family—Display session by family.

idp—IDP-enabled sessions.

interface—Name of incoming or outgoing interface.

logical-system (all | *logical-system-name*)—Name of a specific logical system or **all** to display all logical systems.

nat—Display sessions with network address translation.

node—(Optional) For chassis cluster configurations, display security flow session information on a specific node (device) in the cluster.

- ***node-id*** —Identification number of the node. It can be 0 or 1.
- **all** —Display information about all nodes.
- **local** —Display information about the local node.
- **primary**—Display information about the primary node.

policy-id—Display session information based on policy ID; the range is 1 through 4,294,967,295.

protocol—IP protocol number.

resource-manager—Resource manager.

root-logical-system—Display root logical system as default.

security-intelligence—Display security intelligence sessions.

services-offload—Display services offload sessions.

session-identifier—Display session with specified session identifier.

source-port—Source port.

source-prefix—Source IP prefix.

tenant—Displays the security flow session information for a tenant system.

tunnel—Tunnel sessions.

- brief | extensive | summary—Display the specified level of output.
- none—Display information about all active sessions.

Required Privilege Level
view

RELATED DOCUMENTATION

> *Understanding Traffic Processing on Security Devices*
>
> *clear security flow session all*

List of Sample Output

show security flow session on page 928
show security flow session (with default policy) on page 928
show security flow session brief on page 929
show security flow session extensive on page 929
show security flow session extensive on page 930
show security flow session summary on page 931

Output Fields

Table 54 on page 925 lists the output fields for the **show security flow session** command. Output fields are listed in the approximate order in which they appear.

Table 54: show security flow session Output Fields

Field Name	Field Description	Level of Output
Session ID	Number that identifies the session. Use this ID to get more information about the session.	brief extensive none
If	Interface name.	brief none

Table 54: show security flow session Output Fields *(continued)*

Field Name	Field Description	Level of Output
State	Status of security flow session.	brief extensive none
Conn Tag	A 32-bit connection tag that uniquely identifies the GPRS tunneling protocol, user plane (GTP-U) and the Stream Control Transmission Protocol (STCP) sessions. The connection tag for GTP-U is the tunnel endpoint identifier (TEID) and for SCTP is the vTag. The connection ID remains 0 if the connection tag is not used by the sessions.	brief extensive none
CP Session ID	Number that identifies the central point session. Use this ID to get more information about the central point session.	brief extensive none
Policy name	Name and ID of the policy that the first packet of the session matched.	brief extensive none
Timeout	Idle timeout after which the session expires.	brief extensive none
In	Incoming flow (source and destination IP addresses, application protocol, interface, session token, route, gateway, tunnel, port sequence, FIN sequence, FIN state, packets and bytes).	brief extensive none
Bytes	Number of received and transmitted bytes.	brief extensive none

Table 54: show security flow session Output Fields *(continued)*

Field Name	Field Description	Level of Output
Pkts	Number of received and transmitted packets.	brief extensive none
Total sessions	Total number of sessions.	brief extensive none
Out	Reverse flow (source and destination IP addresses, application protocol, interface, session token, route, gateway, tunnel, port sequence, FIN sequence, FIN state, packets and bytes).	brief extensive none
Status	Session status.	extensive
Flag	Internal flag depicting the state of the session, used for debugging purposes.	extensive
Source NAT pool	The name of the source pool where NAT is used.	extensive
Dynamic application	Name of the application.	extensive
Application traffic control rule-set	AppQoS rule set for this session.	extensive
Rule	AppQoS rule for this session.	extensive
Maximum timeout	Maximum session timeout.	extensive
Current timeout	Remaining time for the session unless traffic exists in the session.	extensive
Session State	Session state.	extensive
Start time	Time when the session was created, offset from the system start time.	extensive
Unicast-sessions	Number of unicast sessions.	Summary

Table 54: show security flow session Output Fields *(continued)*

Field Name	Field Description	Level of Output
Multicast-sessions	Number of multicast sessions.	Summary
Services-offload-sessions	Number of services-offload sessions.	Summary
Failed-sessions	Number of failed sessions.	Summary
Sessions-in-use	Number of sessions in use. • Valid sessions • Pending sessions • Invalidated sessions • Sessions in other states	Summary
Maximum-sessions	Maximum number of sessions permitted.	Summary

Sample Output

show security flow session

`root>` **show security flow session**

```
Flow Sessions on FPC0 PIC1:

Session ID: 10115977, Policy name: SG/4, State: Active, Timeout: 56, Valid
  In: 203.0.113.1/1000 --> 203.0.113.11/2000;udp, Conn Tag: 0x0, If: reth1.0, Pkts:
 1, Bytes: 86, CP Session ID: 10320276
  Out: 203.0.113.11/2000 --> 203.0.113.1/1000;udp, Conn Tag: 0x0, If: reth0.0,
Pkts: 0, Bytes: 0, CP Session ID: 10320276

Total sessions: 1
```

show security flow session (with default policy)

`root>` **show security flow session**

```
Session ID: 36, Policy name: pre-id-default-policy/n, Timeout: 2, Valid
  In: 10.10.10.2/61606 --> 10.10.10.1/179;tcp, Conn Tag: 0x0, If: ge-0/0/2.0, Pkts:
 1, Bytes: 64,
```

```
  Out: 10.10.10.1/179 --> 10.10.10.2/61606;tcp, Conn Tag: 0x0, If: .local..0, Pkts:
 1, Bytes: 40,
```

show security flow session brief

root> **show security flow session brief**

```
Flow Sessions on FPC0 PIC1:

Session ID: 10115977, Policy name: SG/4, State: Active, Timeout: 62, Valid
  In: 203.0.113.11/1000 --> 203.0.113.1/2000;udp, Conn Tag: 0x0, If: reth1.0, Pkts:
 1, Bytes: 86, CP Session ID: 10320276
  Out: 203.0.113.1/2000 --> 203.0.113.11/1000;udp, Conn Tag: 0x0, If: reth0.0,
Pkts: 0, Bytes: 0, CP Session ID: 10320276

Total sessions: 1
```

show security flow session extensive

root> **show security flow session extensive**

```
Flow Sessions on FPC0 PIC1:

Session ID: 10115977, Status: Normal, State: Active
Flags: 0x8000040/0x18000000/0x12000003
Policy name: SG/4
Source NAT pool: Null, Application: junos-gprs-gtp-v0-udp/76
Dynamic application: junos:UNKNOWN,
Encryption:  Unknown
Application traffic control rule-set: INVALID, Rule: INVALID
Maximum timeout: 90, Current timeout: 54
Session State: Valid
Start time: 6704, Duration: 35
   In: 203.0.113.11/1000 --> 201.11.0.100/2000;udp,
    Conn Tag: 0x0, Interface: reth1.0,
    Session token: 0x6, Flag: 0x40000021
    Route: 0x86053c2, Gateway: 201.10.0.100, Tunnel: 0
    Port sequence: 0, FIN sequence: 0,
    FIN state: 0,
    Pkts: 1, Bytes: 86
    CP Session ID: 10320276
   Out: 203.0.113.1/2000 --> 203.0.113.11/1000;udp,
    Conn Tag: 0x0, Interface: reth0.0,
```

```
    Session token: 0x7, Flag: 0x50000000
    Route: 0x86143c2, Gateway: 203.0.113.11, Tunnel: 0
    Port sequence: 0, FIN sequence: 0,
    FIN state: 0,
    Pkts: 0, Bytes: 0
    CP Session ID: 10320276
Total sessions: 1
```

show security flow session extensive

root> **show security flow session extensive**

```
Flow Sessions on FPC0 PIC0:

Session ID: 10000059, Status: Normal
Flags: 0x10000/0x0/0x10/0x1
Policy name: N/A
Source NAT pool: Null
Dynamic application: junos:UNKNOWN,
Encryption:  Unknown
Application traffic control rule-set: INVALID, Rule: INVALID
Maximum timeout: N/A, Current timeout: N/A
Session State: Valid
Start time: 642, Duration: 369
   In: 3.0.0.2/64387 --> 2.0.0.1/8940;esp,
  Conn Tag: 0x0, Interface: xe-2/0/2.0,
    Session token: 0x7, Flag: 0x80100621
    Route: 0xc0010, Gateway: 2.0.0.2, Tunnel: 0
    ESP/AH frag Rx: 0, Generated: 0
    Inner IPv4 frag Rx: 0, Tx: 0, Generated: 0,
    Inner IPv6 frag Rx: 0, Tx: 0, Generated: 0
    Port sequence: 0, FIN sequence: 0,
    FIN state: 0,
    Pkts: 25, Bytes: 3760
    CP Session ID: 0

Session ID: 10000060, Status: Normal
Flags: 0x10000/0x0/0x10/0x1
Policy name: N/A
Source NAT pool: Null
Dynamic application: junos:UNKNOWN,
Encryption:  Unknown
Application traffic control rule-set: INVALID, Rule: INVALID
Maximum timeout: N/A, Current timeout: N/A
```

```
Session State: Valid
Start time: 642, Duration: 369
   In: 3.0.0.2/0 --> 2.0.0.1/0;esp,
  Conn Tag: 0x0, Interface: xe-2/0/2.0,
    Session token: 0x7, Flag: 0x621
    Route: 0xc0010, Gateway: 2.0.0.2, Tunnel: 0
    ESP/AH frag Rx: 0, Generated: 0
    Inner IPv4 frag Rx: 0, Tx: 0, Generated: 0,
    Inner IPv6 frag Rx: 0, Tx: 0, Generated: 0
    Port sequence: 0, FIN sequence: 0,
    FIN state: 0,
    Pkts: 0, Bytes: 0
    CP Session ID: 0
Total sessions: 2
```

show security flow session summary

`root>` **show security flow session summary**

```
Flow Sessions on FPC10 PIC1:
Unicast-sessions: 1
Multicast-sessions: 0
Services-offload-sessions: 0
Failed-sessions: 0
Sessions-in-use: 1
  Valid sessions: 1
  Pending sessions: 0
  Invalidated sessions: 0
  Sessions in other states: 0
Maximum-sessions: 6291456

Flow Sessions on FPC10 PIC2:
Unicast-sessions: 0
Multicast-sessions: 0
Services-offload-sessions: 0
Failed-sessions: 0
Sessions-in-use: 0
  Valid sessions: 0
  Pending sessions: 0
  Invalidated sessions: 0
  Sessions in other states: 0
Maximum-sessions: 6291456

Flow Sessions on FPC10 PIC3:
```

```
Unicast-sessions: 0
Multicast-sessions: 0
Services-offload-sessions: 0
Failed-sessions: 0
Sessions-in-use: 0
  Valid sessions: 0
  Pending sessions: 0
  Invalidated sessions: 0
  Sessions in other states: 0
Maximum-sessions: 6291456
```

show security flow session tenant

Syntax

```
show security flow session tenant (tenant-name | all)
```

Release Information

Command introduced in Junos OS Release 18.3R1.

Description

Displays the information about the currently active security flow sessions of the tenant systems on the device. You can either view the currently active security flow sessions information for a specific tenant system or for all the tenant systems.

Options

tenant-name—Name of the tenant system.

all—Displays the security flow session information for all the tenant systems.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security flow session tenant | 856

List of Sample Output

show security flow session tenant T1 on page 934
show security flow session tenant all on page 934

Output Fields

Table 55 on page 933 lists the output fields for the **show security flow session tenant** command. Output fields are listed in the approximate order in which they appear.

Table 55: show security flow session tenant

Field Name	Field Description
Session ID	Number that identifies the session. You can use this ID to get additional information about the session.
Policy name	Policy that permitted the traffic.

Table 55: show security flow session tenant *(continued)*

Field Name	Field Description
Timeout	Idle timeout after which the session expires.
In	Incoming security flow session details. The incoming security flow session details include the source and destination IP addresses, application protocol, interface, session token, route, gateway, tunnel, port sequence, FIN sequence, FIN state, packets, and bytes.
Out	Reverse security flow session details. The reverse security flow session details include the source and destination IP addresses, application protocol, interface, session token, route, gateway, tunnel, port sequence, FIN sequence, FIN state, packets, and bytes.
Total sessions	Total number of security flow sessions.
Policy name	Name and ID of the policy that the first packet of the security flow session matched.
Tenant	Name of the tenant system.

Sample Output

show security flow session tenant T1

`root@host>` **show security flow session tenant T1**

```
Flow Sessions on FPC7 PIC1:

Session ID: 290000224, Policy name: default-policy-logical-system-32/2, Timeout:
1790, Valid
Tenant: T1
  In: 203.0.113.0/39767 --> 203.0.113.1/23;tcp, Conn Tag: 0x0, If: xe-3/0/1.0,
Pkts: 39, Bytes: 2136, CP Session ID: 1225556754
  Out: 203.0.113.1/23 --> 203.0.113.0/39767;tcp, Conn Tag: 0x0, If: lt-0/0/0.101,
 Pkts: 31, Bytes: 1872, CP Session ID: 1225556754
```

show security flow session tenant all

`root@host>` **show security flow session tenant all**

```
Flow Sessions on FPC7 PIC1:

Session ID: 290000224, Policy name: default-policy-logical-system-32/2, Timeout:
1790, Valid
Tenant: T1
  In: 203.0.113.0/39767 --> 203.0.113.1/23;tcp, Conn Tag: 0x0, If: xe-3/0/1.0,
Pkts: 39, Bytes: 2136, CP Session ID: 1225556754
  Out: 203.0.113.1/23 --> 203.0.113.0/39767;tcp, Conn Tag: 0x0, If: lt-0/0/0.101,
 Pkts: 31, Bytes: 1872, CP Session ID: 1225556754

Session ID: 290000225, Policy name: default-policy-logical-system-33/2, Timeout:
1790, Valid
Tenant: T2
  In: 203.0.113.3/39767 --> 203.0.113.4/23;tcp, Conn Tag: 0x0, If: lt-0/0/0.103,
Pkts: 39, Bytes: 2136, CP Session ID: 1225556755
  Out: 203.0.113.4/23 --> 203.0.113.3/39767;tcp, Conn Tag: 0x0, If: xe-9/0/0.0,
Pkts: 31, Bytes: 1872, CP Session ID: 1225556755
Total sessions: 2

Flow Sessions on FPC7 PIC2:
Total sessions: 0

Flow Sessions on FPC7 PIC3:
Total sessions: 0
```

show security idp logical system

Syntax

```
show security idp logical-system
```

Release Information

Command introduced in Junos OS Release 18.3R1.

Description

Display information about the logical systems and the IDP policies associated to the logical systems.

Options

- **logical-system**— Show the IDP policy assigned to a logical system. The IDP policy is assigned to a logical system through the security profile.
  - **policy-association**

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp

List of Sample Output

show security idp logical-system policy-association on page 936

Sample Output

show security idp logical-system policy-association

`user@host>` **show security idp logical-system policy-association**

```
Logical system                 IDP policy

root-logical-system            policy1
LSYS1                          idpengine
```

show security idp attack table

Syntax

```
show security idp attack table
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
IPv6 covert channels are detected in Junos OS Release 19.1R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the detailed information of IDP attack table and displays the IPv6 covert channels which are identified and mitigated.

Options

none—Displays the details of the IDP attack table.

logical-system *logical-system-name*—(Optional) Displays the details of the IDP attack table for a specific logical system.

logical-system all—(Optional) Displays the details of the IDP attack table for all logical systems.

tenant *tenant-name*—(Optional) Displays the details of the IDP attack table for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp attack table | 840

List of Sample Output

show security idp attack table on page 938
show security idp attack table tenant TSYS1 on page 938

Output Fields

Table 56 on page 938 lists the output fields for the **show security idp attack table** command. Output fields are listed in the approximate order in which they appear.

Table 56: show security idp attack table Output Fields

Field Name	Field Description
Attack name	Name of the attack that you want to match in the monitored network traffic.
Hits	Total number of attack matches. On SRX Series devices, for brute force and time-binding-related attacks, the logging is to be done only when the match **count** is equal to the **threshold**. That is, only one log is generated within the 60-second period in which the threshold is measured. This process prevents repetitive logs from being generated and ensures consistency with other IDP platforms, such as IDP-standalone. When no attack is seen within the 60-second period and the BFQ entry is flushed out, the match count starts over the new attack match shows up in the attack table, and the log is generated.

Sample Output

show security idp attack table

`user@host>` **show security idp attack table**

```
IDP attack statistics:
  Attack name                                 #Hits
  HTTP:OVERFLOW:PI3WEB-SLASH-OF               1
```

show security idp attack table tenant TSYS1

`user@host>` **show security idp attack table tenant *TSYS1***

```
IDP attack statistics:

  Attack name                                 #Hits
  FTP:USER:ROOT                               1
```

show security idp counters action

Syntax

```
show security idp counters action
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical system in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the detailed information of IDP counter type and value.

Options

none—Displays the detailed information of IDP counter type and value.

logical system *logical-system-name*—(Optional) Displays the detailed information of IDP counter type and value for a specific logical system.

logical system all—(Optional) Displays the detailed information of IDP counter type and value for all logical systems.

tenant *tenant-name*—(Optional) Displays the detailed information of IDP counter type and value for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters action | 848

List of Sample Output

show security idp counters action on page 940
show security idp counters action logical-system LSYS0 on page 940
show security idp counters action tenant TSYS1 on page 941

Output Fields

Table 57 on page 940 lists the output fields for the **show security idp counters action** command. Output fields are listed in the approximate order in which they appear.

Table 57: show security idp counters action Output Fields

Field Name	Field Description
IDP counter type	Name of the action
Value	Number of packets dropped, recommended, and ignored based on the action in the IDP counters.

Sample Output

show security idp counters action

```
user@host> show security idp counters action
```

```
IDP counters:

  IDP counter type                                                Value
 None                                                              0
 Recommended                                                       0
 Ignore                                                            0
 Diffserv                                                          0
 Drop packet                                                       0
 Drop                                                              0
 Close                                                             0
 Close server                                                      0
 Close client                                                      0
 IP action rate limit                                              0
 IP action drop                                                    0
 IP action close                                                   0
 IP action nofity                                                  0
 IP action failed                                                  0
```

show security idp counters action logical-system LSYS0

```
user@host> show security idp counters action logical-system LSYS0
```

```
IDP counters:

  IDP counter type                                                Value
 None                                                              0
 Recommended                                                       0
```

```
 Ignore                                                          0
 Diffserv                                                        0
 Drop packet                                                     0
 Drop                                                            0
 Close                                                           0
 Close server                                                    0
 Close client                                                    0
 IP action rate limit                                            0
 IP action drop                                                  0
 IP action close                                                 0
 IP action nofity                                                0
 IP action failed                                                0
```

show security idp counters action tenant TSYS1

user@host> **show security idp counters action tenant TSYS1**

```
IDP counters:

  IDP counter type                                             Value
 None                                                           1
 Recommended                                                    0
 Ignore                                                         0
 Diffserv                                                       0
 Drop packet                                                    0
 Drop                                                           0
 Close                                                          0
 Close server                                                   0
 Close client                                                   0
 IP action rate limit                                           0
 IP action drop                                                 0
 IP action close                                                0
 IP action nofity                                               0
 IP action failed                                               0
```

show security idp counters application-identification

Syntax

```
show security idp counters application-identification
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2. Modified in Junos OS Release 12.1.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all IDP application identification (AI) counter values.

Options

none—Displays the status of all IDP application identification (AI) counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all IDP application identification (AI) counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all IDP application identification (AI) counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all IDP application identification (AI) counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters application-identification | 847

List of Sample Output

show security idp counters application-identification on page 945
show security idp counters application-identification tenant TSYS1 on page 946

Output Fields

Table 58 on page 943 lists the output fields for the **show security idp counters application-identification** command. Output fields are listed in the approximate order in which they appear.

Table 58: show security idp counters application-identification Output Fields

Field Name	Field Description
AI matches	Number of sessions with an AI signature match.
AI no-matches	Number of sessions with no AI signature match.
AI-enabled sessions	Number of sessions with AI enabled.
AI-disabled sessions	Number of sessions with AI disabled.
AI-disabled sessions due to ssl encapsulated flows	Number of sessions with AI disabled due to SSL encapsulated flows.
AI-disabled sessions due to cache hit	Number of sessions with AI disabled due to a cache match.
AI-disabled sessions due to configuration	Number of sessions with AI disabled because the configured session limit was reached.
AI-disabled sessions due to protocol remapping	Number of sessions with AI disabled due to protocol remapping.
AI-disabled sessions due to RPC match	Number of sessions with AI disabled due to an RPC match.
AI-disabled sessions due to gate match	Number of sessions with AI disabled due to a gate match.
AI-disabled sessions due to non-TCP/UDP flows	Number of sessions with AI disabled due to non-TCP or non-UDP flows.
AI-disabled sessions due to session limit	Number of sessions with AI disabled because the maximum session limit was reached.
AI-disabled sessions due to session packet memory limit	Number of sessions with AI disabled because the memory usage limit per session was reached.
AI-disabled sessions due to global packet memory limit	Number of sessions with AI disabled because the global memory usage limit was reached.
AI sessions current global reass packet memory usage	Number of AI sessions with current global reassembler packet memory usage limit

Table 58: show security idp counters application-identification Output Fields *(continued)*

Field Name	Field Description
AI sessions peak global reass packet memory usage	Number of AI sessions with peak global reassembler packet memory usage limit
AI sessions current global packet memory usage	Number of AI sessions with current global packet memory usage limit
AI sessions peak global packet memory usage	Number of AI sessions with peak global packet memory usage limit
AI-sessions dropped due to malloc failure before session create	Number of AI sessions dropped because the malloc failure occurred before session create.
AI-sessions dropped due to malloc failure after create	Number of AI sessions dropped because the malloc failure occurred after session create.
AI-Packets received on sessions marked for drop due to malloc failure	Number of AI packets received on sessions that are marked to be dropped because the malloc failure.
Packets cloned for AI	Number of packets cloned for application identification.
Policy update	Number of times the IDP policy has been updated.
Total PME prematch job ignored	Number of jobs ignored because of pattern matching engine (PME) not matching.
Total packets for which prematch job were ignored	Number of packets for which signature matching was ignored as prematch found.
Prematch busy packet count	Number of packets saved as they are handed off for signature matching during prematch reprocess.
Final match busy packet count	Number of packets saved as they are handed off for signature matching during final match reprocess.
Total AI busy packet count	Number of times AI saved packet handed off for signature matching.
Final match processed busy packet count	Number of times a packet processed for final matching before signature matching.

Table 58: show security idp counters application-identification Output Fields *(continued)*

Field Name	Field Description
Prematch processed busy packet count	Number of times a packet processed for prematch before signature match.
Prematch ignored busy packet count	Number of packets ignored for signature matching as prematch found.
AI done busy packet count	Number of packets signature matching not completed before AI done.
JPME flow for Ignored jobs destroyed	Number of jobs destroyed because of flow mismatch due to policy relookup.
Set AI done for prematch	Number of sessions set for AI applied.
AI done for prematch	Number of sessions with AI applied.

Sample Output

show security idp counters application-identification

`user@host>` **show security idp counters application-identification**

```
IDP counter type                                                  Value
 AI matches                                                         0
 AI no-matches                                                      0
 AI-enabled sessions                                                0
 AI-disabled sessions                                               0
 AI-disabled sessions due to ssl encapsulated flows                 0
 AI-disabled sessions due to cache hit                              0
 AI-disabled sessions due to configuration                          0
 AI-disabled sessions due to protocol remapping                     0
 AI-disabled sessions due to RPC match                              0
 AI-disabled sessions due to gate match                             0
 AI-disabled sessions due to non-TCP/UDP flows                      0
 AI-disabled sessions due to session limit                          0
 AI-disabled sessions due to session packet memory limit            0
 AI-disabled sessions due to global packet memory limit             0
 AI sessions current global reass packet memory usage               0
 AI sessions peak global reass packet memory usage                  0
```

```
AI sessions current global packet memory usage                          0
AI sessions peak global packet memory usage                             0
AI-sessions dropped due to malloc failure before session create         0
AI-sessions dropped due to malloc failure after create                  0
AI-Packets received on sessions marked for drop due to malloc failure   0
Packets cloned for AI                                                   0
Policy update                                                           0
Total PME prematch job ignored                                          0
Total packets for which prematch job were ignored                       0
Prematch busy packet count                                              0
Final match busy packet count                                           0
Total AI busy packet count                                              0
Final match processed busy packet count                                 0
Prematch processed busy packet count                                    0
Prematch ignored busy packet count                                      0
AI done busy packet count                                               0
JPME flow for Ignored jobs destroyed                                    0
Set AI done for prematch                                                0
AI done for prematch                                                    0
                                                                        0
```

show security idp counters application-identification tenant TSYS1

`user@host>` **show security idp counters application-identification tenant TSYS1**

```
IDP counters:

  IDP counter type                                                  Value
 AI matches                                                          0
 AI no-matches                                                       0
 AI-enabled sessions                                                 0
 AI-disabled sessions                                                1
 AI-disabled sessions due to ssl encapsulated flows                  0
 AI-disabled sessions due to cache hit                               1
 AI-disabled sessions due to configuration                           0
 AI-disabled sessions due to protocol remapping                      0
 AI-disabled sessions due to RPC match                               0
 AI-disabled sessions due to gate match                              0
 AI-disabled sessions due to non-TCP/UDP flows                       0
 AI-disabled sessions due to global packet memory limit              0
 AI sessions current global packet memory usage                      0
 AI sessions peak global packet memory usage                         0
 AI-sessions dropped due to malloc failure before session create     0
 AI-sessions dropped due to malloc failure after create              0
```

```
AI-Packets received on sessions marked for drop due to malloc failure   0
Packets cloned for AI                                                   0
Policy update                                                           0
Total PME prematch job ignored                                          0
Total packets for which prematch job were ignored                       0
Prematch busy packet count                                              0
Final match busy packet count                                           0
Total AI busy packet count                                              0
Final match processed busy packet count                                 0
Prematch processed busy packet count                                    0
Prematch ignored busy packet count                                      0
AI done busy packet count                                               0
JPME flow for Ignored jobs destroyed                                    0
Set AI done for prematch                                                0
AI done for prematch                                                    0
```

show security idp counters memory

Syntax

```
show security idp counters memory
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays detailed information of allocated, reallocated IDP counters memory values.

Options

none—Displays detailed information of allocated, reallocated IDP counters memory values.

logical-system *logical-system-name*—(Optional) Displays detailed information of allocated, reallocated IDP counters memory values for a specific logical system.

logical-system all—(Optional) Displays detailed information of allocated, reallocated IDP counters memory values for all logical systems.

tenant *tenant-name*—(Optional) Displays detailed information of allocated, reallocated IDP counters memory values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters memory | 844

List of Sample Output

show security idp counters memory on page 949
show security idp counters memory tenant TSYS1 on page 950

Output Fields

Table 59 on page 949 lists the output fields for the **show security idp counters memory** command. Output fields are listed in the approximate order in which they appear.

Table 59: show security idp counters memory Output Fields

Field Name	Field Description
IDP counter type	Name of the counter type
Value	Number of requests made for memory allocation and reallocation,

Sample Output

show security idp counters memory

`user@host>` **show security idp counters memory**

```
IDP counters:

  IDP counter type                                                Value
 Memory allocation requested                                      928058
 Memory reallocation requested                                    0
 Memory allocation failed                                         0
 Memory reallocation failed                                       0
 Memory free requested                                            889749
 Memory free failed                                               0
 IDP Arena requested                                              0
 IDP Arena failed                                                 0
 IDP Arena freed                                                  0
 Objcache requested                                               132
 Objcache failed                                                  0
 Objcache freed                                                   2
 Objcache over limit                                              0
 Objcache invalid record                                          0
 Detector Objcache requested                                      21032
 Detector Objcache failed                                         0
 Detector Objcache freed                                          20324
 Detector Objcache invalid record                                 0
 Detector Arena requested                                         0
 Detector Arena failed                                            0
 Detector Arena freed                                             0
 Kzalloc requested                                                910823
 Kzalloc failed                                                   0
 Kzalloc freed                                                    885264
 Pool alloc called                                                0
 Pool alloc subscribed size                                       0
```

```
 Pool alloc done                                                  0
 Pool free called                                                 0
 Pool free done                                                   0
 Malloc over limit                                                0
 Remote free deadbeef                                             0
```

show security idp counters memory tenant TSYS1

user@host> **show security idp counters memory tenant TSYS1**

```
IDP counters:

  IDP counter type                                              Value
 Memory allocation requested                                     78
 Memory reallocation requested                                   0
 Memory allocation failed                                        0
 Memory reallocation failed                                      0
 Memory free requested                                           75
 Memory free failed                                              0
 IDP Arena requested                                             0
 IDP Arena failed                                                0
 IDP Arena freed                                                 0
 Objcache requested                                              70
 Objcache failed                                                 0
 Objcache freed                                                  68
 Objcache over limit                                             0
 Objcache invalid record                                         0
 Detector Objcache requested                                     13
 Detector Objcache failed                                        0
 Detector Objcache freed                                         13
 Detector Objcache invalid record                                0
 Detector Arena requested                                        0
 Detector Arena failed                                           0
 Detector Arena freed                                            0
 Kzalloc requested                                               8
 Kzalloc failed                                                  0
 Kzalloc freed                                                   7
 Pool alloc called                                               0
 Pool alloc subscribed size                                      0
 Pool alloc done                                                 0
 Pool free called                                                0
 Pool free done                                                  0
 Malloc over limit                                               0
 Remote free deadbeef                                            0
```

show security idp counters ssl-inspection

Syntax

```
show security idp counters ssl-inspection
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the IDP counters value for decrypted and encrypted sessions.

Options

none—Displays the IDP counters value for decrypted and encrypted sessions.

logical-system *logical-system-name*—(Optional) Displays the IDP counters value for decrypted and encrypted sessions for a specific logical system.

logical-system all—(Optional) Displays the IDP counters value for decrypted and encrypted sessions for all logical systems.

tenant *tenant-name*—(Optional) Displays the IDP counters value for decrypted and encrypted sessions for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters ssl-inspection | 843

List of Sample Output

show security idp counters ssl-inspection on page 952
show security idp counters ssl-inspection logical-system LSYS1 on page 952
show security idp counters ssl-inspection tenant TSYS1 on page 953

Output Fields

Table 60 on page 952 lists the output fields for the **show security idp counters ssl-inspection** command. Output fields are listed in the approximate order in which they appear.

Table 60: show security idp counters ssl-inspection Output Fields

Field Name	Field Description
IDP counter type	Name of the action
Value	Number of packets and sessions decrypted, sessions not decrypted.

Sample Output

show security idp counters ssl-inspection

```
user@host> show security idp counters ssl-inspection
```

```
IDP counters:

  IDP counter type                                                Value
 Packets Decrypted                                                 0
 Sessions Decrypted                                                0
 Sessoins Not Decrypted                                            0
 Sessions Not Decrypted - Configuration                            0
 Sessions Not Decrypted - No Key                                   0
 Sessions Not Decrypted - Unsupported Ciphers                      0
 Sessions Not Decrypted - Unsupported Compression                  0
 Sessions Not Decrypted - Unsupported Key Exchange                 0
 Sessions Not Decrypted - Bulk Decryption Failure                  0
 Sessions Not Decrypted - Key Generation Failure                   0
 Sessions Not Decrypted - Temporary Certificate                    0
 Sessions Not Decrypted - Handshake Verification Failure           0
 Sessions Not Decrypted - ID Cache Miss                            0
 Sessions Not Decrypted - Session Limit                            0
 Sessions Not Decrypted - Message Size                             0
 Sessions Not Decrypted - No Memory                                0
 Sessions New Key                                                  0
 Sessions Used Key                                                 0
 Session ID Cache Hits                                             0
 Session ID Cache Misses                                           0
 Sessions Used XLR RSA SAE for Key Decryption                      0
 Sessions - Error when XLR RSA SAE used                            0
```

show security idp counters ssl-inspection logical-system LSYS1

```
user@host> show security idp counters ssl-inspection logical-system LSYS1
```

```
IDP counters:

  IDP counter type                                                  Value
 Packets Decrypted                                                   0
 Sessions Decrypted                                                  0
 Sessoins Not Decrypted                                              0
 Sessions Not Decrypted - Configuration                              0
 Sessions Not Decrypted - No Key                                     0
 Sessions Not Decrypted - Unsupported Ciphers                        0
 Sessions Not Decrypted - Unsupported Compression                    0
 Sessions Not Decrypted - Unsupported Key Exchange                   0
 Sessions Not Decrypted - Bulk Decryption Failure                    0
 Sessions Not Decrypted - Key Generation Failure                     0
 Sessions Not Decrypted - Temporary Certificate                      0
 Sessions Not Decrypted - Handshake Verification Failure             0
 Sessions Not Decrypted - ID Cache Miss                              0
 Sessions Not Decrypted - Session Limit                              0
 Sessions Not Decrypted - Message Size                               0
 Sessions Not Decrypted - No Memory                                  0
 Sessions New Key                                                    0
 Sessions Used Key                                                   0
 Session ID Cache Hits                                               0
 Session ID Cache Misses                                             0
 Sessions Used XLR RSA SAE for Key Decryption                        0
 Sessions - Error when XLR RSA SAE used                              0
```

show security idp counters ssl-inspection tenant TSYS1

user@host> **show security idp counters ssl-inspection tenant TSYS1**

```
IDP counters:

  IDP counter type                                                  Value
 Packets Decrypted                                                   0
 Sessions Decrypted                                                  0
 Sessoins Not Decrypted                                              0
 Sessions Not Decrypted - Configuration                              0
 Sessions Not Decrypted - No Key                                     0
 Sessions Not Decrypted - Unsupported Ciphers                        0
 Sessions Not Decrypted - Unsupported Compression                    0
 Sessions Not Decrypted - Unsupported Key Exchange                   0
 Sessions Not Decrypted - Bulk Decryption Failure                    0
 Sessions Not Decrypted - Key Generation Failure                     0
 Sessions Not Decrypted - Temporary Certificate                      0
```

```
Sessions Not Decrypted - Handshake Verification Failure                0
Sessions Not Decrypted - ID Cache Miss                                 0
Sessions Not Decrypted - Session Limit                                 0
Sessions Not Decrypted - Message Size                                  0
Sessions Not Decrypted - No Memory                                     0
Sessions New Key                                                       0
Sessions Used Key                                                      0
Session ID Cache Hits                                                  0
Session ID Cache Misses                                                0
Sessions Used XLR RSA SAE for Key Decryption                           0
Sessions - Error when XLR RSA SAE used                                 0
```

show security idp counters pdf-decoder

Syntax

```
show security idp counters pdf-decoder
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced for user logical systems in Junos OS Release 18.3R1
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the IDP counters value for PDF-Decode enabled sessions, requests, and memory limit IDP counter types.

Options

none—Displays the IDP counters value for PDF-Decode enabled sessions, requests, and memory limit IDP counter types.

logical-system *logical-system-name*—(Optional) Displays the IDP counters value for PDF-Decode enabled sessions, requests, and memory limit IDP counter types for a specific logical system.

logical-system all—(Optional) Displays the IDP counters value for PDF-Decode enabled sessions, requests, and memory limit IDP counter types for all logical systems.

tenant *tenant-name*—(Optional) Displays the IDP counters value for PDF-Decode enabled sessions, requests, and memory limit IDP counter types for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters pdf-decoder | 842

List of Sample Output

show security idp counters pdf-decoder on page 956
show security idp counters pdf-decoder logical-system LSYS1 on page 956
show security idp counters pdf-decoder tenant TSYS1 on page 957

Output Fields

Table 61 on page 956 lists the output fields for the **show security idp counters pdf-decoder** command. Output fields are listed in the approximate order in which they appear.

Table 61: show security idp counters pdf-decoder Output Fields

Field Name	Field Description
IDP counter type	Name of the action
Value	Number of PDF-decode enabled sessions and requests for the IDP counters.

Sample Output

show security idp counters pdf-decoder

```
user@host> show security idp counters pdf-decoder
```

```
IDP counters:

  IDP counter type                                                Value
 PDF-Decode enabled sessions                                       0
 PDF-Decode requests                                               0
 PDF-decode in pending state                                       0
 PDF-decode finished sucessfully                                   0
 PDF-decode per file memory limit reached                          0
 PDF-decode memory limit reached                                   0
 PDF-decode session limit reached                                  0
 PDF-decode malloc count                                           0
 PDF-decode free count                                             0
 PDF-decode bypassed  -  Global memory limit                       0
 PDF-decode bypassed  -  Per file memory limit                     0
 PDF-decode bypassed  -  Document encrypted                        0
 PDF-decode bypassed  -  Unsupported filter decode                 0
 PDF-decode bypassed  -  corrupted PDF file                        0
 PDF-decode bypassed  -  unsupported obj-stream length             0
 PDF-decode bypassed  -  filter decode failed                      0
```

show security idp counters pdf-decoder logical-system LSYS1

```
user@host> show security idp counters pdf-decoder logical-system LSYS1
```

```
IDP counters:

  IDP counter type                                                  Value
 PDF-Decode enabled sessions                                         0
 PDF-Decode requests                                                 0
 PDF-decode in pending state                                         0
 PDF-decode finished sucessfully                                     0
 PDF-decode per file memory limit reached                            0
 PDF-decode memory limit reached                                     0
 PDF-decode session limit reached                                    0
 PDF-decode malloc count                                             0
 PDF-decode free count                                               0
 PDF-decode bypassed  -  Global memory limit                         0
 PDF-decode bypassed  -  Per file memory limit                       0
 PDF-decode bypassed  -  Document encrypted                          0
 PDF-decode bypassed  -  Unsupported filter decode                   0
 PDF-decode bypassed  -  corrupted PDF file                          0
 PDF-decode bypassed  -  unsupported obj-stream length               0
 PDF-decode bypassed  -  filter decode failed                        0
```

show security idp counters pdf-decoder tenant TSYS1

user@host> **show security idp counters pdf-decoder tenant TSYS1**

```
IDP counters:

  IDP counter type                                                  Value
 PDF-Decode enabled sessions                                         0
 PDF-Decode requests                                                 0
 PDF-decode in pending state                                         0
 PDF-decode finished sucessfully                                     0
 PDF-decode per file memory limit reached                            0
 PDF-decode memory limit reached                                     0
 PDF-decode session limit reached                                    0
 PDF-decode malloc count                                             0
 PDF-decode free count                                               0
 PDF-decode bypassed  -  Global memory limit                         0
 PDF-decode bypassed  -  Per file memory limit                       0
 PDF-decode bypassed  -  Document encrypted                          0
 PDF-decode bypassed  -  Unsupported filter decode                   0
 PDF-decode bypassed  -  corrupted PDF file                          0
 PDF-decode bypassed  -  unsupported obj-stream length               0
 PDF-decode bypassed  -  filter decode failed                        0
```

show security idp counters log

Syntax

```
show security idp counters log
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all IDP log counter values.

Options

none—Displays the status of all IDP log counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all IDP log counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all IDP log counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all IDP log counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

event-rate

clear security idp counters log

List of Sample Output

show security idp counters log on page 960
show security idp counters log logical-system LSYS1 on page 961
show security idp counters log tenant TSYS1 on page 962

Output Fields

Table 62 on page 959 lists the output fields for the **show security idp counters log** command. Output fields are listed in the approximate order in which they appear.

Table 62: show security idp counters log Output Fields

Field Name	Field Description
Logs dropped	Number of logs that are dropped.
Suppressed log count	Number of logs that are suppressed.
Logs waiting for post-window packets (Unsupported)	Number of logs waiting for post-window packets.
Logs ready to be sent (Unsupported)	Number of logs ready to be sent.
Logs in suppression list (Unsupported)	Number of logs considered for suppression list.
Log timers created	Number of times the log timer is created.
Logs timers expired	Number of times the log timer is expired.
Log timers cancelled	Number of times the log timer is canceled.
Logs ready to be sent high watermark (Unsupported)	Number of packets that are ready to be sent with high degree watermark.
Log receive buffer full (Unsupported)	Number of times the buffer is full.
Packet log too big (Unsupported)	Number of packet logs that exceeded allowed packet log size.
Reads per second (Unsupported)	Number of packets that are read per second.
Logs in read buffer high watermark (Unsupported)	Number of high watermark packets that are in read buffer.

Table 62: show security idp counters log Output Fields *(continued)*

Field Name	Field Description
Packets logged	Number of packets that are logged,
Packets lost (Unsupported)	Number of packets that are failed to log.
Packets copied (Unsupported)	Number of packets copied during packet log.
Packets held (Unsupported)	Number of packets held for packet log.
Packets released	Number of packets that are released from hold.
IP Action Messages (Unsupported)	Number of IP action messages.
IP Action Drops (Unsupported)	Number of IP action messages dropped.
IP Action Exists (Unsupported)	Number of exits during IP action creation.
NWaits (Unsupported)	Number of logs waiting for post window packets.
Match vectors	Number of attacks in IDS match vector.
Supercedes	Number of attacks in supercede vector.

Sample Output

show security idp counters log

```
user@host> show security idp counters log
```

```
IDP counters:
IDP counter type                                                Value
Logs dropped                                                      0
Suppressed log count                                              0
Logs waiting for post-window packets                              0
Logs ready to be sent                                             0
Logs in suppression list                                          0
Log timers created                                                0
Logs timers expired                                               0
Log timers cancelled                                              0
Logs ready to be sent high watermark                              0
Log receive buffer full                                           0
Packet log too big                                                0
Reads per second                                                  1
Logs in read buffer high watermark                                0
Log Bytes in read buffer high watermark                           0
Packets logged                                                    0
Packets lost                                                      0
Packets copied                                                    0
Packets held                                                      0
Packets released                                                  0
IP Action Messages                                                0
IP Action Drops                                                   0
IP Action Exists                                                  0
NWaits                                                            0
Match vectors                                                     0
Supercedes                                                        0
Kpacket too big                                                   0
```

show security idp counters log logical-system LSYS1

`user@host>` **show security idp counters log logical-system LSYS1**

```
IDP counters:
IDP counter type                                                Value
Logs dropped                                                      0
Suppressed log count                                              0
Logs waiting for post-window packets                              0
Logs ready to be sent                                             0
Logs in suppression list                                          0
Log timers created                                                0
Logs timers expired                                               0
Log timers cancelled                                              0
Logs ready to be sent high watermark                              0
```

```
Log receive buffer full                                                 0
Packet log too big                                                      0
Reads per second                                                        0
Logs in read buffer high watermark                                      0
Log Bytes in read buffer high watermark                                 0
Packets logged                                                          0
Packets lost                                                            0
Packets copied                                                          0
Packets held                                                            0
Packets released                                                        0
IP Action Messages                                                      0
IP Action Drops                                                         0
IP Action Exists                                                        0
NWaits                                                                  0
Match vectors                                                           0
Supercedes                                                              0
send succeed                                                            0
send fail                                                               0
retries on send failures                                                0
uac send succeed                                                        0
uac send fail                                                           0
idpd to flowd alloc msg fail                                            0
idpd to flowd enqueue log  msg fail                                     0
idpd to flowd enqueue log msg succeed                                   0
idpd to flowdlog msg dequeued                                           0
idpd to flowdlog unknown msg type                                       0
flowd send succeed                                                      0
flowd send fail                                                         0
objcache alloc failure for sc_pcap_mbuf_info_t                         0
pcap mbuf alloc fail counter                                            0
pcap mbuf reinj failed                                                  0
pcap fragmented packets count                                           0
idpd to flowd pcap messages count in dedicated mode                     0
idpd pcap type1 messages count                                          0
idpd pcap type2 messages count                                          0
idpd pcap type3 messages count                                          0
Kpacket too big                                                         0
```

show security idp counters log tenant TSYS1

user@host> **show security idp counters log tenant TSYS1**

```
IDP counters:
```

```
 IDP counter type                                                  Value
Logs dropped                                                        0
Suppressed log count                                                0
Logs waiting for post-window packets                                0
Logs ready to be sent                                               0
Logs in suppression list                                            0
Log timers created                                                  0
Logs timers expired                                                 0
Log timers cancelled                                                0
Logs ready to be sent high watermark                                0
Log receive buffer full                                             0
Packet log too big                                                  0
Reads per second                                                    0
Logs in read buffer high watermark                                  0
Log Bytes in read buffer high watermark                             0
Packets logged                                                      0
Packets lost                                                        0
Packets copied                                                      0
Packets held                                                        0
Packets released                                                    0
IP Action Messages                                                  0
IP Action Drops                                                     0
IP Action Exists                                                    0
NWaits                                                              0
Match vectors                                                       0
Supercedes                                                          0
send succeed                                                        1
send fail                                                           0
retries on send failures                                            0
uac send succeed                                                    0
uac send fail                                                       0
idpd to flowd alloc msg fail                                        0
idpd to flowd enqueue log  msg fail                                 0
idpd to flowd enqueue log msg succeed                               0
idpd to flowdlog msg dequeued                                       0
idpd to flowdlog unknown msg type                                   0
flowd send succeed                                                  0
flowd send fail                                                     0
 objcache alloc failure for sc_pcap_mbuf_info_t                     0
pcap mbuf alloc fail counter                                        0
pcap mbuf reinj failed                                              0
pcap fragmented packets count                                       0
idpd to flowd pcap messages count in dedicated mode                 0
idpd pcap type1 messages count                                      0
```

```
idpd pcap type2 messages count                                    0
idpd pcap type3 messages count                                    0
Kpacket too big                                                   0
```

show security idp counters ips

Syntax

```
show security idp counters ips
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command modified in Junos OS Release 11.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all IPS counter values.

Options

none—Displays the status of all IPS counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all IPS counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all IPS counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all IPS counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

ips

clear security idp counters ips | **841**

List of Sample Output

show security idp counters ips on page 967
show security idp counters ips logical-system LSYS1 on page 968
show security idp counters ips tenant TSYS1 on page 969

Output Fields

Table 63 on page 966 lists the output fields for the **show security idp counters ips** command. Output fields are listed in the approximate order in which they appear.

Table 63: show security idp counters ips Output Fields

Field Name	Field Description
TCP fast path	Number of TCP packets skipped for IDS processing.
Layer-4 anomalies	Number of Layer-4 protocol error or anomaly.
Anomaly hash misses	Number of times look failed on anomaly hash.
Line context matches	Number of attempts to match line based attacks in traffic stream.
Stream256 context matches	Number of attempts to match stream based attacks in first 256 bytes of traffic stream.
Stream context matches	Number of attempts to match stream based attacks in traffic stream.
Packet context matches	Number of attempts to match packet based attacks in traffic packet.
Packet header matches	Number of attempts to match packet header based attacks in traffic packet.
Context matches	Number of attempts to match protocol context based attacks in traffic stream.
Regular expression matches	Number of attempts to match PCRE expressions in traffic stream.
Tail DFAs	Number of attempts to match an attack on tail DFA group matches.
Exempted attacks	Number of attacks exempted from match as per exempt rulebase.
Out of order chains	Number of times attack is excluded from match due to member attacks in an attack group did not complete chain.
Partial chain matches	Number of attacks in partial chain match with attack scope as transaction.
IDS device FIFO size	Number of IDS contexts in virtual IDS device.
IDS device FIFO overflows	Number of times an IDS context can not be written as the IDS device is full.
Brute force queue size	Number of entries in the brute force queue.
IDS cache hits (Unsupported)	Number of sessions those found attack instance in IDS cache.

Table 63: show security idp counters ips Output Fields *(continued)*

Field Name	Field Description
IDS cache misses (Unsupported)	Number of sessions those did not find attack instance in IDS cache.
Shellcode detection invocations	Number of times shell code match is attempted.
Wrong offsets	Number of times attack's offset is not within the service offset range.
No peer MAC (Unsupported)	Number of times flow peer MAC address is not available.

Sample Output

show security idp counters ips

`user@host>` **show security idp counters ips**

```
IDP counters:
 IDP counter type                                                Value
 TCP fast path                                                     15
 Layer-4 anomalies                                                 0
 Anomaly hash misses                                               3
 Line context matches                                              5
 Stream256 context matches                                         5
 Stream context matches                                            5
 Packet context matches                                            0
 Packet header matches                                             0
 Context matches                                                  12
 Regular expression matches                                        0
 Tail DFAs                                                         0
 Exempted attacks                                                  0
 Out of order chains                                               0
 Partial chain matches                                             0
 IDS device FIFO size                                              0
 IDS device FIFO overflows                                         0
 Brute force queue size                                            0
 IDS cache hits                                                    0
 IDS cache misses                                                  0
 Shellcode detection invocations                                   0
```

```
 Wrong offsets                                                    0
 No peer MAC                                                      0
 Content-decompression memory usage in KB                         0
 Content-decompression memory over limit                          0
 Content-decompression gunzip called                              0
 Content-decompression gunzip failed                              0
 Content-decompression others called                              0
 Content-decompression others failed                              0
 Content-decompression input bytes                                0
 Content-decompression output bytes                               0
 Content-decompression ratio over limit                           0
 Content-decompression type mismatch                              0
```

show security idp counters ips logical-system LSYS1

user@host> **show security idp counters ips logical-system LSYS1**

```
IDP counters:

  IDP counter type                                              Value
 TCP fast path                                                   40
 Layer-4 anomalies                                               0
 Anomaly hash misses                                             4
 Line context matches                                            0
 Stream256 context matches                                       0
 Stream context matches                                          0
 Packet context matches                                          0
 Packet header matches                                           0
 Context matches                                                 4
 Context reset                                                   0
 Regular expression matches                                      0
 Tail DFAs                                                       0
 Exempted attacks                                                0
 Out of order chains                                             0
 Partial chain matches                                           0
 IDS device FIFO size                                            0
 IDS device FIFO overflows                                       0
 Brute force queue size                                          2
 IDS cache hits                                                  0
 IDS cache misses                                                0
 Shellcode detection invocations                                 0
 Wrong offsets                                                   0
 No peer MAC                                                     0
 Content-decompression memory usage in KB                        0
```

```
 Content-decompression memory over limit                                  0
 Content-decompression gunzip called                                      0
 Content-decompression gunzip failed                                      0
 Content-decompression others called                                      0
 Content-decompression others failed                                      0
 Content-decompression input bytes                                        0
 Content-decompression output bytes                                       0
 Content-decompression ratio over limit                                   0
 Content-decompression type mismatch                                      0
 URL track session bypassed                                               0
 Exceeded max Tail DFA transition limit                                   0
 Number of times HS stream close failed                                   0
 Number of times HS stream open failed                                    0
 Number of times HS scan stream failed                                    0
 Number of times HS scan failed                                           0
```

show security idp counters ips tenant TSYS1

```
user@host> show security idp counters ips tenant TSYS1
```

```
IDP counters:

  IDP counter type                                                    Value
 TCP fast path                                                         16
 Layer-4 anomalies                                                     0
 Anomaly hash misses                                                   1
 Line context matches                                                  0
 Stream256 context matches                                             0
 Stream context matches                                                0
 Packet context matches                                                0
 Packet header matches                                                 0
 Context matches                                                       1
 Context reset                                                         0
 Regular expression matches                                            0
 Tail DFAs                                                             0
 Exempted attacks                                                      0
 Out of order chains                                                   0
 Partial chain matches                                                 0
 IDS device FIFO size                                                  0
 IDS device FIFO overflows                                             0
 Brute force queue size                                                0
 IDS cache hits                                                        0
 IDS cache misses                                                      0
 Shellcode detection invocations                                       0
```

```
Wrong offsets                                                    0
No peer MAC                                                      0
Content-decompression memory usage in KB                         0
Content-decompression memory over limit                          0
Content-decompression gunzip called                              0
Content-decompression gunzip failed                              0
Content-decompression others called                              0
Content-decompression others failed                              0
Content-decompression input bytes                                0
Content-decompression output bytes                               0
Content-decompression ratio over limit                           0
Content-decompression type mismatch                              0
URL track session bypassed                                       0
Exceeded max Tail DFA transition limit                           0
Number of times HS stream close failed                           0
Number of times HS stream open failed                            0
Number of times HS scan stream failed                            0
Number of times HS scan failed                                   0
```

show security idp counters dfa

Syntax

```
show security idp counters dfa
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all DFA counter values.

Options

none—Displays the status of all DFA counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all DFA counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all DFA counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all DFA counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters dfa | 849

List of Sample Output

show security idp counters dfa on page 972
show security idp counters dfa logical-system LSYS1 on page 972
show security idp counters dfa tenant TSYS1 on page 972

Output Fields

Table 64 on page 972 lists the output fields for the **show security idp counters dfa** command. Output fields are listed in the approximate order in which they appear.

Table 64: show security idp counters dfa Output Fields

Field Name	Field Description
DFA Group Merged Usage	Number of DFA groups merged.
DFA Matches	Number of DFA matches found.

Sample Output

show security idp counters dfa

```
user@host> show security idp counters dfa
```

```
IDP counters:

  IDP counter type                                                Value
 DFA Group Merged Usage                                            0
 DFA Matches                                                       0
 DFA compressed                                                    0
 DFA group compressed                                              0
 DFA uncompressed                                                  0
 DFA group uncompressed                                            0
                                                                 1
```

show security idp counters dfa logical-system LSYS1

```
user@host> show security idp counters dfa logical-system LSYS1
```

```
IDP counters:

  IDP counter type                                                Value
 DFA Group Merged Usage                                            0
 DFA Matches                                                       0
 DFA compressed                                                    0
 DFA group compressed                                              0
 DFA uncompressed                                                  0
 DFA group uncompressed                                            0
```

show security idp counters dfa tenant TSYS1

```
user@host> show security idp counters dfa tenant TSYS1
```

```
IDP counters:

  IDP counter type                                                Value
 DFA Group Merged Usage                                            0
 DFA Matches                                                       1
 DFA compressed                                                    0
 DFA group compressed                                              0
 DFA uncompressed                                                  0
 DFA group uncompressed                                            0
```

show security idp counters flow

Syntax

```
show security idp counters flow
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all IDP flow counter values.

> **NOTE:** On SRX Series devices with IDP enabled, if IDP attacks are configured for a single direction (server or client), a flow in the opposite direction does not need IDP processing. For TCP traffic, the TCP optimization feature ensures minimal processing for these flows without running into reassembly errors.

Options

none—Displays the status of all IDP flow counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all IDP flow counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all IDP flow counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all IDP flow counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

flow (Security IDP)

clear security idp counters flow | 850

List of Sample Output

show security idp counters flow on page 980
show security idp counters flow tenant TSYS1 on page 983

Output Fields

Table 65 on page 975 lists the output fields for the **show security idp counters flow** command. Output fields are listed in the approximate order in which they appear.

Table 65: show security idp counters flow Output Fields

Field Name	Description
Fast-path packets	Number of packets that are set through fast path after completing IDP policy lookup.
Slow-path packets	Number of packets that are sent through slow path during IDP policy lookup.
Session construction failed (Unsupported)	Number of times the packet failed to establish the session.
Session limit reached	Number of sessions that reached IDP sessions limit.
Session inspection depth reached	Number of sessions that reached inspection depth.
Memory limit reached	Number of sessions that reached memory limit.
Not a new session (Unsupported)	Number of sessions that extended beyond time limit.
Invalid index at age-out (Unsupported)	Invalid session index in session age-out message.
Packet logging	Number of packets saved for packet logging.
Policy cache hits	Number of sessions that matched policy cache.
Policy cache misses	Number of sessions that did not match policy cache.
Policy cache entries	Number of policy cache entries.
Maximum flow hash collisions	Maximum number of packets, of one flow, that share the same hash value.
Flow hash collisions	Number of packets that share the same hash value.

Table 65: show security idp counters flow Output Fields *(continued)*

Field Name	Description
Gates added	Number of gate entries added for dynamic port identification.
Gate matches (Unsupported)	Number of times a gate is matched.
Sessions deleted	Number of sessions deleted.
Sessions aged-out (Unsupported)	Number of sessions that are aged out if no traffic is received within session timeout value.
Sessions in-use while aged-out (Unsupported)	Number of sessions in use during session age-out.
TCP flows marked dead on RST/FIN	Number of sessions marked dead on TCP RST/FIN.
policy init failed	Policy initiation failed.
Number of times Sessions exceed high mark	Number of times sessions exceeded the high mark.
Number of sessions exceeds high mark	Number of sessions that exceed high mark.
Number of sessions drops below low mark	Number of sessions that fall below low mark.
Memory of sessions exceeds high mark	Session memory exceeds high mark.
Memory of sessions drops below low mark	Session memory drops below low mark.
SM Sessions encountered memory failures	Number of SM sessions that encountered memory failures.
SM Packets on sessions with memory failures	Number of SM packets that encountered memory failures.
Sessions constructed	Number of sessions established.

Table 65: show security idp counters flow Output Fields *(continued)*

Field Name	Description
SM Sessions dropped	Number of SM sessions dropped.
SM sessions ignored	Number of sessions ignored in Security Module (SM).
SM sessions interested	Number of SM sessions interested.
SM sessions not interested	Number of SM sessions not interested.
SM sessions interest error	Number of errors created for SM sessions interested.
Sessions destructed	Number of sessions destructed.
SM Session Create	Number of SM sessions created.
SM Packet Process	Number of packets processed from SM.
SM FTP data session ignored by IDP	Number of SM FTP data sessions that are ignored by IDP.
SM Session close	Number of SM sessions closed.
SM client-to-server packets	Number of SM client-to-server packets.
SM server-to-client packets	Number of SM server-to-client packets.
SM client-to-server L7 bytes	Number of SM client-to-server Layer 7 bytes.
SM server-to-client L7 bytes	Number of SM server-to-client Layer 7 bytes.
Client-to-server flows ignored	Number of client-to-server flow sessions that are ignored.
Server-to-client flows ignored	Number of server-to-client flow sessions that are ignored.
Server-to-client flows tcp optimized	Number of server-to-client flow TCP sessions that are optimized.
Client-to-server flows tcp optimized	Number of client-to-server flow TCP sessions that are optimized.
Both directions flows ignored	Number of server-to-client and client-to-server flow sessions that are ignored.

Table 65: show security idp counters flow Output Fields *(continued)*

Field Name	Description
Fail-over sessions dropped	Number of failover sessions dropped.
Sessions dropped due to no policy	Number of sessions dropped because there was no active IDP policy.
IDP Stream Sessions dropped due to memory failure	Number of IDP stream sessions that are dropped because of memory failure.
IDP Stream Sessions ignored due to memory failure	Number of IDP stream sessions that are ignored because of memory failure.
IDP Stream Sessions closed due to memory failure	Number of IDP stream sessions that are closed because of memory failure.
IDP Stream Sessions accepted	Number of IDP stream sessions that are accepted.
IDP Stream Sessions constructed	Number of IDP stream sessions that are constructed.
IDP Stream Sessions destructed	Number of IDP stream sessions that are destructed.
IDP Stream Move Data	Number of stream data events handled by IDP.
IDP Stream Sessions ignored on JSF SSL Event	Number of IDP stream sessions that are ignored because of a JSF SSL proxy event.
IDP Stream Sessions not processed for no matching rules	Number of IDP stream sessions that are not processed for no matching rules.
IDP Stream stbuf dropped	Number of IDP stream plug-in buffers dropped.
IDP Stream stbuf reinjected	Number of IDP stream plug-in buffers injected.
Busy packets from stream plugin	Number of packets saved as one or more packets of this session from stream plug-in.
Busy packets from packets plugin	Number of saved packets for IDP stream plug-in sessions.
Bad kpp	Number of internal marked packets logged for IDP processing.
Lsys policy id lookup failed sessions	Number of sessions that failed logical systems policy lookup.

Table 65: show security idp counters flow Output Fields *(continued)*

Field Name	Description
Busy packets	Number of packets saved as one or more packets of this session are handed off for asynchronous processing.
Busy packet errors	Number of packets found with IP checksum error after asynchronous processing is completed.
Dropped queued packets (async mode)	Number of queued packets dropped based on policy action, reinjection failures, or if the session is marked to destruct.
Dropped queued packets failed (async mode)	Not used currently.
Reinjected packets (async mode)	Number of packets reinjected into the queue.
Reinjected packets failed(async mode)	Number of failed reinjected packets.
AI saved processed packet	Number of AI packets saved for which the asynchronous processing is completed.
Busy packet count incremented	Number of times the busy packet count incremented in asynchronous processing.
busy packet count decremented	Number of times the busy packet count decremented in asynchronous processing.
session destructed in pme	Number of sessions destructed as a part of asynchronous result processing.
session destruct set in pme	Number of sessions set to be destructed as a result of asynchronous processing.
KQ op	Number of sessions with one of the following status: • KQ op hold–number of times packets held by IDP. • KQ op drop–number of times packets dropped by IDP. • KQ op route–number of times IDP decided to be route the packet directly. • KQ op Continue–number of times IDP decided to continue to process the packet. • KQ op error–number of times error occurred while IPD processing packet. • KQ op stop–number of times IDP decided to stop processing the packet.
PME wait not set	Number of AI saved packets given for signature matching.
PME wait set	Number of packets given for signature matching without AI save.

Table 65: show security idp counters flow Output Fields *(continued)*

Field Name	Description
PME KQ run not called	Number of times signature matching results processed out of packet receiving order.
IDP sessions ignored for content decompression in intel inspect mode	Number of IDP session ignored for content decompression in the IDP intelligent inspection mode.
IDP sessions ignored for bytes depth limit in intel inspect mode	Number of IDP session ignored for bytes depth in the IDP intelligent inspection mode.
IDP sessions ignored for protocol decoding in intel inspect mode	Number of IDP session ignored for protocol decoding in the IDP intelligent inspection mode.
IDP sessions detected CPU usage crossed intel inspect CPU threshold	Number of IDP session detected when the CPU usage crosses the CPU threshold of the IDP intelligent inspection.
IDP sessions detected mem drop below intel inspect low mem threshold	Number of IDP session detected when memory drops below the IDP intelligent inspect low memory threshold.

Sample Output

show security idp counters flow

`user@host>` **show security idp counters flow**

```
IDP counters:

  IDP counter type                                                Value
 Fast-path packets                                                 40252
 Slow-path packets                                                 127
 Session construction failed                                       0
 Session limit reached                                             0
 Session inspection depth reached                                  0
 Memory limit reached                                              0
 Not a new session                                                 0
 Invalid index at ageout                                           0
 Packet logging                                                    0
```

```
Policy cache hits                                                    92
Policy cache misses                                                  67
Policy cache entries                                                 67
Maximum flow hash collisions                                         0
Flow hash collisions                                                 0
Gates added                                                          0
Gate matches                                                         0
Sessions deleted                                                     127
Sessions aged-out                                                    0
Sessions in-use while aged-out                                       0
TCP flows marked dead on RST/FIN                                     13
Policy init failed                                                   0
Number of times Sessions exceed high mark                            0
Number of times Sessions drop below low mark                         0
Memory of Sessions exceeds high mark                                 0
Memory of Sessions drops below low mark                              0
SM Sessions encountered memory failures                              0
SM Packets on sessions with  memory failures                         0
IDP session gate creation requests                                   0
IDP session gate creation acknowledgements                           0
IDP session gate hits                                                0
IDP session gate timeouts                                            0
Number of times Sessions crossed the CPU threshold value that is set 0
Number of times Sessions crossed the CPU upper threshold             0
Sessions constructed                                                 127
SM Sessions ignored                                                  0
SM Sessions dropped                                                  0
SM Sessions interested                                               168
SM Sessions not interested                                           4
SM Sessions interest error                                           0
Sessions destructed                                                  127
SM Session Create                                                    127
SM Packet Process                                                    52257
SM ftp data session ignored by idp                                   0
SM Session close                                                     127
SM Client-to-server packets                                          20066
SM Server-to-client packets                                          32191
SM Client-to-server L7 bytes                                         167292
SM Server-to-client L7 bytes                                         28523514

Client-to-server flows ignored                                       1
Server-to-client flows ignored                                       1
Server-to-client flows tcp optimized                                 3
Client-to-server flows tcp optimized                                 0
```

```
Both directions flows ignored                                          32
Fail-over sessions dropped                                             0
Sessions dropped due to no policy                                      0
IDP Stream Sessions dropped due to memory failure                      0
IDP Stream Sessions ignored due to memory failure                      0
IDP Stream Sessions closed due to memory failure                       0
IDP Stream Sessions accepted                                           0
IDP Stream Sessions constructed                                        0
IDP Stream Sessions destructed                                         0
IDP Stream Move Data                                                   0
IDP Stream Sessions ignored on JSF SSL Event                           0
IDP Stream Sessions not processed for no matching rules                0
IDP Stream stbuf dropped                                               0
IDP Stream stbuf reinjected                                            0
Busy pkts from stream plugin                                           0
Busy pkts from pkt plugin                                              0
bad kpp                                                                0
Lsys policy id lookup failed sessions                                  0
Busy packets                                                           0
Busy packet Errors                                                     0
Dropped queued packets (async mode)                                    0
Dropped queued packets failed(async mode)                              0
Reinjected packets (async mode)                                        0
Reinjected packets failed(async mode)                                  0
AI saved processed packet                                              0
busy packet count incremented                                          0
busy packet count decremented                                          0
session destructed in pme                                              0
session destruct set in pme                                            0
kq op hold                                                             0
kq op drop                                                             0
kq op route                                                            0
kq op continue                                                         35155
kq op error                                                            0
kq op stop                                                             0
PME wait not set                                                       0
PME wait set                                                           0
PME KQ run not called                                                  0
IDP sessions ignored for content decompression in intel inspect mode   0
IDP sessions ignored for bytes depth limit in intel inspect mode       0
IDP sessions ignored for protocol decoding in intel inspect mode       0
IDP sessions detected CPU usage crossed intel inspect CPU threshold    0
IDP sessions detected mem drop below intel inspect low mem threshold   0
```

show security idp counters flow tenant TSYS1

```
user@host> show security idp counters flow tenant TSYS1
```

```
IDP counters:

  IDP counter type                                                  Value
 Fast-path packets                                                   38
 Slow-path packets                                                   1
 Session construction failed                                         0
 Session limit reached                                               0
 Session inspection depth reached                                    0
 Memory limit reached                                                0
 Not a new session                                                   0
 Invalid index at ageout                                             0
 Packet logging                                                      0
 Policy cache hits                                                   0
 Policy cache misses                                                 1
 Policy cache entries                                                0
 Maximum flow hash collisions                                        0
 Flow hash collisions                                                0
 Gates added                                                         0
 Gate matches                                                        0
 Sessions deleted                                                    1
 Sessions aged-out                                                   0
 Sessions in-use while aged-out                                      0
 TCP flows marked dead on RST/FIN                                    1
 Policy init failed                                                  0
 Policy reinit failed                                                0
 Number of times Sessions exceed high mark                           0
 Number of times Sessions drop below low mark                        0
 Memory of Sessions exceeds high mark                                0
 Memory of Sessions drops below low mark                             0
 SM Sessions encountered memory failures                             0
 SM Packets on sessions with  memory failures                        0
 IDP session gate creation requests                                  0
 IDP session gate creation acknowledgements                          0
 IDP session gate hits                                               0
 IDP session gate timeouts                                           0
 Number of times Sessions crossed the CPU threshold value that is set    0
 Number of times Sessions crossed the CPU upper threshold            0
 Sessions constructed                                                1
 SM Sessions ignored                                                 0
 SM Sessions dropped                                                 0
 SM Sessions interested                                              2
```

```
SM Sessions not interested                                    0
SM Sessions interest error                                    0
Sessions destructed                                           1
SM Session Create                                             1
SM Packet Process                                             38
SM ftp data session ignored by idp                            1
SM Session close                                              1
SM Client-to-server packets                                   15
SM Server-to-client packets                                   23
SM Client-to-server L7 bytes                                  99
SM Server-to-client L7 bytes                                  367
Client-to-server flows ignored                                0
Server-to-client flows ignored                                0
Server-to-client flows tcp optimized                          0
Client-to-server flows tcp optimized                          0
Both directions flows ignored                                 1
Fail-over sessions dropped                                    0
Sessions dropped due to no policy                             0
IDP Stream Sessions dropped due to memory failure             0
IDP Stream Sessions ignored due to memory failure             0
IDP Stream Sessions closed due to memory failure              0
IDP Stream Sessions accepted                                  0
IDP Stream Sessions constructed                               0
IDP Stream Sessions destructed                                0
IDP Stream Move Data                                          0
IDP Stream Sessions ignored on JSF SSL Event                  0
IDP Stream Sessions not processed for no matching rules       0
IDP Stream stbuf dropped                                      0
IDP Stream stbuf reinjected                                   0
Busy pkts from stream plugin                                  0
Busy pkts from pkt plugin                                     0
bad kpp                                                       0
Lsys policy id lookup failed sessions                         0
NGAppID Events with no L7 App                                 0
NGAppID Events with no active-policy                          0
NGAppID Detector failed from event handler                    0
NGAppID Detector failed from API                              0
Busy packets                                                  0
Busy packet Errors                                            0
Dropped queued packets (async mode)                           0
Dropped queued packets failed(async mode)                     0
Reinjected packets (async mode)                               0
Reinjected packets failed(async mode)                         0
AI saved processed packet                                     0
```

```
busy packet count incremented                                          0
busy packet count decremented                                          0
session destructed in pme                                              0
session destruct set in pme                                            0
kq op hold                                                             0
kq op drop                                                             0
kq op route                                                            0
kq op continue                                                         37
kq op error                                                            0
kq op stop                                                             0
PME wait not set                                                       0
PME wait set                                                           0
PME KQ run not called                                                  0
IDP sessions ignored for content decompression in intel inspect mode   0
IDP sessions ignored for bytes depth limit in intel inspect mode       0
IDP sessions ignored for protocol decoding in intel inspect mode       0
IDP sessions detected CPU usage crossed intel inspect CPU threshold    0
IDP sessions detected mem drop below intel inspect low mem threshold   0
```

show security idp counters http-decoder

Syntax

```
show security idp counters http-decoder
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 11.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all HTTP decoders.

Options

none—Displays the status of all HTTP decoders.

logical-system *logical-system-name*—(Optional) Displays the status of all HTTP decoders for a specific logical system.

logical-system all—(Optional) Displays the status of all HTTP decoders for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all HTTP decoders for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters http-decoder | 852

List of Sample Output

show security idp counters http-decoder on page 987
show security idp counters http-decoder logical-system LSYS1 on page 987
show security idp counters http-decoder tenant TSYS1 on page 988

Output Fields

Table 66 on page 987 lists the output fields for the **show security idp counters http-decoder** command. Output fields are listed in the approximate order in which they appear.

Table 66: show security idp counters http-decoder Output Fields

Field Name	Field Description
No of file-decoder requests from MIME over HTTP	Number of active file decoder requests sent over HTTP from MIME.
No of pending file-decoder requests from MIME over HTTP	Number of pending file decoder requests sent over HTTP from MIME.
No of completed file-decoder requests from MIME over HTTP	Number of completed file decoder requests sent over HTTP from MIME.
No of unrecognized file type from MIME over HTTP	Number of unrecognized file types sent over HTTP from MIME.
No of compressed payload transferred over HTTP	Number of compressed files transferred over HTTP from MIME.

Sample Output

show security idp counters http-decoder

```
user@host> show security idp counters http-decoder
```

```
IDP counters:
IDP counter type                                                Value
No of file-decoder requests from MIME over HTTP                     0
No of pending file-decoder requests from MIME over HTTP             0
No of completed file-decoder requests from MIME over HTTP           0
No of unrecognized file type from MIME over HTTP                    0
No of compressed payload transferred over HTTP                      0
No of bypassed files over HTTP                                     0
```

show security idp counters http-decoder logical-system LSYS1

```
user@host> show security idp counters http-decoder logical-system LSYS1
```

```
IDP counters:

  IDP counter type                                              Value
 No of file-decoder requests from MIME over HTTP                 0
```

```
 No of pending file-decoder requests from MIME over HTTP                0
 No of completd file-decoder requests from MIME over HTTP               0
 No of unrecognized file type from MIME over HTTP                       0
 No of compressed payload transferred over HTTP                         0
 No of bypassed files over HTTP                                         0
```

show security idp counters http-decoder tenant TSYS1

user@host> **show security idp counters http-decoder tenant TSYS1**

```
IDP counters:

  IDP counter type                                                    Value
 No of file-decoder requests from MIME over HTTP                        0
 No of pending file-decoder requests from MIME over HTTP                0
 No of completd file-decoder requests from MIME over HTTP               0
 No of unrecognized file type from MIME over HTTP                       0
 No of compressed payload transferred over HTTP                         0
 No of bypassed files over HTTP                                         0
```

show security idp counters packet-log

Syntax

```
show security idp counters packet-log
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 10.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the values of all IDP packet-log counters.

Options

none—Displays the values of all IDP packet-log counters.

logical-system *logical-system-name*—(Optional) Displays the values of all IDP packet-log counters for a specific logical system.

logical-system all—(Optional) Displays the values of all IDP packet-log counters for all logical systems.

tenant *tenant-name*—(Optional) Displays the values of all IDP packet-log counters for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters packet-log | 853

List of Sample Output

show security idp counters packet-log on page 990
show security idp counters packet-log logical-system LSYS1 on page 991
show security idp counters packet-log tenant TSYS1 on page 991

Output Fields

The following table lists the output fields for the **show security idp counters packet-log** command. Output fields are listed in the approximate order in which they appear.

Field Name	Field Description
Total packets captured since packet capture was activated	Number of packets captured by the device by the IDP service.
Total sessions enabled since packet capture was activated	Number of sessions that have performed packet capture since the capture facility was activated.
Sessions currently enabled for packet capture	Number of sessions that are actively capturing packets at this time.
Packets currently captured for enabled sessions	Number of packets that have been captured by active sessions.
Packet clone failures	Number of packet capture failures due to cloning error.
Session log object failures	Number of objects containing log messages generated during packet capture that were not successfully transmitted to the host.
Session packet log object failures	Number of objects containing captured packets that were not successfully transmitted to the host.
Sessions skipped because session limit exceeded	Number of sessions that could not initiate packet capture because the maximum number of sessions specified for the device were conducting captures at that time.
Packets skipped because packet limit exceeded	Number of packets not captured because the packet limit specified for this device was reached.
Packets skipped because total memory limit exceeded	Number of packets not captured because the memory allocated for packet capture on this device was exceeded.

Sample Output

show security idp counters packet-log

`user@host>` **show security idp counters packet-log**

```
IDP counters:                                                   Value
 Total packets captured since packet capture was activated          0
```

```
 Total sessions enabled since packet capture was activated              0
 Sessions currently enabled for packet capture                          0
 Packets currently captured for enabled sessions                        0
 Packet clone failures                                                  0
 Session log object failures                                            0
 Session packet log object failures                                     0
 Sessions skipped because session limit exceeded                        0
 Packets skipped because packet limit exceeded                          0
 Packets skipped because total memory limit exceeded                    0
```

show security idp counters packet-log logical-system LSYS1

user@host> **show security idp counters packet-log logical-system LSYS1**

```
IDP counters:

  IDP counter type                                                    Value
 No of file-decoder requests from MIME over HTTP                        0
 No of pending file-decoder requests from MIME over HTTP                0
 No of completd file-decoder requests from MIME over HTTP               0
 No of unrecognized file type from MIME over HTTP                       0
 No of compressed payload transferred over HTTP                         0
 No of bypassed files over HTTP                                         0
```

show security idp counters packet-log tenant TSYS1

user@host> **show security idp counters packet-log tenant TSYS1**

```
IDP counters:

  IDP counter type                                                    Value
 Total packets captured since packet capture was activated              0
 Total sessions enabled since packet capture was activated              0
 Sessions currently enabled for packet capture                          0
 Packets currently captured for enabled sessions                        0
 Packet clone failures                                                  0
 Session log object failures                                            0
 Session packet log object failures                                     0
 Sessions skipped because session limit exceeded                        0
 Packets skipped because packet limit exceeded                          0
 Packets skipped because total memory limit exceeded                    0
```

show security idp counters packet

Syntax

```
show security idp counters packet
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
The fields **Dropped by IDP policy** and **Dropped by Error** added in Junos OS Release 10.1.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all IDP packet counter values.

Options

none—Displays the status of all IDP packet counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all IDP packet counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all IDP packet counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all IDP packet counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters packet | 854

List of Sample Output

show security idp counters packet on page 995
show security idp counters packet logical-system LSYS1 on page 995
show security idp counters packet tenant TSYS1 on page 997

Output Fields

Table 67 on page 993 lists the output fields for the **show security idp counters packet** command. Output fields are listed in the approximate order in which they appear.

Table 67: show security idp counters packet Output Fields

Field Name	Field Description
Processed packets	Number of packets processed by the IDP service.
Dropped packets	Number of packets dropped by the IDP service. The counter for all dropped packets.
Dropped by IDP policy	Number of packets dropped by the IDP policy. The counter for dropped packets due to the action specified in the IDP policy (starting with the attack detection).
Dropped by Error	Number of packets dropped by error. The difference between **Dropped packets** and **Dropped by IDP policy**. IDS drops are primarily due to policy actions. Reassembly errors lead to packet drops. So all drops shown in **show security idp counters ips**, **show security idp counters flow** and **show security idp counters tcp-reassembler** add to **Dropped by Error**. All drops includes reassembly errors, anomalies similar to bad ip header and TTL errors.
Dropped sessions (Unsupported)	Number of sessions dropped.
Bad IP headers	Number of packets that fail IP header length validity check.
Packets with IP options	Number of packets that contain the optional header fields.
Decapsulated packets	Number of packets that are decapsulated.
GRE decapsulations (Unsupported)	Number of packets that are generic routing encapsulation (GRE) decapsulated.
PPP decapsulations (Unsupported)	Number of packets that are Point-to-Point Protocol (PPP) decapsulated.
TCP decompression uncompressed IP (Unsupported)	Number of uncompressed IP headers that are to be TCP decompressed.

Table 67: show security idp counters packet Output Fields *(continued)*

Field Name	Field Description
TCP decompression compressed IP (Unsupported)	Number of compressed IP headers that are to be TCP decompressed.
Deferred-send packets (Unsupported)	Number of deferred IP packets that are sent out.
IP-in-IP packets (Unsupported)	Number of packets that are IP-in-IP encapsulated.
TTL errors (Unsupported)	Number of packets with TTL error in the header.
Routing loops (Unsupported)	Number of packets that continue to be routed in an endless circle due to an inconsistent routing state.
No-route packets (Unsupported)	Number of packets that could not be routed further.
Flood IP (Unsupported)	Number of packets that are identified as IP flood packets.
Invalid ethernet headers (Unsupported)	Number of packets that are identified with an invalid Ethernet header.
Packets attached	Number of packets attached.
Packets cloned	Number of packets that are cloned.
Packets allocated	Number of packets allocated.
Packets destructed	Number of packets destructed.

Sample Output

show security idp counters packet

```
user@host> show security idp counters packet
```

```
IDP counters:
 IDP counter type                                                Value
 Processed packets                                                 27
 Dropped packets                                                    0
 Dropped by IDP policy                                              0
 Dropped by error                                                   0
 Dropped sessions                                                   0
 Bad IP headers                                                     0
 Packets with IP options                                            0
 Decapsulated packets                                               0
 GRE decapsulations                                                 0
 PPP decapsulations                                                 0
 TCP decompression uncompressed IP                                  0
 TCP decompression compressed IP                                    0
 Deferred-send packets                                              0
 IP-in-IP packets                                                   0
 TTL errors                                                         0
 Routing loops                                                      0
 STP drops                                                          0
 No-route packets                                                   0
 Flood IP                                                           0
 Invalid ethernet headers                                           0
 Packets attached                                                  28
 Packets cloned                                                    28
 Packets allocated                                                  0
 Packets destructed                                                55
```

show security idp counters packet logical-system LSYS1

```
user@host> show security idp counters packet logical-system LSYS1
```

```
IDP counters:

  IDP counter type                                               Value
 Processed packets                                                 64
 Dropped packets                                                    0
 Dropped ICMP packets                                               0
 Dropped TCP packets                                                0
```

```
Dropped UDP packets                                              0
Dropped Other packets                                            0
Dropped by IDP Policy                                            0
Dropped by Error                                                 0
Dropped sessions                                                 0
Bad IP headers                                                   0
Packets with IP options                                          0
Decapsulated packets                                             0
GRE decapsulations                                               0
PPP decapsulations                                               0
GTP decapsulations                                               0
GTP flows                                                        0
TCP decompression uncompressed IP                                0
TCP decompression compressed IP                                  0
Deferred-send packets                                            0
IP-in-IP packets                                                 0
TTL errors                                                       0
Routing loops                                                    0
STP drops                                                        0
No-route packets                                                 0
Flood IP                                                         0
Invalid ethernet headers                                         0
Packets attached                                                64
IP Packet attach failed                                          0
Packets cloned                                                  25
Packets allocated                                                0
Packets destructed                                              89
Packet data buffer allocated                                    24
Packet data buffer released                                     24
Buffer allocation on clone avoided                               0
Late buffer allocation on clone                                  0
Distinct clone request                                           0
KPP clone buf cache allocated                                    0
KPP clone buf cache released                                     0
KPP clone buf cache used                                         0
KQMSG constructed                                               69
KQMSG destructed                                                69
jbuf copy failed                                                 0
jbuf pullup failed                                               0
jbuf copy done                                                   0
jbuf copy freed                                                  0
jbuf copy reinjected                                             0
```

show security idp counters packet tenant TSYS1

```
user@host> show security idp counters packet tenant TSYS1
```

```
IDP counters:

  IDP counter type                                                  Value
 Processed packets                                                   38
 Dropped packets                                                     0
 Dropped ICMP packets                                                0
 Dropped TCP packets                                                 0
 Dropped UDP packets                                                 0
 Dropped Other packets                                               0
 Dropped by IDP Policy                                               0
 Dropped by Error                                                    0
 Dropped sessions                                                    0
 Bad IP headers                                                      0
 Packets with IP options                                             0
 Decapsulated packets                                                0
 GRE decapsulations                                                  0
 PPP decapsulations                                                  0
 GTP decapsulations                                                  0
 GTP flows                                                           0
 TCP decompression uncompressed IP                                   0
 TCP decompression compressed IP                                     0
 Deferred-send packets                                               0
 IP-in-IP packets                                                    0
 TTL errors                                                          0
 Routing loops                                                       0
 STP drops                                                           0
 No-route packets                                                    0
 Flood IP                                                            0
 Invalid ethernet headers                                            0
 Packets attached                                                    38
 IP Packet attach failed                                             0
 Packets cloned                                                      21
 Packets allocated                                                   0
 Packets destructed                                                  59
 Packets destructed in pipeline                                      0
 Packet data buffer allocated                                        21
 Packet data buffer released                                         21
 Buffer allocation on clone avoided                                  0
 Late buffer allocation on clone                                     0
 Distinct clone request                                              0
 KPP clone buf cache allocated                                       0
```

```
KPP clone buf cache released                                    0
KPP clone buf cache used                                        0
KQMSG constructed                                               38
KQMSG destructed                                                38
KQMSG destructed in pipeline                                    0
jbuf copy failed                                                0
jbuf pullup failed                                              0
jbuf copy done                                                  0
jbuf copy freed                                                 0
jbuf copy reinjected                                            0
```

show security idp counters policy-manager

Syntax

```
show security idp counters policy-manager
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all IDP policies counter values.

Options

none—Displays the status of all IDP policies counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all IDP policies counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all IDP policies counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all IDP policies counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security idp counters policy-manager | 855

List of Sample Output

show security idp counters policy-manager on page 1000
show security idp counters policy-manager logical-system LSYS1 on page 1000
show security idp counters policy-manager tenant TSYS1 on page 1000

Output Fields

Table 68 on page 1000 lists the output fields for the **show security idp counters policy-manager** command. Output fields are listed in the approximate order in which they appear.

Table 68: show security idp counters policy-manager Output Fields

Field Name	Field Description
Number of policies	Number of policies installed.
Number of aged out policies	Number of IDP policies that are expired.

Sample Output

show security idp counters policy-manager

```
user@host> show security idp counters policy-manager
```

```
IDP counters:
 IDP counter type                                                  Value
 Number of policies                                                  0
 Number of aged out policies                                         0
```

show security idp counters policy-manager logical-system LSYS1

```
user@host> show security idp counters policy-manager logical-system LSYS1
```

```
IDP counters:

  IDP counter type                                                 Value
 Number of policies                                                  1
 Number of aged out policies                                         0
 Policy compile failure due to memory                                0
```

show security idp counters policy-manager tenant TSYS1

```
user@host> show security idp counters policy-manager tenant TSYS1
```

```
IDP counters:

  IDP counter type                                                 Value
 Number of policies                                                  0
 Number of aged out policies                                         0
 Policy compile failure due to memory                                0
```

show security idp counters tcp-reassembler

Syntax

```
show security idp counters tcp-reassembler
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the status of all TCP reassembler counter values.

> **NOTE:** On SRX Series devices with IDP enabled, if IDP attacks are configured for a single direction (server or client), a flow in the opposite direction does not need IDP processing. For TCP traffic, the TCP optimization feature ensures minimal processing for these flows without running into reassembly errors.

Options

none—Displays the status of all TCP reassembler counter values.

logical-system *logical-system-name*—(Optional) Displays the status of all TCP reassembler counter values for a specific logical system.

logical-system all—(Optional) Displays the status of all TCP reassembler counter values for all logical systems.

tenant *tenant-name*—(Optional) Displays the status of all TCP reassembler counter values for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

re-assembler

clear security idp counters tcp-reassembler | 846

List of Sample Output

show security idp counters tcp-reassembler on page 1004
show security idp counters tcp-reassembler logical-system LSYS1 on page 1005

Output Fields

Table 69 on page 1002 lists the output fields for the **show security idp counters tcp-reassembler** command. Output fields are listed in the approximate order in which they appear.

Table 69: show security idp counters tcp-reassembler Output Fields

Field Name	Field Description
Bad TCP checksums (Unsupported)	Number of packets that have incorrect TCP checksums.
Bad TCP headers	Number of bad TCP headers detected.
Slow path segments	Number of segments that are sent through the slow path if the TCP segment does not pass fast-path segment validation.
Fast path segments	Number of segments that are sent through the fast path after passing a predefined TCP validation sequence.
Tcp Optimized s2c segments	Number of TCP segments that are sent through optimized re-assembly process from server to client.
Tcp Optimized c2s segments	Number of TCP segments that are sent through optimized re-assembly process from server to client.
Sequence number wrap around errors	Number of packets that wrap around of the sequence number.
Session reuses	Number of sessions that reused an already established TCP session.
SYN retransmissions	Number of SYN packets that are retransmitted.
Bad three way handshake acknowledgements	Number of packets that have incorrect three-way handshake acknowledgements (ACK packet).
Sequence number out of sync flows	Number of packets that have out-of-sync sequence numbers.
Fast path pattern matches in queued up streams	Number of queued packets that have fast path pattern match.

Table 69: show security idp counters tcp-reassembler Output Fields *(continued)*

Field Name	Field Description
New segments with no overlaps with old segment	Number of new segments that do not overlap with old segment.
New segment overlaps with beginning of old segment	Number of new segments that overlap with beginning of old segment.
New segment overlaps completely with old segment	Number of new segments that overlap completely with old segment.
New segment is contained in old segment	Number of new segments contained in old segment.
New segment overlaps with end of old segment	Number of new segments that overlap with the end of old segment.
New segment begins after end of old segment	Number of new segments that overlap after the end of old segment.
Memory consumed by new segment	Memory that is consumed by the new segment.
Peak memory consumed by new segments	Peak memory that is consumed by the new segment.
Segments in memory	Number of segments that are stored in memory for processing.
Per-flow memory overflows	Number of segments dropped after reaching per flow memory limit.
Global memory overflows	Number of segments dropped after reaching reassembler global memory limit.
Overflow drops	Number of packets that are dropped due to memory overflow.
Copied packets (Unsupported)	Number of packets copied in reassembler.
Closed Acks	Number of Ack packets seen without having seen SYN on the same session.
Ack Validation failures	Number of Invalid ACKs received from server during 3-way handshake.
Simultanious syn	Number of simultaneous syn packets seen.

Table 69: show security idp counters tcp-reassembler Output Fields *(continued)*

Field Name	Field Description
C2S synack	Number of C2S Syn/Ack packets seen.
Segment to left of receiver window	Number of segments falling left of receive window.
Segment to right of receiver window	Number of segments falling right of receive window.
SYN seen in the window	Number of Syn packets seen after connection establishment.
ACK bit is off	Number of packets seen without ACK after connection establishment.
Unexpected FIN	Number of unexpected FIN packets seen.
Duplicate Syn/Ack with different SEQ	Number of Syn/Ack packets with different SEQ numbers.

Sample Output

show security idp counters tcp-reassembler

`user@host>` **show security idp counters tcp-reassembler**

```
IDP counters:

 IDP counter type                                                Value
Bad TCP checksums                                                 0
Bad TCP headers                                                   0
Slow path segments                                                90
Fast path segments                                                7099
Tcp Optimized s2c segments                                        0
Tcp Optimized c2s segments                                        0
Sequence number wrap around errors                                0
Session reuses                                                    0
SYN retransmissions                                               0
Bad three way handshake acknowledgements                          0
Sequence number out of sync flows                                 0
Fast path pattern matches in queued up streams                    0
New segments with no overlaps with old segment                    0
```

```
 New segment overlaps with beginning of old segment                    0
 New segment overlaps completely with old segment                      0
 New segment is contained in old segment                               0
 New segment overlaps with end of old segment                          0
 New segment begins after end of old segment                           3
 Memory consumed by new segment                                        0
 Peak memory consumed by new segments                                  3821
 Segments in memory                                                    0
 Per-flow memory overflows                                             0
 Global memory overflows                                               0
 Overflow drops                                                        0
 Copied packets                                                        0
 Closed Acks                                                           3
 Ack Validation failure                                                0
 Simultanious syn                                                      0
 C2S synack                                                            0
 segment to left of receiver window                                    0
 segment to right of receiver window                                   0
 SYN seen in the window                                                0
 ACK bit is off                                                        0
 Unexpected FIN                                                        0
 Duplicate Syn/Ack with different SEQ                                  0
```

show security idp counters tcp-reassembler logical-system LSYS1

user@host> **show security idp counters tcp-reassembler logical-system LSYS1**

```
IDP counters:

  IDP counter type                                                   Value
 Bad TCP checksums                                                    0
 Bad TCP headers                                                      0
 Slow path segments                                                   37
 Fast path segments                                                   27
 Tcp Optimized s2c segments                                           0
 Tcp Optimized c2s segments                                           0
 Sequence number wrap around errors                                   0
 Session reuses                                                       0
 SYN retransmissions                                                  0
 Bad three way handshake acknowledgements                             0
 Sequence number out of sync flows                                    0
 Fast path pattern matches in queued up streams                       0
 New segments with no overlaps with old segment                       0
 New segment overlaps with beginning of old segment                   0
```

```
New segment overlaps completely with old segment                    0
New segment is contained in old segment                             0
New segment overlaps with end of old segment                        0
New segment begins after end of old segment                         0
Memory consumed by new segment                                      0
Peak memory consumed by new segments                                2021
Segments in memory                                                  0
Per-flow memory overflows                                           0
Global memory overflows                                             0
Overflow drops                                                      0
Overflow drops - missing packets                                    0
Copied packets                                                      0
Closed Acks                                                         0
Ack Validation failure                                              0
Simultanious syn                                                    0
C2S synack                                                          0
segment to left of receiver window                                  0
segment to right of receiver window                                 0
SYN seen in the window                                              0
ACK bit is off                                                      0
Unexpected FIN                                                      0
Duplicate Syn/Ack with different SEQ                                0
```

show security idp logical-system policy-association

Syntax

```
show security idp logical-system policy-association
```

Release Information
Command introduced in Junos OS Release 11.3.

Description
Display the IDP policy assigned to a logical system. The IDP policy is assigned to a logical system through the security profile.

Required Privilege Level
view

RELATED DOCUMENTATION

security-profile | 805

List of Sample Output
show security idp logical-system policy-association on page 1007

Output Fields
Table 70 on page 1007 lists the output fields for the **show security idp logical-system policy-association** command.

Table 70: show security idp logical-system policy-association Output Fields

Field Name	Field Description
Logical system	Name of the logical system to which an IDP policy is assigned.
IDP policy	Name of the IDP policy that is specified in the security profile that is bound to the logical system.

Sample Output

show security idp logical-system policy-association

```
user@host> show security idp logical-system policy-association
```

```
Logical system         IDP policy
root-logical-system    idp-policy1
lsys1                  idp-policy2
```

show security idp policies

Syntax

```
show security idp policies
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 10.1.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the list of currently installed policies.

Options

none—Displays the list of currently installed policies.

logical-system *logical-system-name*—(Optional) Displays the list of currently installed policies for a specific logical system.

logical-system all—(Optional) Displays the list of currently installed policies for all logical systems.

tenant *tenant-name*—(Optional) Displays the list of currently installed policies for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

show security idp active-policy

Sample Output

show security idp policies

`user@host>` **show security idp policies**

```
PIC : FPC 0 PIC 0:
  ID    Name                  Sessions    Memory      Detector
```

```
   0  idp-policy-unified         0        10179      12.6.130180509
```

show security idp policies logical-system LSYS0

```
user@host> show security idp policies logical-system LSYS0
```

```
 PIC : FPC 0 PIC 0:
ID    Name                   Sessions    Memory      Detector
53   idp_one policy             0        189712      12.6.130180509
```

show security idp policy-commit-status

Syntax

```
show security idp policy-commit-status
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in JUNOS OS Release 10.4.
Starting with Junos OS Release 12.3X48-D15 and Junos OS Release 17.3R1, a new pattern matching engine is introduced for the SRX Series IDP feature. This scanning mechanism helps improve performance and policy loading. The new engine is 9.223 times faster than the existing DFA engine.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays the IDP policy commit status. For example, status of policy compilation or load.

Options

none—Displays the IDP policy commit status.

logical-system *logical-system-name*—(Optional) Displays the IDP policy commit status for a specific logical system.

logical-system all—(Optional) Displays the IDP policy commit status for all logical systems.

tenant *tenant-name*—(Optional) Displays the IDP policy commit status for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

show security idp status

show security idp policy-commit-status clear

List of Sample Output

show security idp policy-commit-status on page 1012
show security idp policy-commit-status logical-system LSYS1 on page 1012

Sample Output

show security idp policy-commit-status

user@host> **show security idp policy-commit-status**

```
IDP policy[/var/db/idpd/bins/test.bin.gz.v] and
detector[/var/db/idpd/sec-repository/installed-detector/libidp-detector.so.tgz.v]
 loaded successfully.

The loaded policy size is:45583070 Bytes
```

Sample Output

show security idp policy-commit-status logical-system LSYS1

user@host> **show security idp policy-commit-status logical-system LSYS1**

```
 IDP policy[/var/db/idpd/bins//idp-policy-combined.bin.gz.v] and
detector[/var/db/idpd/sec-repository/installed-detector/libidp-detector.so.tgz.v]
 loaded successfully.
 The loaded policy size is:7416 Bytes
```

show security idp policy-templates-list

Syntax

```
show security idp policy-templates-list
```

Release Information

Command introduced in Junos OS Release 10.1.
Command introduced for user logical system in Junos OS Release 18.3R1.

Description

Display the list of available policy templates for logical systems.

Required Privilege Level

view

RELATED DOCUMENTATION

show security idp active-policy

Sample Output

show security idp policy-templates-list

`user@host>`**show security idp policy-templates-list**

```
 Web_Server
DMZ_Services
DNS_Service
File_Server
Getting_Started
IDP_Default
Server-Protection
Server-Protection-1G
Client-Protection
Client-Protection-1G
Client-And-Server-Protection
Client-And-Server-Protection-1G
Recommended
```

show security idp security-package-version

Syntax

```
show security idp security-package-version
<logical-system (logical-system-name | all)>
<tenant tenant-name>
```

Release Information

Command introduced in Junos OS Release 9.2.
logical-system option introduced in Junos OS Release 18.3R1.
tenant option introduced in Junos OS Release 19.2R1.

Description

Displays information of the currently installed security package version and detector version.

Options

none—Displays information of the currently installed security package version and detector version.

logical-system *logical-system-name*—(Optional) Displays information of the currently installed security package version and detector version for a specific logical system.

logical-system all—(Optional) Displays information of the currently installed security package version and detector version for all logical systems.

tenant *tenant-name*—(Optional) Displays information of the currently installed security package version and detector version for a specific tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

- *security-package*
- *request security idp security-package download*
- *request security idp security-package install*

List of Sample Output

show security idp security-package-version on page 1015
show security idp security-package-version on page 1015
show security idp security-package-version tenant TSYS1 on page 1015

Output Fields

Table 71 on page 1015 lists the output fields for the **show security idp security-package-version** command. Output fields are listed in the approximate order in which they appear.

Table 71: show security idp security-package-version Output Fields

Field Name	Field Description
Attack database version	Attack database version number that is currently installed on the system.
Detector version	Detector version number that is currently installed on the system.
Policy template version	Policy template version number that is currently installed on the system.

Sample Output

show security idp security-package-version

```
user@host> show security idp security-package-version

   Attack database version:1154(Mon Apr 28 15:08:42 2008)
   Detector version :9.1.140080400
   Policy template version :7
```

show security idp security-package-version

```
user@host:LSYS1> show security idp security-package-version

   Attack database version:1154(Mon Apr 28 15:08:42 2008)
   Detector version :9.1.140080400
   Policy template version :7
```

show security idp security-package-version tenant TSYS1

```
user@host> show security idp security-package-version tenant TSYS1

Attack database version:3155(Thu Mar 21 11:49:33 2019 UTC)
  Detector version :12.6.130190309
  Policy template version :3154
```

show security ike security-associations

Syntax

```
show security ike security-associations
<peer-address>
<brief | detail>
<family (inet | inet6)>
<fpc slot-number>
<index SA-index-number>
<kmd-instance (all | kmd-instance-name)>
<pic slot-number>
<sa-type shortcut >
```

Release Information

Command introduced in Junos OS Release 8.5 . Support for the **fpc**, **pic**, and **kmd-instance** options added in Junos OS Release 9.3. Support for the **family** option added in Junos OS Release 11.1. Support for Auto Discovery VPN added in Junos OS Release 12.3X48-D10. Support for IKEv2 reauthentication added in Junos OS Release 15.1X49-D60. Support for IKEv2 fragmentation added in Junos OS Release 15.1X49-D80.

Description

Display information about Internet Key Exchange security associations (IKE SAs).

Options

- none—Display standard information about existing IKE SAs, including index numbers.
- ***peer-address***—(Optional) Display details about a particular SA based on the IPv4 or IPv6 address of the destination peer. This option and **index** provide the same level of output.
- **brief**—(Optional) Display standard information about all existing IKE SAs. (Default)
- **detail**—(Optional) Display detailed information about all existing IKE SAs.
- **family**—(Optional) Display IKE SAs by family. This option is used to filter the output.
  - **inet**—IPv4 address family.
  - **inet6**—IPv6 address family.
- **fpc *slot-number***—(Optional) Display information about existing IKE SAs in this Flexible PIC Concentrator (FPC) slot. This option is used to filter the output.

> **NOTE:** In a chassis cluster, when you execute the CLI command **show security ike security-associations pic *<slot-number>* fpc *<slot-number>*** in operational mode, only the primary node information about the existing IPsec SAs in the specified Flexible PIC Concentrator (FPC) slot and PIC slot is displayed.

- **index *SA-index-number***—(Optional) Display information for a particular SA based on the index number of the SA. For a particular SA, display the list of existing SAs by using the command with no options. This option and ***peer-address*** provide the same level of output.
- **kmd-instance** —(Optional) Display information about existing IKE SAs in the key management process (in this case, it is KMD) identified by FPC *slot-number* and PIC *slot-number*. This option is used to filter the output.
  - **all**—All KMD instances running on the Services Processing Unit (SPU).
  - ***kmd-instance-name***—Name of the KMD instance running on the SPU.
- **pic *slot-number*** —(Optional) Display information about existing IKE SAs in this PIC slot. This option is used to filter the output.
- **sa-type**—(Optional for ADVPN) Type of SA. **shortcut** is the only option for this release.

Required Privilege Level
view

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Output Fields

Table 72 on page 1018 lists the output fields for the **show security ike security-associations** command. Output fields are listed in the approximate order in which they appear.

Table 72: show security ike security-associations Output Fields

Field Name	Field Description
IKE Peer or Remote Address	IP address of the destination peer with which the local peer communicates.
Index	Index number of an SA. This number is an internally generated number you can use to display information about a single SA.
Gateway Name	Name of the IKE gateway.
Location	• **FPC**—Flexible PIC Concentrator (FPC) slot number. • **PIC**—PIC slot number. • **KMD-Instance**—The name of the KMD instance running on the SPU, identified by FPC *slot-number* and PIC *slot-number*. Currently, 4 KMD instances are running on each SPU, and any particular IKE negotiation is carried out by a single KMD instance.
Role	Part played in the IKE session. The device triggering the IKE negotiation is the initiator, and the device accepting the first IKE exchange packets is the responder.
State	State of the IKE SAs: • **DOWN**—SA has not been negotiated with the peer. • **UP**—SA has been negotiated with the peer.
Initiator cookie	Random number, called a cookie, which is sent to the remote node when the IKE negotiation is triggered.
Responder cookie	Random number generated by the remote node and sent back to the initiator as a verification that the packets were received. A cookie is aimed at protecting the computing resources from attack without spending excessive CPU resources to determine the cookie's authenticity.

Table 72: show security ike security-associations Output Fields *(continued)*

Field Name	Field Description
Exchange type	Negotiation method agreed on by the two IPsec endpoints, or peers, used to exchange information between one another. Each exchange type or mode determines the number of messages and the payload types that are contained in each message. The modes are: • **main**—The exchange is done with six messages. This mode encrypts the payload, protecting the identity of the neighbor. • **aggressive**—The exchange is done with three messages. This mode does not encrypt the payload, leaving the identity of the neighbor unprotected. **NOTE:** IKEv2 protocol does not use the mode configuration for negotiation. Therefore, the mode displays the version number of the security association.
Authentication method	Method used to authenticate the source of IKE messages, which can be either **Pre-shared-keys** or digital certificates, such as **DSA-signatures**, **ECDSA-signatures-256**, **ECDSA-signatures-384**, or **RSA-signatures**.
Local	Address of the local peer.
Remote	Address of the remote peer.
Lifetime	Number of seconds remaining until the IKE SA expires.
Reauth Lifetime	When enabled, number of seconds remaining until reauthentication triggers a new IKEv2 SA negotiation.
IKE Fragmentation	**Enabled** means that both the IKEv2 initiator and responder support message fragmentation and have negotiated the support during the IKE_SA_INIT message exchange. **Size** shows the maximum size of an IKEv2 message before it is fragmented.

Table 72: show security ike security-associations Output Fields *(continued)*

Field Name	Field Description

Algorithms	IKE algorithms used to encrypt and secure exchanges between the peers during the IPsec Phase 2 process:
	• **Authentication**—Type of authentication algorithm used:
	  ◦ **sha1**—Secure Hash Algorithm 1 authentication.
	  ◦ **md5**—MD5 authentication.
	• **Encryption**—Type of encryption algorithm used:
	  ◦ **aes-256-cbc**—Advanced Encryption Standard (AES) 256-bit encryption.
	  ◦ **aes-192-cbc**— AES192-bit encryption.
	  ◦ **aes-128-cbc**—AES 128-bit encryption.
	  ◦ **3des-cbc**—3 Data Encryption Standard (DES) encryption.
	  ◦ **aes-128-gcm**—Advanced Encryption Standard (AES) 256-bit encryption.
	  ◦ **des-cbc**—DES encryption.
	  Starting in Junos OS Release 19.4R2, when you configure **aes-128-gcm** or **aes-256-gcm** as an encryption algorithm at the **[edit security ipsec proposalproposal-name]** hierarchy level, the authentication algorithm field of the **show security ikesecurity-associations detail** command displays the same configured encryption algorithm.
	• **Pseudo random function**—Function that generates highly unpredictable random numbers: **hmac-md5** or **hmac-sha1**.
	• **Diffie-Hellman group**—Specifies the type of Diffie-Hellman group when performing the new Diffie-Hellman exchange. It can be one of the following:
	  ◦ **group1**—768-bit Modular Exponential (MODP) algorithm.
	  ◦ **group2**—1024-bit MODP algorithm.
	  ◦ **group14**—2048-bit MODP group.
	  ◦ **group15**—3072-bit MODP algorithm.
	  ◦ **group16**—4096-bit MODP algorithm.
	  ◦ **group19**—256-bit random Elliptic Curve Groups modulo a prime (ECP group) algorithm.
	  ◦ **group20**—384-bit random ECP group algorithm.
	  ◦ **group21**—521-bit random ECP group algorithm.
	  ◦ **group24**—2048-bit MODP group with 256-bit prime order subgroup.

Table 72: show security ike security-associations Output Fields *(continued)*

Field Name	Field Description
Traffic statistics	• **Input bytes—**Number of bytes received. • **Output bytes—**Number of bytes transmitted. • **Input packets—**Number of packets received. • **Output packets—**Number of packets transmitted. • **Input fragmented packets**—Number of IKEv2 fragmented packets received. • **Output fragmented packets**—Number of IKEv2 fragmented packets transmitted.
Flags	Notification to the key management process of the status of the IKE negotiation: • **caller notification sent**—Caller program notified about the completion of the IKE negotiation. • **waiting for done**—Negotiation is done. The library is waiting for the remote end retransmission timers to expire. • **waiting for remove**—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation. • **waiting for policy manager**—Negotiation is waiting for a response from the policy manager.
IPSec security associations	• ***number* created:** The number of SAs created. • ***number* deleted**: The number of SAs deleted.

Phase 2 negotiations in progress	Number of Phase 2 IKE negotiations in progress and status information:
	• **Negotiation type**—Type of Phase 2 negotiation. Junos OS currently supports quick mode.
	• **Message ID**—Unique identifier for a Phase 2 negotiation.
	• **Local identity**—Identity of the local Phase 2 negotiation. The format is *id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)*.
	• **Remote identity**—Identity of the remote Phase 2 negotiation. The format is *id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)*.
	• **Flags**—Notification to the key management process of the status of the IKE negotiation:
	  ◦ **caller notification sent**—Caller program notified about the completion of the IKE negotiation.
	  ◦ **waiting for done**—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.
	  ◦ **waiting for remove**—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.
	  ◦ **waiting for policy manager**—Negotiation is waiting for a response from the policy manager.

Table 72: show security ike security-associations Output Fields *(continued)*

Field Name	Field Description
Local gateway interface	Interface name of the local gateway.
Routing instance	Name of the local gateway routing instance.

Sample Output

show security ike security-associations (IPv4)

```
user@host> show security ike security-associations
```

```
Index  Remote Address  State  Initiator cookie        Responder cookie Mode
8  192.168.1.2  UP  3a895f8a9f620198 9040753e66d700bb Main
Index  Remote Address  State  fInitiator cookie Responder cookie Mode
9  192.168.1.3   UP  5ba96hfa9f65067  70890755b65b80b  Main
```

show security ike security-associations (IPv6)

```
user@host> show security ike security-associations
```

```
Index   State  Initiator cookie  Responder cookie  Mode           Remote Address

5       UP     e48efd6a444853cf  0d09c59aafb720be  Aggressive     2001:db8::1112
```

show security ike security-associations detail (SRX300, SRX320, SRX340, SRX345, and SRX550HM Devices)

```
user@host> show security ike security-associations detail
```

```
IKE peer 192.168.134.245, Index 2577565, Gateway Name: tropic
  Role: Initiator, State: UP
  Initiator cookie: b869b3424513340a, Responder cookie: 4cb3488cb19397c3
  Exchange type: Main, Authentication method: Pre-shared-keys Trusted CA group:
xyz_ca_grp
  Local: 192.168.134.241:500, Remote: 192.168.134.245:500
  Local gateway interface: ge-0/0/0
  Routing instance: default
  Lifetime: Expires in 169 seconds
  Peer ike-id: 192.168.134.245
```

```
  AAA assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : hmac-sha1-96
   Encryption            : aes-128-gcm
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-5
  Traffic statistics:
   Input  bytes  :                1012
   Output bytes  :                1196
   Input  packets:                   4
   Output packets:                   5
  Flags: IKE SA is created
  IPSec security associations: 1 created, 0 deleted
  Phase 2 negotiations in progress: 0

    Negotiation type: Quick mode, Role: Initiator, Message ID: 0
    Local: 192.168.134.241:500, Remote: 192.168.134.245:500
    Local identity: 192.168.134.241
    Remote identity: 192.168.134.245
    Flags: IKE SA is created
IPsec SA Rekey CREATE_CHILD_SA exchange stats:
   Initiator stats:                                 Responder stats:
    Request Out             : 1                      Request In             : 0
    Response In             : 1                      Response Out           : 0
    No Proposal Chosen In   : 0                      No Proposal Chosen Out : 0
    Invalid KE In           : 0                      Invalid KE Out         : 0
    TS Unacceptable In      : 0                      TS Unacceptable Out    : 0
    Res DH Compute Key Fail : 0                      Res DH Compute Key Fail: 0
    Res Verify SA Fail      : 0
    Res Verify DH Group Fail: 0
    Res Verify TS Fail      : 0
```

show security ike security-associations detail (SRX5400, SRX5600, and SRX5800 Devices)

`user@host>` **show security ike security-associations detail**

```
IKE peer 192.168.2, Index 914039858, Gateway Name: tropic
  Location: FPC 3, PIC 1, KMD-Instance 3
  Role: Initiator, State: UP
  Initiator cookie: 219a697652bdde37, Responder cookie: b49c30b229d36bcd
  Exchange type: Aggressive, Authentication method: Pre-shared-keys  Trusted CA
group: xyz_ca_grp
  Local gateway interface: ge-0/0/0
  Routing instance: default
```

```
  Local: 192.168.1.1:500, Remote: 192.168.1.2:500
  Lifetime: Expires in 26297 seconds
  Peer ike-id: 192.168.1.2
  AAA user-name: not available
  AAA assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : hmac-sha1-96
   Encryption            : aes-128-gcm
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-5
  Traffic statistics:
   Input  bytes  :                  0
   Output bytes  :                  0
   Input  packets:                  0
   Output packets:                  0
  IPSec security associations: 0 created, 0 deleted
  Phase 2 negotiations in progress: 1
IPsec SA Rekey CREATE_CHILD_SA exchange stats:
   Initiator stats:                                Responder stats:
    Request Out             : 1                     Request In             : 0
    Response In             : 1                     Response Out           : 0
    No Proposal Chosen In   : 0                     No Proposal Chosen Out : 0
    Invalid KE In           : 0                     Invalid KE Out         : 0
    TS Unacceptable In      : 0                     TS Unacceptable Out    : 0
    Res DH Compute Key Fail : 0                     Res DH Compute Key Fail: 0
    Res Verify SA Fail      : 0
    Res Verify DH Group Fail: 0
    Res Verify TS Fail      : 0
```

The *show security ike stats* topic lists the output fields for the **show security ike security-associations detail** command.

show security ike security-associations family inet6

`user@host>` **show security ike security-associations family inet6**

```
  IKE peer 2001:db8:1212::1112, Index 5, Gateway Name: tropic
  Role: Initiator, State: UP
  Initiator cookie: e48efd6a444853cf, Responder cookie: 0d09c59aafb720be
  Exchange type: Aggressive, Authentication method: Pre-shared-keys
  Local: 2001:db8:1212::1111:500, Remote: 2001:db8:1212::1112:500
  Lifetime: Expires in 19518 seconds
  Peer ike-id: not valid
```

```
  AAA assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : sha1
   Encryption            : 3des-cbc
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-5
  Traffic statistics:
   Input  bytes  :                1568
   Output bytes  :                2748
   Input  packets:                   6
   Output packets:                  23
  Flags: Caller notification sent
  IPSec security associations: 5 created, 0 deleted
  Phase 2 negotiations in progress: 1

    Negotiation type: Quick mode, Role: Initiator, Message ID: 2900338624
    Local: 2001:db8:1212::1111:500, Remote: 2001:db8:1212::1112:500
    Local identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
    Remote identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
    Flags: Caller notification sent, Waiting for done
```

show security ike security-associations index 222075191 detail

user@host> **show security ike security-associations index 222075191 detail**

```
node0:
-
IKE peer 192.168.1.2, Index 222075191, Gateway Name: ZTH_HUB_GW
  Location: FPC 0, PIC 3, KMD-Instance 2
  Auto Discovery VPN:
   Type: Static, Local Capability: Suggester, Peer Capability: Partner
   Suggester Shortcut Suggestions Statistics:
     Suggestions sent    :    2
     Suggestions accepted:    4
     Suggestions declined:    1
  Role: Responder, State: UP
  Initiator cookie: 7b996b4c310d2424, Responder cookie: 5724c5882a212157
  Exchange type: IKEv2, Authentication method: RSA-signatures
  Local: 192.168.1.1:500, Remote: 192.168.1.2:500
  Lifetime: Expires in 828 seconds
  Peer ike-id: C=US, DC=example, ST=CA, L=Sunnyvale, O=example, OU=engineering,
CN=cssvk36-d
  Xauth user-name: not available
  Xauth assigned IP: 0.0.0.0
```

```
  Algorithms:
   Authentication        : hmac-sha1-96
   Encryption            : aes256-cbc
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-5
  Traffic statistics:
   Input  bytes  :                20474
   Output bytes  :                21091
   Input  packets:                  237
   Output packets:                  237
  IPSec security associations: 2 created, 0 deleted
  Phase 2 negotiations in progress: 1

    Negotiation type: Quick mode, Role: Responder, Message ID: 0
    Local: 192.168.1.1:500, Remote: 192.168.1.2:500
   Local identity: C=US, DC=example, ST=CA, L=Sunnyvale, O=example, OU=engineering,
 CN=host1
    Remote identity: C=US, DC=example, ST=CA, L=Sunnyvale, O=example,
OU=engineering, CN=host2
    Flags: IKE SA is created
```

show security ike security-associations index 788674 detail

user@host> **show security ike security-associations index 788674 detail**

```
IKE peer 192.168.1.1, Index 788674, Gateway Name: ZTH_SPOKE_GW
  Auto Discovery VPN:
   Type: Static, Local Capability: Partner, Peer Capability: Suggester
   Partner Shortcut Suggestions Statistics:
     Suggestions received:    2
     Suggestions accepted:    2
     Suggestions declined:    0
  Role: Initiator, State: UP
  Initiator cookie: 7b996b4c310d2424, Responder cookie: 5724c5882a212157
  Exchange type: IKEv2, Authentication method: RSA-signatures
  Local: 192.168.1.2:500, Remote: 192.168.1.1:500
  Lifetime: Expires in 734 seconds
  Peer ike-id: C=US, DC=example, ST=CA, L=Sunnyvale, O=example, OU=engineering,
CN=test
  Xauth user-name: not available
  Xauth assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : hmac-sha1-96
   Encryption            : aes256-cbc
```

```
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-5
  Traffic statistics:
   Input  bytes  :                22535
   Output bytes  :                21918
   Input  packets:                  256
   Output packets:                  256
  IPSec security associations: 2 created, 0 deleted
  Phase 2 negotiations in progress: 1

    Negotiation type: Quick mode, Role: Initiator, Message ID: 0
    Local: 192.168.1.2:500, Remote: 192.168.1.1:500
   Local identity: C=US, DC=example, ST=CA, L=Sunnyvale, O=example, OU=engineering,
 CN=host1
    Remote identity: C=US, DC=example, ST=CA, L=Sunnyvale, O=example,
OU=engineering, CN=host2
    Flags: IKE SA is created
```

show security ike security-associations 192.168.1.2

```
user@host> show security ike security-associations 192.168.1.2
```

```
Index     State  Initiator cookie  Responder cookie  Mode Remote Address
   8        UP     3a895f8a9f620198  9040753e66d700bb  Main 192.168.1.2
```

show security ike security-associations fpc 6 pic 1 kmd-instance all (SRX Series Devices)

```
user@host> show security ike security-associations fpc 6 pic 1 kmd-instance all
```

```
Index      Remote Address  State  Initiator cookie  Responder cookie  Mode

1728053250 192.168.1.2     UP     fc959afd1070d10b  bdeb7e8c1ea99483  Main
```

show security ike security-associations detail (ADVPN Suggester, Static Tunnel)

```
user@host> show security ike security-associations detail
```

```
IKE peer 192.168.0.105, Index 13563297, Gateway Name: zth_hub_gw
  Location: FPC 0, PIC 0, KMD-Instance 1
  Auto Discovery VPN:
 Type: Static, Local Capability: Suggester, Peer Capability: Partner
   Suggester Shortcut Suggestions Statistics:
```

```
    Suggestions sent            :  12
    Suggestion response accepted:  12
    Suggestion response declined:   0
  Role: Responder, State: UP
  Initiator cookie: 4d3f4e4b2e75d727, Responder cookie: 81ab914e13cecd21
  Exchange type: IKEv2, Authentication method: RSA-signatures
  Local: 192.168.0.154:500, Remote: 192.168.0.105:500
  Lifetime: Expires in 26429 seconds
  Peer ike-id: DC=example, CN=host02, L=Sunnyvale, ST=CA, C=US
```

show security ike security-associations detail (ADVPN Partner, Static Tunnel)

`user@host>` **show security ike security-associations detail**

```
IKE peer 192.168.0.154, Index 4980720, Gateway Name: zth_spoke_gw
  Location: FPC 0, PIC 0, KMD-Instance 1
  Auto Discovery VPN:
 Type: Static, Local Capability: Partner, Peer Capability: Suggester
   Partner Shortcut Suggestions Statistics:
     Suggestions received:  12
     Suggestions accepted:  12
     Suggestions declined:   0
  Role: Initiator, State: UP
  Initiator cookie: 4d3f4e4b2e75d727, Responder cookie: 81ab914e13cecd21
  Exchange type: IKEv2, Authentication method: RSA-signatures
  Local: 192.168.0.105:500, Remote: 192.168.0.154:500
  Lifetime: Expires in 26252 seconds
  Peer ike-id: DC=example, CN=host01, OU=SBU, O=example, L=Sunnyvale, ST=CA, C=US
```

show security ike security-associations detail (ADVPN Partner, Shortcut)

`user@host>` **show security ike security-associations detail**

```
IKE peer 192.168.0.106, Index 4980737, Gateway Name:
GW-ADVPN-GT-ADVPN-zth_spoke_vpn-268173323
  Location: FPC 0, PIC 0, KMD-Instance 1
  Auto Discovery VPN:
   Type: Shortcut, Local Capability: Partner, Peer Capability: Partner
  Role: Responder, State: UP
  Initiator cookie: e1ed0c655929debc, Responder cookie: 437de6ed784ba63e
  Exchange type: IKEv2, Authentication method: RSA-signatures
  Local: 192.168.0.105:500, Remote: 192.168.0.106:500
```

```
  Lifetime: Expires in 28796 seconds
  Peer ike-id: DC=example, CN=paulyd, L=Sunnyvale, ST=CA, C=US
```

show security ike security-associations sa-type shortcut (ADVPN)

```
user@host> show security ike security-associations sa-type shortcut
```

```
Index   State  Initiator cookie  Responder cookie  Mode           Remote Address
4980742 UP     vb56fbe694eaee5b6 064dbccbfa3b2aab  IKEv2          192.168.0.106
```

show security ike security-associations sa-type shortcut detail (ADVPN)

```
user@host> show security ike security-associations sa-type shortcut detail
```

```
IKE peer 192.168.0.106, Index 4980742, Gateway Name:
GW-ADVPN-GT-ADVPN-zth_spoke_vpn-268173327
  Location: FPC 0, PIC 0, KMD-Instance 1
  Auto Discovery VPN:
   Type: Shortcut, Local Role: Partner, Peer Role: Partner
  Role: Responder, State: UP
```

show security ike security-associations detail (IKEv2 Reauthentication)

```
user@host> show security ike security-associations detail
```

```
IKE peer 10.1.2.11, Index 6009224, Gateway Name: GW
  Role: Responder, State: UP
  Initiator cookie: 2c74d14c798a9d70, Responder cookie: 83cbb49bfbcb80cb
  Exchange type: IKEv2, Authentication method: RSA-signatures
  Local: 10.1.1.11:500, Remote: 10.1.2.11:500
  Lifetime: Expires in 173 seconds
  Reauth Lifetime: Expires in 600 seconds
  Peer ike-id: vsrx@example.net
  AAA assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : hmac-sha1-96
   Encryption            : aes128-cbc
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-2
  Traffic statistics:
   Input  bytes  :                1782
```

```
   Output bytes  :                1743
   Input  packets:                   2
```

show security ike security-associations detail (IKEv2 Fragmentation)

`user@host>` **show security ike security-associations detail**

```
IKE peer 172.24.23.157, Index 11883008, Gateway Name: routebased_s2s_gw-552_1
  Role: Responder, State: UP
  Initiator cookie: f3255e720f162e3a, Responder cookie: 17555e3ff7451841
  Exchange type: Main, Authentication method: Pre-shared-keys Trusted CA group:
xyz_ca_grp
  Local: 192.168.254.1:500, Remote: 172.24.23.157:500
  Lifetime: Expires in 530 seconds
  Reauth Lifetime: Disabled
  IKE Fragmentation: Enabled, Size: 576
  Peer ike-id: 172.24.23.157
  AAA assigned IP: 0.0.0.0
  Algorithms:
   Authentication        : hmac-sha1-96
   Encryption            : 3des-cbc
   Pseudo random function: hmac-sha1
   Diffie-Hellman group  : DH-group-5
  Traffic statistics:
   Input  bytes  :                1004
   Output bytes  :                 756
   Input  packets:                   6
   Output packets:                   4
   Input  fragmented packets:  3
   Output fragmented packets: 3
  IPSec security associations: 1 created, 1 deleted
  Phase 2 negotiations in progress: 1

    Negotiation type: Quick mode, Role: Responder, Message ID: 0
    Local: 192.168.254.1:500, Remote: 172.24.23.157:500
    Local identity: 192.168.254.1
    Remote identity: 172.24.23.157
    Flags: IKE SA is created
```

show security ipsec security-associations

Syntax

```
show security ipsec security-associations
<brief | detail>
<family (inet | inet6)>
<fpc slot-number pic slot-number>
<index SA-index-number>
<kmd-instance (all | kmd-instance-name)>
<pic slot-number fpc slot-number>
<sa-type shortcut>
<traffic-selector traffic-selector-name>
<vpn-name vpn-name>
```

Release Information

Command introduced in Junos OS Release 8.5. Support for the **family** option added in Junos OS Release 11.1. Support for the **vpn-name** option added in Junos OS Release 11.4R3. Support for the **traffic-selector** option and traffic selector field added in Junos OS Release 12.1X46-D10. Support for Auto Discovery VPN (ADVPN) added in Junos OS Release 12.3X48-D10. Support for IPsec datapath verification added in Junos OS Release 15.1X49-D70. Support for thread anchorship added in Junos OS Release 17.4R1. Starting in Junos OS Release 18.2R2 the **show security ipsec security-assocations detail** command output will include thread anchorship information for the security associations (SAs).
Starting in Junos OS Release 19.4R1, we have deprecated the CLI option **fc-name** (COS Forward Class name) in the new **iked** process that displays the security associations (SAs) under show command **show security ipsec sa**.

Description

Display information about the IPsec security associations (SAs).

Options

none—Display information about all SAs.

brief | detail—(Optional) Display the specified level of output. The default is **brief**.

family—(Optional) Display SAs by family. This option is used to filter the output.

- **inet**—IPv4 address family.
- **inet6**—IPv6 address family.

fpc *slot-number* pic *slot-number*—(Optional) Display information about existing IPsec SAs in the specified Flexible PIC Concentrator (FPC) slot and PIC slot.

NOTE: In a chassis cluster, when you execute the CLI command **show security ipsec security-associations pic <*slot-number*> fpc <*slot-number*>** in operational mode, only the primary node information about the existing IPsec SAs in the specified Flexible PIC Concentrator (FPC) slot and PIC slot is displayed.

index *SA-index-number*—(Optional) Display detailed information about the specified SA identified by this index number. To obtain a list of all SAs that includes their index numbers, use the command with no options.

kmd-instance—(Optional) Display information about existing IPsec SAs in the key management process (in this case, it is KMD) identified by the FPC *slot-number* and PIC *slot-number*.

- **all**—All KMD instances running on the Services Processing Unit (SPU).
- ***kmd-instance-name***—Name of the KMD instance running on the SPU.

pic *slot-number* fpc *slot-number*—(Optional) Display information about existing IPsec SAs in the specified PIC slot and FPC slot.

sa-type—(Optional for ADVPN) Display information for the specified type of SA. **shortcut** is the only option for this release.

traffic-selector *traffic-selector-name*—(Optional) Display information about the specified traffic selector.

vpn-name *vpn-name*—(Optional) Display information about the specified VPN.

Required Privilege Level
view

RELATED DOCUMENTATION

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Output Fields

Table 73 on page 1033 lists the output fields for the **show security ipsec security-associations** command, Table 74 on page 1038 lists the output fields for the **show security ipsec sa** command and Table 75 on page 1038. lists the output fields for the **show security ipsec sa detail**. Output fields are listed in the approximate order in which they appear.

Table 73: show security ipsec security-associations

Field Name	Field Description	Level of Output
Total active tunnels	Total number of active IPsec tunnels.	**brief**
ID	Index number of the SA. You can use this number to get additional information about the SA.	All levels
Algorithm	Cryptography used to secure exchanges between peers during the IKE negotiations includes: • An authentication algorithm used to authenticate exchanges between the peers. • An encryption algorithm used to encrypt data traffic.	**brief**
SPI	Security parameter index (SPI) identifier. An SA is uniquely identified by an SPI. Each entry includes the name of the VPN, the remote gateway address, the SPIs for each direction, the encryption and authentication algorithms, and keys. The peer gateways each have two SAs, one resulting from each of the two phases of negotiation: IKE and IPsec.	**brief**

Table 73: show security ipsec security-associations *(continued)*

Field Name	Field Description	Level of Output
Life: sec/kb	The lifetime of the SA, after which it expires, expressed either in seconds or kilobytes.	**brief**
Mon	The Mon field refers to VPN monitoring status. If VPN monitoring is enabled, then this field displays **U** (up) or **D** (down). A hyphen (-) means VPN monitoring is not enabled for this SA. A **V** means that IPsec datapath verification is in progress.	**brief**
lsys	The root system.	**brief**
Port	If Network Address Translation (NAT) is used, this value is 4500. Otherwise, it is the standard IKE port, 500.	All levels
Gateway	IP address of the remote gateway.	**brief**
Virtual-system	Name of the logical system.	**detail**
VPN name	IPsec name for VPN.	**detail**
State	State has two options, **Installed** and **Not Installed**. • **Installed**—The SA is installed in the SA database. • **Not Installed**—The SA is not installed in the SA database. For transport mode, the value of State is always **Installed**.	**detail**
Local gateway	Gateway address of the local system.	**detail**
Remote gateway	Gateway address of the remote system.	**detail**
Traffic selector	Name of the traffic selector.	**detail**

Table 73: show security ipsec security-associations *(continued)*

Field Name	Field Description	Level of Output
Local identity	Identity of the local peer so that its partner destination gateway can communicate with it. The value is specified as an IP address, fully qualified domain name, e-mail address, or distinguished name (DN).	**detail**
Remote identity	IP address of the destination peer gateway.	**detail**
Version	IKE version, either **IKEv1** or **IKEv2**.	**detail**
DF-bit	State of the don't fragment bit: **set** or **cleared**.	**detail**
Location	**FPC**—Flexible PIC Concentrator (FPC) slot number. **PIC**—PIC slot number. **KMD-Instance**—The name of the KMD instance running on the SPU, identified by FPC *slot-number* and PIC *slot-number*. Currently, 4 KMD instances running on each SPU, and any particular IPsec negotiation is carried out by a single KMD instance.	**detail**
Tunnel events	Tunnel event and the number of times the event has occurred. See *Tunnel Events* for descriptions of tunnel events and the action you can take.	**detail**
Anchorship	Anchor thread ID for the SA (for SRX4600 Series devices with the **detail** option).	
Direction	Direction of the SA; it can be inbound or outbound.	**detail**
AUX-SPI	Value of the auxiliary security parameter index(SPI). • When the value is **AH** or **ESP**, **AUX-SPI** is always 0. • When the value is **AH+ESP**, **AUX-SPI** is always a positive integer.	**detail**

Table 73: show security ipsec security-associations *(continued)*

Field Name	Field Description	Level of Output
Mode	Mode of the SA: • **transport**—Protects host-to-host connections. • **tunnel—**Protects connections between security gateways.	**detail**
Type	Type of the SA: • **manual**—Security parameters require no negotiation. They are static and are configured by the user. • **dynamic**—Security parameters are negotiated by the IKE protocol. Dynamic SAs are not supported in transport mode.	**detail**
State	State of the SA: • **Installed**—The SA is installed in the SA database. • **Not Installed**—The SA is not installed in the SA database. For transport mode, the value of State is always **Installed**.	**detail**
Protocol	Protocol supported. • Transport mode supports Encapsulation Security Protocol (ESP) and Authentication Header (AH). • Tunnel mode supports ESP and AH.	**detail**
Authentication	Type of authentication used.	**detail**
Encryption	Type of encryption used. Starting in Junos OS Release 19.4R2, when you configure **aes-128-gcm** or **aes-256-gcm** as an encryption algorithm at the **[edit security ipsec proposal proposal-name]** hierarchy level, the authentication algorithm field of the **show security ipsec security-associations detail** command displays the same configured encryption algorithm.	**detail**

Table 73: show security ipsec security-associations *(continued)*

Field Name	Field Description	Level of Output
Soft lifetime	The soft lifetime informs the IPsec key management system that the SA is about to expire. Each lifetime of an SA has two display options, hard and soft, one of which must be present for a dynamic SA. This allows the key management system to negotiate a new SA before the hard lifetime expires. • **Expires in seconds**—Number of seconds left until the SA expires.	**detail**
Hard lifetime	The hard lifetime specifies the lifetime of the SA. • **Expires in seconds**—Number of seconds left until the SA expires.	**detail**
Lifesize Remaining	The lifesize remaining specifies the usage limits in kilobytes. If there is no lifesize specified, it shows unlimited. • **Expires in kilobytes**—Number of kilobytes left until the SA expires.	**detail**
Anti-replay service	State of the service that prevents packets from being replayed. It can be **Enabled** or **Disabled**.	**detail**
Replay window size	Size of the antireplay service window, which is 64 bits.	**detail**
Bind-interface	The tunnel interface to which the route-based VPN is bound.	**detail**
Copy-Outer-DSCP	Indicates if the system copies the outer DSCP value from the IP header to the inner IP header.	**detail**
tunnel-establishment	Indicates how the IKE is activated.	**detail**

Table 74: show security ipsec sa Output Fields

Field Name	Field Description
Total active tunnels	Total number of active IPsec tunnels.
ID	Index number of the SA. You can use this number to get additional information about the SA.
Algorithm	Cryptography used to secure exchanges between peers during the IKE Phase 2 negotiations includes: • An authentication algorithm used to authenticate exchanges between the peers. Options are **hmac-md5-96**, **hmac-sha-256-128**, or **hmac-sha1-96**. • An encryption algorithm used to encrypt data traffic. Options are **3des-cbc**, **aes-128-cbc**, **aes-192-cbc**, **aes-256-cbc**, or **des-cbc**.
SPI	Security parameter index (SPI) identifier. An SA is uniquely identified by an SPI. Each entry includes the name of the VPN, the remote gateway address, the SPIs for each direction, the encryption and authentication algorithms, and keys. The peer gateways each have two SAs, one resulting from each of the two phases of negotiation: Phase 1 and Phase 2.
Life:sec/kb	The lifetime of the SA, after which it expires, expressed either in seconds or kilobytes.
Mon	The Mon field refers to VPN monitoring status. If VPN monitoring is enabled, then this field displays U (up) or D (down). A hyphen (-) means VPN monitoring is not enabled for this SA. A V means that IPSec datapath verification is in progress.
lsys	The root system.
Port	If Network Address Translation (NAT) is used, this value is 4500. Otherwise, it is the standard IKE port, 500.
Gateway	Gateway address of the system.

Table 75: show security ipsec sa detail Output Fields

Field Name	Field Description
ID	Index number of the SA. You can use this number to get additional information about the SA.
Virtual-system	The virtual system name.

Table 75: show security ipsec sa detail Output Fields *(continued)*

Field Name	Field Description
VPN Name	IPSec name for VPN.
Local Gateway	Gateway address of the local system.
Remote Gateway	Gateway address of the remote system.
Local Identity	Identity of the local peer so that its partner destination gateway can communicate with it. The value is specified as an IP address, fully qualified domain name, e-mail address, or distinguished name (DN).
Remote Identity	IP address of the destination peer gateway.
Version	IKE version. For example, IKEv1, IKEv2.
DF-bit	State of the don't fragment bit: **set** or **cleared**.
Bind-interface	The tunnel interface to which the route-based VPN is bound.
Tunnel Events	
Direction	Direction of the SA; it can be inbound or outbound.
AUX-SPI	Value of the auxiliary security parameter index(SPI). • When the value is **AH** or **ESP**, **AUX-SPI** is always 0. • When the value is **AH+ESP**, **AUX-SPI** is always a positive integer.
VPN Monitoring	If VPN monitoring is enabled, then the **Mon** field displays **U (up)** or **D (down)**. A hyphen (-) means VPN monitoring is not enabled for this SA. A V means that IPSec datapath verification is in progress.
Hard lifetime	The hard lifetime specifies the lifetime of the SA. • **Expires in seconds** - Number of seconds left until the SA expires.
Lifesize Remaining	The lifesize remaining specifies the usage limits in kilobytes. If there is no lifesize specified, it shows unlimited.

Table 75: show security ipsec sa detail Output Fields *(continued)*

Field Name	Field Description
Soft lifetime	The soft lifetime informs the IPsec key management system that the SA is about to expire. Each lifetime of an SA has two display options, hard and soft, one of which must be present for a dynamic SA. This allows the key management system to negotiate a new SA before the hard lifetime expires. • **Expires in seconds** - Number of seconds left until the SA expires.
Mode	Mode of the SA: • **transport** - Protects host-to-host connections. • **tunnel** - Protects connections between security gateways.
Type	Type of the SA: • **manual** - Security parameters require no negotiation. They are static and are configured by the user. • **dynamic** - Security parameters are negotiated by the IKE protocol. Dynamic SAs are not supported in transport mode.
State	State of the SA: • **Installed** - The SA is installed in the SA database. • **Not Installed** - The SA is not installed in the SA database. For transport mode, the value of State is always Installed.

Protocol	Protocol supported.
	• Transport mode supports Encapsulation Security Protocol (ESP) and Authentication Header (AH).
	• Tunnel mode supports ESP and AH.
	  ◦ **Authentication** - Type of authentication used.
	  ◦ **Encryption** - Type of encryption used.

Anti-replay service	State of the service that prevents packets from being replayed. It can be **Enabled** or **Disabled**.
Replay window size	Configured size of the antireplay service window. It can be 32 or 64 packets. If the replay window size is 0, the antireplay service is disabled. The antireplay window size protects the receiver against replay attacks by rejecting old or duplicate packets.

Sample Output

For brevity, the show command outputs does not display all the values of the configuration. Only a subset of the configuration is displayed. Rest of the configuration on the system has been replaced with ellipses (...).

show security ipsec security-associations (IPv4)

```
user@host> show security ipsec security-associations
```

```
Total active tunnels: 14743 Total Ipsec sas: 14743
ID    Algorithm       SPI      Life:sec/kb  Mon lsys Port  Gateway
<511672 ESP:aes-cbc-128/sha1 0x071b8cd2      -   root 500   21.0.45.152
>503327 ESP:aes-cbc-128/sha1 0x69d364dd 1584/ unlim - root 500 21.0.12.255

<503327 ESP:aes-cbc-128/sha1 0x0a577f2d 1584/ unlim - root 500 21.0.12.255

>512896 ESP:aes-cbc-128/sha1 0xd2f51c81 1669/ unlim - root 500 21.0.50.96

<512896 ESP:aes-cbc-128/sha1 0x071b8d9e 1669/ unlim - root 500 21.0.50.96

>513881 ESP:aes-cbc-128/sha1 0x95955834 1696/ unlim - root 500 21.0.54.57

<513881 ESP:aes-cbc-128/sha1 0x0a57860c 1696/ unlim - root 500 21.0.54.57

>505835 ESP:aes-cbc-128/sha1 0xf827b5c6 1598/ unlim - root 500 21.0.22.204

<505835 ESP:aes-cbc-128/sha1 0x0f43bf3f 1598/ unlim - root 500 21.0.22.204

>506531 ESP:aes-cbc-128/sha1 0x01694572 1602/ unlim - root 500 21.0.25.131

<506531 ESP:aes-cbc-128/sha1 0x0a578143 1602/ unlim - root 500 21.0.25.131

>512802 ESP:aes-cbc-128/sha1 0xdc292de4 1668/ unlim - root 500 21.0.50.1

<512802 ESP:aes-cbc-128/sha1 0x0a578558 1668/ unlim - root 500 21.0.50.1

>512413 ESP:aes-cbc-128/sha1 0xbe2c52d5 1660/ unlim - root 500 21.0.48.125

<512413 ESP:aes-cbc-128/sha1 0x1129580c 1660/ unlim - root 500 21.0.48.125

>505075 ESP:aes-cbc-128/sha1 0x2aae6647 1593/ unlim - root 500 21.0.19.213

<505075 ESP:aes-cbc-128/sha1 0x02dc5c50 1593/ unlim - root 500 21.0.19.213
```

```
>514055 ESP:aes-cbc-128/sha1 0x2b8adfcb 1704/ unlim - root 500 21.0.54.238

<514055 ESP:aes-cbc-128/sha1 0x0f43c49a 1704/ unlim - root 500 21.0.54.238

>508898 ESP:aes-cbc-128/sha1 0xbcced4d6 1619/ unlim - root 500 21.0.34.194

<508898 ESP:aes-cbc-128/sha1 0x1492035a 1619/ unlim - root 500 21.0.34.194

>505328 ESP:aes-cbc-128/sha1 0x2a8d2b36 1594/ unlim - root 500 21.0.20.208

<505328 ESP:aes-cbc-128/sha1 0x14920107 1594/ unlim - root 500 21.0.20.208

>500815 ESP:aes-cbc-128/sha1 0xdd86c89a 1573/ unlim - root 500 21.0.3.47

<500815 ESP:aes-cbc-128/sha1 0x1129507f 1573/ unlim - root 500 21.0.3.47

>503758 ESP:aes-cbc-128/sha1 0x64cc490e 1586/ unlim - root 500 21.0.14.172

<503758 ESP:aes-cbc-128/sha1 0x14920001 1586/ unlim - root 500 21.0.14.172

>504004 ESP:aes-cbc-128/sha1 0xde0b63ee 1587/ unlim - root 500 21.0.15.164

<504004 ESP:aes-cbc-128/sha1 0x071b87d4 1587/ unlim - root 500 21.0.15.164

>508816 ESP:aes-cbc-128/sha1 0x2703b7a5 1618/ unlim - root 500 21.0.34.112

<508816 ESP:aes-cbc-128/sha1 0x071b8af6 1618/ unlim - root 500 21.0.34.112

>511341 ESP:aes-cbc-128/sha1 0x828f3330 1644/ unlim - root 500 21.0.44.77

<511341 ESP:aes-cbc-128/sha1 0x02dc6064 1644/ unlim - root 500 21.0.44.77

>500456 ESP:aes-cbc-128/sha1 0xa6f1515d 1572/ unlim - root 500 21.0.1.200

<500456 ESP:aes-cbc-128/sha1 0x1491fddb 1572/ unlim - root 500 21.0.1.200

>512506 ESP:aes-cbc-128/sha1 0x4108f3a3 1662/ unlim - root 500 21.0.48.218

<512506 ESP:aes-cbc-128/sha1 0x071b8d5d 1662/ unlim - root 500 21.0.48.218

>504657 ESP:aes-cbc-128/sha1 0x27a6b8b3 1591/ unlim - root 500 21.0.18.41

<504657 ESP:aes-cbc-128/sha1 0x112952fe 1591/ unlim - root 500 21.0.18.41
```

```
  >506755 ESP:aes-cbc-128/sha1 0xc0afcff0 1604/ unlim - root 500 21.0.26.100

  <506755 ESP:aes-cbc-128/sha1 0x149201f5 1604/ unlim - root 500 21.0.26.100

  >508023 ESP:aes-cbc-128/sha1 0xa1a90af8 1612/ unlim - root 500 21.0.31.87

  <508023 ESP:aes-cbc-128/sha1 0x02dc5e3b 1612/ unlim - root 500 21.0.31.87

  >509190 ESP:aes-cbc-128/sha1 0xee52074d 1621/ unlim - root 500 21.0.35.230

  <509190 ESP:aes-cbc-128/sha1 0x0f43c16e 1621/ unlim - root 500 21.0.35.230

  >505051 ESP:aes-cbc-128/sha1 0x24130b1c 1593/ unlim - root 500 21.0.19.188

  <505051 ESP:aes-cbc-128/sha1 0x149200d9 1593/ unlim - root 500 21.0.19.188

  >513214 ESP:aes-cbc-128/sha1 0x2c4752d1 1676/ unlim - root 500 21.0.51.158

  <513214 ESP:aes-cbc-128/sha1 0x071b8dd3 1676/ unlim - root 500 21.0.51.158

  >510808 ESP:aes-cbc-128/sha1 0x4acd94d3 1637/ unlim - root 500 21.0.42.56

  <510808 ESP:aes-cbc-128/sha1 0x071b8c42 1637/ unlim - root 500 21.0.42.56
```

show security ipsec security-associations (IPv6)

```
user@host> show security ipsec security-associations
```

```
Total active tunnels: 1
ID     Algorithm         SPI      Life:sec/kb  Mon  vsys Port  Gateway
131074 ESP:aes256/sha256 14caf1d9 3597/ unlim   -   root 500   2001:db8::1112

131074 ESP:aes256/sha256 9a4db486 3597/ unlim   -   root 500   2001:db8::1112
```

show security ipsec security-associations index 511672

```
user@host> show security ipsec security-associations index 511672
```

```
ID: 511672 Virtual-system: root, VPN Name: ipsec_vpn
  Local Gateway: 20.0.0.1, Remote Gateway: 21.0.45.152
  Traffic Selector Name: ts
  Local Identity: ipv4(191.45.151.0-191.45.151.255)
  Remote Identity: ipv4(40.45.151.0-40.45.151.255)
```

```
  Version: IKEv2
  DF-bit: clear, Copy-Outer-DSCP Disabled, Bind-interface: st0.0, Policy-name:
IPSEC_POL
  Port: 500, Nego#: 0, Fail#: 0, Def-Del#: 0 Flag: 0
  Multi-sa, Configured SAs# 0, Negotiated SAs#: 0
  Location: FPC 0, PIC 1, KMD-Instance 0
  Anchorship: Thread 10
  Direction: inbound, SPI: 0x835b8b42, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1639 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1257 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha1-96, Encryption: aes-cbc (128 bits)
    Anti-replay service: counter-based enabled, Replay window size: 64
  Direction: outbound, SPI: 0x071b8cd2, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1639 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1257 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha1-96, Encryption: aes-cbc (128 bits)
    Anti-replay service: counter-based enabled, Replay window size: 64
```

show security ipsec security-associations index 131073 detail

user@host> **show security ipsec security-associations index 131073 detail**

```
ID: 131073 Virtual-system: root, VPN Name: IPSEC_VPN1
  Local Gateway: 4.0.0.1, Remote Gateway: 5.0.0.1
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Version: IKEv2
  DF-bit: clear, Copy-Outer-DSCP Disabled, Bind-interface: st0.1
  Port: 500, Nego#: 18, Fail#: 0, Def-Del#: 0 Flag: 0x600a39
  Multi-sa, Configured SAs# 9, Negotiated SAs#: 9
  Tunnel events:
    Mon Apr 23 2018 22:20:54 -0700: IPSec SA negotiation successfully completed
(1 times)
    Mon Apr 23 2018 22:20:54 -0700: IKE SA negotiation successfully completed (2
times)
    Mon Apr 23 2018 22:20:18 -0700: User cleared IKE SA from CLI, corresponding
IPSec SAs cleared (1 times)
    Mon Apr 23 2018 22:19:55 -0700: IPSec SA negotiation successfully completed
```

```
(2 times)
    Mon Apr 23 2018 22:19:23 -0700: Tunnel is ready. Waiting for trigger event or
 peer to trigger negotiation (1 times)
    Mon Apr 23 2018 22:19:23 -0700: Bind-interface's zone received. Information
updated (1 times)
   Mon Apr 23 2018 22:19:23 -0700: External interface's zone received. Information
 updated (1 times)
  Direction: inbound, SPI: 2d8e710b, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1930 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1563 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
    Multi-sa FC Name: default
  Direction: outbound, SPI: 5f3a3239, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1930 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1563 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes-256-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
    Multi-sa FC Name: default
  Direction: inbound, SPI: 5d227e19, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1930 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1551 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes-256-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
    Multi-sa FC Name: best-effort
  Direction: outbound, SPI: 5490da, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1930 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1551 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes-256-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
...
```

Starting with Junos OS Release 18.2R1, the CLI **show security ipsec security-associations index *index-number* detail** output displays all the child SA details including forwarding class name.

show security ipsec sa

```
user@host> show security ipsec sa
```

```
Total active tunnels: 2
ID Algorithm SPI Life:sec/kb Mon lsys Port Gateway
>67108885 ESP:aes-gcm-256/None fdef4dab 2918/ unlim - root 500 2001:db8:3000::2
>67108885 ESP:aes-gcm-256/None e785dadc 2918/ unlim - root 500 2001:db8:3000::2
>67108887 ESP:aes-gcm-256/None 34a787af 2971/ unlim - root 500 2001:db8:5000::2
>67108887 ESP:aes-gcm-256/None cf57007f 2971/ unlim - root 500 2001:db8:5000::2
```

show security ipsec sa detail

```
user@host> show security ipsec sa detail
```

```
ID: 500201 Virtual-system: root, VPN Name: IPSEC_VPN
  Local Gateway: 2.0.0.1, Remote Gateway: 2.0.0.2
  Local Identity: ipv4(0.0.0.0-255.255.255.255)
  Remote Identity: ipv4(0.0.0.0-255.255.255.255)
  Version: IKEv1
  DF-bit: clear, Copy-Outer-DSCP Disabled, Bind-interface: st0.1, Policy-name:
IPSEC_POL
  Port: 500, Nego#: 0, Fail#: 0, Def-Del#: 0 Flag: 0
  Multi-sa, Configured SAs# 0, Negotiated SAs#: 0
  Location: FPC 0, PIC 1, KMD-Instance 0
  Anchorship: Thread 1
  Distribution-Profile: default-profile
  Direction: inbound, SPI: 0x0a25c960, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 91 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 44 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha1-96, Encryption: 3des-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
    tunnel-establishment: establish-tunnels-responder-only-no-rekey
  Direction: outbound, SPI: 0x43e34ad3, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 91 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 44 seconds
```

```
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha1-96, Encryption: 3des-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
    tunnel-establishment: establish-tunnels-responder-only-no-rekey
...
```

Starting with Junos OS Release 19.1R1, a new field **tunnel-establishment** in the output of the CLI **show security ipsec sa detail** displays the option configured under **ipsec vpn establish-tunnels** hierarchy.

show security ipsec security-association

user@host>**show security ipsec security-association**

```
Total active tunnels: 1     Total IPsec sas: 1
  ID      Algorithm       SPI      Life:sec/kb  Mon lsys Port  Gateway
  <500006 ESP:aes-gcm-128/aes128-gcm 0x782b233c 1432/ unlim - root 500 2.0.0.2
```

show security ipsec security-associations brief

user@host> **show security ipsec security-associations brief**

```
Total active tunnels: 2     Total Ipsec sas: 18
  ID    Algorithm       SPI      Life:sec/kb  Mon lsys Port  Gateway
  <131073 ESP:aes256/sha256 89e5098  1569/ unlim   -   root 500   5.0.0.1

  >131073 ESP:aes256/sha256 fcee9d54 1569/ unlim   -   root 500   5.0.0.1

  <131073 ESP:aes256/sha256 f3117676 1609/ unlim   -   root 500   5.0.0.1

  >131073 ESP:aes256/sha256 6050109f 1609/ unlim   -   root 500   5.0.0.1

  <131073 ESP:aes256/sha256 e01f54b1 1613/ unlim   -   root 500   5.0.0.1

  >131073 ESP:aes256/sha256 29a05dd6 1613/ unlim   -   root 500   5.0.0.1

  <131073 ESP:aes256/sha256 606c90f6 1616/ unlim   -   root 500   5.0.0.1

  >131073 ESP:aes256/sha256 9b5b059d 1616/ unlim   -   root 500   5.0.0.1

  <131073 ESP:aes256/sha256 b8116d6d 1619/ unlim   -   root 500   5.0.0.1

  >131073 ESP:aes256/sha256 b7ed6bfd 1619/ unlim   -   root 500   5.0.0.1
```

```
  <131073 ESP:aes256/sha256 4f5ce754 1619/ unlim   -   root 500   5.0.0.1

  >131073 ESP:aes256/sha256 af8984b6 1619/ unlim   -   root 500   5.0.0.1

...
```

show security ipsec security-associations detail

user@host> **show security ipsec security-associations detail**

```
ID: 500006 Virtual-system: root, VPN Name: ipsec_vpn1
  Local Gateway: 2.0.0.1, Remote Gateway: 2.0.0.2
  Local Identity: ipv4(0.0.0.0-255.255.255.255)
  Remote Identity: ipv4(0.0.0.0-255.255.255.255)
  Version: IKEv2
  DF-bit: clear, Copy-Outer-DSCP Disabled, Bind-interface: st0.0, Policy-name:
ipsec_pol
  Port: 500, Nego#: 0, Fail#: 0, Def-Del#: 0 Flag: 0
  Multi-sa, Configured SAs# 0, Negotiated SAs#: 0
  Location: FPC 0, PIC 0, KMD-Instance 0
  Anchorship: Thread 0
  Distribution-Profile: default-profile
  Direction: inbound, SPI: 0x782b233c, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1439 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1047 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: aes128-gcm, Encryption: aes-gcm (128 bits)
    Anti-replay service: counter-based enabled, Replay window size: 64
    Extended-Sequence-Number: none
    tunnel-establishment: establish-tunnels-on-traffic
  Direction: outbound, SPI: 0x7f8c6fe3, AUX-SPI: 0
                              , VPN Monitoring: -
    Hard lifetime: Expires in 1439 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1047 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
    Protocol: ESP, Authentication: aes128-gcm, Encryption: aes-gcm (128 bits)
    Anti-replay service: counter-based enabled, Replay window size: 64
    Extended-Sequence-Number: none
    tunnel-establishment: establish-tunnels-on-traffic
```

show security ipsec security-associations family inet6

```
user@host> show security ipsec security-associations family inet6
```

```
  Virtual-system: root
  Local Gateway: 2001:db8:1212::1111, Remote Gateway: 2001:db8:1212::1112
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
    DF-bit: clear
    Direction: inbound, SPI: 14caf1d9, AUX-SPI: 0
                             , VPN Monitoring: -
    Hard lifetime: Expires in 3440 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 2813 seconds
    Mode: tunnel, Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64

    Direction: outbound, SPI: 9a4db486, AUX-SPI: 0
                             , VPN Monitoring: -
    Hard lifetime: Expires in 3440 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 2813 seconds
    Mode: tunnel, Type: dynamic, State: installed
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc
    Anti-replay service: counter-based enabled, Replay window size: 64
```

show security ipsec security-associations fpc 6 pic 1 kmd-instance all (SRX Series Devices)

```
user@host> show security ipsec security-associations fpc 6 pic 1 kmd-instance all
```

```
  Total active tunnels: 1

ID    Gateway          Port  Algorithm           SPI      Life:sec/kb  Mon vsys

<2    192.168.1.2      500   ESP:aes256/sha256   67a7d25d 28280/unlim   -   0

>2    192.168.1.2      500   ESP:aes256/sha256   a23cbcdc 28280/unlim   -   0
```

show security ipsec security-associations detail (ADVPN Suggester, Static Tunnel)

```
user@host> show security ipsec security-associations detail
```

```
ID: 70516737 Virtual-system: root, VPN Name: ZTH_HUB_VPN
  Local Gateway: 192.168.1.1, Remote Gateway: 192.168.1.2
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Version: IKEv2
  DF-bit: clear
  Bind-interface: st0.1

  Port: 500, Nego#: 5, Fail#: 0, Def-Del#: 0 Flag: 0x608a29
  Tunnel events:
  Tue Nov 03 2015 01:24:27 -0800: IPSec SA negotiation successfully completed (1
times)
  Tue Nov 03 2015 01:24:27 -0800: IKE SA negotiation successfully completed (4
times)
  Tue Nov 03 2015 01:23:38 -0800: User cleared IPSec SA from CLI (1 times)
  Tue Nov 03 2015 01:21:32 -0800: IPSec SA negotiation successfully completed (1
times)
  Tue Nov 03 2015 01:21:31 -0800: IPSec SA delete payload received from peer,
corresponding IPSec SAs cleared (1 times)
  Tue Nov 03 2015 01:21:27 -0800: IPSec SA negotiation successfully completed (1
times)
  Tue Nov 03 2015 01:21:13 -0800: Tunnel configuration changed. Corresponding
IKE/IPSec SAs are deleted (1 times)
  Tue Nov 03 2015 01:19:27 -0800: IPSec SA negotiation successfully completed (1
times)
  Tue Nov 03 2015 01:19:27 -0800: Tunnel is ready. Waiting for trigger event or
peer to trigger negotiation (1 times)
  Location: FPC 0, PIC 3, KMD-Instance 2
  Direction: inbound, SPI: 43de5d65, AUX-SPI: 0
  Hard lifetime: Expires in 1335 seconds
  Lifesize Remaining:  Unlimited
  Soft lifetime: Expires in 996 seconds
  Mode: Tunnel(0 0), Type: dynamic, State: installed
  Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)
  Anti-replay service: counter-based enabled

  , Replay window size: 64
  Location: FPC 0, PIC 3, KMD-Instance 2
  Direction: outbound, SPI: 5b6e157c, AUX-SPI: 0
  Hard lifetime: Expires in 1335 seconds
  Lifesize Remaining:  Unlimited
  Soft lifetime: Expires in 996 seconds
  Mode: Tunnel(0 0), Type: dynamic, State: installed
  Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)
```

```
  Anti-replay service: counter-based enabled

  , Replay window size: 64
```

show security ipsec security-associations detail (ADVPN Partner, Static Tunnel)

`user@host>` **show security ipsec security-associations detail**

```
ID: 67108872 Virtual-system: root, VPN Name: ZTH_SPOKE_VPN
  Local Gateway: 192.168.1.2, Remote Gateway: 192.168.1.1
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Version: IKEv2
  DF-bit: clear, Bind-interface: st0.1
  Port: 500, Nego#: 0, Fail#: 0, Def-Del#: 0 Flag: 0x8608a29
  Tunnel events:
  Tue Nov 03 2015 01:24:26 -0800: IPSec SA negotiation successfully completed (1
times)
  Tue Nov 03 2015 01:24:26 -0800: IKE SA negotiation successfully completed (4
times)
  Tue Nov 03 2015 01:23:37 -0800: IPSec SA delete payload received from peer,
corresponding IPSec SAs cleared (1 times)
  Tue Nov 03 2015 01:21:31 -0800: IPSec SA negotiation successfully completed (1
times)
  Tue Nov 03 2015 01:21:31 -0800: Tunnel is ready. Waiting for trigger event or
peer to trigger negotiation (1 times)
  Tue Nov 03 2015 01:18:26 -0800: Key pair not found for configured local
certificate. Negotiation failed (1 times)
  Tue Nov 03 2015 01:18:13 -0800: CA certificate for configured local certificate
 not found. Negotiation not initiated/successful (1 times)
  Direction: inbound, SPI: 5b6e157c, AUX-SPI: 0
  Hard lifetime: Expires in 941 seconds
  Lifesize Remaining:  Unlimited
  Soft lifetime: Expires in 556 seconds
  Mode: Tunnel(0 0), Type: dynamic, State: installed
  Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)
  Anti-replay service: counter-based enabled, Replay window size: 64
  Direction: outbound, SPI: 43de5d65, AUX-SPI: 0
  Hard lifetime: Expires in 941 seconds
  Lifesize Remaining:  Unlimited
  Soft lifetime: Expires in 556 seconds
  Mode: Tunnel(0 0), Type: dynamic, State: installed
  Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)
  Anti-replay service: counter-based enabled, Replay window size: 64
```

show security ipsec security-associations sa-type shortcut (ADVPN)

```
user@host> show security ipsec security-associations sa-type shortcut
```

```
Total active tunnels: 1
ID         Algorithm         SPI      Life:sec/kb  Mon lsys Port  Gateway
<268173318 ESP:aes256/sha256 6f164ee0 3580/ unlim - root 500 192.168.0.111
>268173318 ESP:aes256/sha256 e6f29cb0 3580/ unlim - root 500 192.168.0.111
```

show security ipsec security-associations sa-type shortcut detail (ADVPN)

```
user@host> show security ipsec security-associations sa-type shortcut detail
```

```
node0:
--------------------------------------------------------------------------

ID: 67108874 Virtual-system: root, VPN Name: ZTH_SPOKE_VPN
  Local Gateway: 192.168.1.2, Remote Gateway: 192.168.1.2
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Auto Discovery VPN:
    Type: Shortcut, Shortcut Role: Initiator
  Version: IKEv2
  DF-bit: clear, Bind-interface: st0.1
  Port: 4500, Nego#: 0, Fail#: 0, Def-Del#: 0 Flag: 0x40608a29
  Tunnel events:
    Tue Nov 03 2015 01:47:26 -0800: IPSec SA negotiation successfully completed
(1 times)
    Tue Nov 03 2015 01:47:26 -0800: Tunnel is ready. Waiting for trigger event or
 peer to trigger negotiation (1 times)
    Tue Nov 03 2015 01:47:26 -0800: IKE SA negotiation successfully completed (1
times)
  Direction: inbound, SPI: b7a5518, AUX-SPI: 0
    Hard lifetime: Expires in 1766 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1381 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
   Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)

    Anti-replay service: counter-based enabled, Replay window size: 64
  Direction: outbound, SPI: b7e0268, AUX-SPI: 0
    Hard lifetime: Expires in 1766 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1381 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
```

```
    Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)

     Anti-replay service: counter-based enabled, Replay window size: 64
```

show security ipsec security-associations family inet detail

user@host> **show security ipsec security-associations family inet detail**

```
ID: 131073 Virtual-system: root, VPN Name: ike-vpn
  Local Gateway: 192.168.1.1, Remote Gateway: 192.168.1.2
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Version: IKEv1
  DF-bit: clear
  , Copy-Outer-DSCP Enabled
  Bind-interface: st0.99

  Port: 500, Nego#: 116, Fail#: 0, Def-Del#: 0 Flag: 0x600a29
  Tunnel events:
  Fri Oct 30 2015 15:47:21 -0700: IPSec SA rekey successfully completed (115 times)

  Fri Oct 30 2015 11:38:35 -0700: IKE SA negotiation successfully completed (12
times)
  Mon Oct 26 2015 16:41:07 -0700: IPSec SA negotiation successfully completed (1
times)
  Mon Oct 26 2015 16:40:56 -0700: Tunnel is ready. Waiting for trigger event or
peer to trigger negotiation (1 times)
  Mon Oct 26 2015 16:40:56 -0700: External interface's address received. Information
 updated (1 times)
  Location: FPC 0, PIC 1, KMD-Instance 1
  Direction: inbound, SPI: 81b9fc17, AUX-SPI: 0
  Hard lifetime: Expires in 1713 seconds
  Lifesize Remaining:  Unlimited
  Soft lifetime: Expires in 1090 seconds
  Mode: Tunnel(0 0), Type: dynamic, State: installed
  Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)
  Anti-replay service: counter-based enabled

  , Replay window size: 64
  Location: FPC 0, PIC 1, KMD-Instance 1
  Direction: outbound, SPI: 727f629d, AUX-SPI: 0
  Hard lifetime: Expires in 1713 seconds
  Lifesize Remaining:  Unlimited
  Soft lifetime: Expires in 1090 seconds
```

```
  Mode: Tunnel(0 0), Type: dynamic, State: installed
  Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)
  Anti-replay service: counter-based enabled

  , Replay window size: 64
```

show security ipsec security-associations detail (SRX4600)

`user@host>` **show security ipsec security-associations detail**

```
ID: 131073 Virtual-system: root, VPN Name: ike-vpn
  Local Gateway: 62.1.1.3, Remote Gateway: 62.1.1.2
  Local Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Remote Identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
  Version: IKEv2
  DF-bit: clear, Bind-interface: st0.0
  Port: 500, Nego#: 25, Fail#: 0, Def-Del#: 0 Flag: 0x600a29
  Tunnel events:
    Fri Jan 12 2007 07:50:10 -0800: IPSec SA rekey successfully completed (23
times)
  Location: FPC 0, PIC 0, KMD-Instance 0
  Anchorship: Thread 6
  Direction: inbound, SPI: 812c9c01, AUX-SPI: 0
    Hard lifetime: Expires in 2224 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1598 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
   Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)

    Anti-replay service: counter-based enabled, Replay window size: 64
  Location: FPC 0, PIC 0, KMD-Instance 0
  Anchorship: Thread 7
  Direction: outbound, SPI: c4de0972, AUX-SPI: 0
    Hard lifetime: Expires in 2224 seconds
    Lifesize Remaining:  Unlimited
    Soft lifetime: Expires in 1598 seconds
    Mode: Tunnel(0 0), Type: dynamic, State: installed
   Protocol: ESP, Authentication: hmac-sha-256, Encryption: aes256-cbc (256 bits)

    Anti-replay service: counter-based enabled, Replay window size: 64
```

show security log report

Syntax

```
in-detail
in-interval
summary
top
```

Release Information
Command introduced in Junos OS Release 19.1R1.

Description
Displays the security log report settings.

On-box reporting offers a comprehensive reporting facility where your security management team can spot a security event when it occurs. Immediately access and review pertinent details about the event, and quickly decide appropriate remedial action.

Options
in-detail—Displays the detail log content

in-interval—Displays the count in intervals

summary—Displays the summary information

top—Displays the top number to be calculated

Required Privilege Level
view

RELATED DOCUMENTATION

exclude (Security Log)

clear security log

List of Sample Output
show security log report summary session-all tenant TSYS1 on page 1056
Show security log report summary session-all root-logical-system on page 1056

Sample Output

show security log report summary session-all tenant TSYS1

```
user@host> show security log report summary session-all tenant TSYS1
```

```
total-count: 4
```

Show security log report summary session-all root-logical-system

```
user@host> Show security log report summary session-all root-logical-system
```

```
total-count: 4
```

show security match-policies

Syntax

```
show security match-policies
destination-ip <ip-address>
destination-port < port-number>
from-zone <zone-name>
global
logical-system <logical-system-name>
protocol <protocol-name | protocol-number>
result-count <number>
root-logical-system
source-end-user-profile <device-identity-profile-name>
source-identity <role-name>
source-ip <ip-address>
source-port <port-number>
tenant <tenant-name>
to-zone <zone-name>
```

Release Information

Command introduced in Junos OS Release 10.3.
Command updated in Junos OS Release 10.4.
Command updated in Junos OS Release 12.1.
Command updated to include optional from-zone and to-zone global match options in Junos OS Release 12.1X47-D10.
The **tenant** option is introduced in Junos OS Release 18.3R1.

Description

The **show security match-policies** command allows you to troubleshoot traffic problems using the match criteria: source port, destination port, source IP address, destination IP address, and protocol. For example, if your traffic is not passing because either an appropriate policy is not configured or the match criteria is incorrect, then the **show security match-policies** command allows you to work offline and identify where the problem actually exists. It uses the search engine to identify the problem and thus enables you to use the appropriate match policy for the traffic.

The **result-count** option specifies how many policies to display. The first enabled policy in the list is the policy that is applied to all matching traffic. Other policies below it are “shadowed” by the first and are never encountered by matching traffic.

> **NOTE:** The **show security match-policies** command is applicable only to security policies; IDP policies are not supported.

Options

- **destination-ip** ***destination-ip***—Displays the destination IP address of the traffic.
- **destination-port** ***destination-port***–Displays the destination port number of the traffic. Range is 1 through 65,535.
- **from-zone** ***zone-name***—Displays the name or ID of the source zone of the traffic.
- **global**—Displays information about global policies.
- **logical-system**—Displays the logical system name.
- **protocol** ***protocol-name*** **|** ***protocol-number***–Displays the protocol name or numeric value of the traffic.
  - **ah** or **51**
  - **egp** or **8**
  - **esp** or **50**
  - **gre** or **47**
  - **icmp** or **1**
  - **igmp** or **2**
  - **igp** or **9**
  - **ipip** or **94**
  - **ipv6** or **41**
  - **ospf** or **89**
  - **pgm** or **113**
  - **pim** or **103**
  - **rdp** or **27**
  - **rsvp** or **46**
  - **sctp** or **132**
  - **tcp** or **6**
  - **udp** or **17**
  - **vrrp** or **112**

- **result-count *number***—(Optional) Displays the number of policy matches. Valid range is from 1 through 16. The default value is 1.
- **root-logical-system**—Displays root logical system as default.
- **source-end-user-profile** *device-identity-profile-name*—(Optional) Displays the device identity profile that specifies characteristics that can apply to one or more devices.
- **source-identity *role-name***—(Optional) Displays the source identity of the traffic determined by the user role.
- **source-ip *source-ip***—Displays the source IP address of the traffic.
- **source-port *source-port***—Displays the source port number of the traffic. Range is 1 through 65,535.
- **tenant**—Displays the name of the tenant system.
- **to-zone *zone-name***—Displays the name or ID of the destination zone of the traffic.

Required Privilege Level
view

RELATED DOCUMENTATION

> *clear security policies statistics*
>
> *Security Policies Overview*
>
> *Understanding Security Policy Rules*
>
> *Understanding Security Policy Elements*

List of Sample Output

Example 1: show security match-policies on page 1061
Example 2: show security match policies ... result-count on page 1062
Example 3: show security match policies ... source-identity on page 1062
Example 4: show security match policies ... global on page 1063
show security match-policies tenant TN1 from-zone trust to-zone untrust source-ip 10.10.10.1 destination-ip 192.0.2.1 source-port 1 destination-port 21 protocol tcp on page 1063

Output Fields

Table 76 on page 1059 lists the output fields for the **show security match-policies** command. Output fields are listed in the approximate order in which they appear.

Table 76: show security match-policies Output Fields

Field Name	Field Description
Policy	Name of the applicable policy.

Table 76: show security match-policies Output Fields *(continued)*

Field Name	Field Description
Action or **Action-type**	The action to be taken for traffic that matches the policy's match criteria. Actions include the following: • **permit** • **firewall-authentication** • **tunnel ipsec-vpn *vpn-name*** • **pair-policy *pair-policy-name*** • **source-nat pool *pool-name*** • **pool-set *pool-set-name*** • **interface** • **destination-nat *name*** • **deny** • **reject**
State	Status of the policy: • **enabled**: The policy can be used in the policy lookup process, which determines access rights for a packet and the action taken in regard to it. • **disabled**: The policy cannot be used in the policy lookup process, and therefore it is not available for access control.
Index	An internal number associated with the policy.
Sequence number	Number of the policy within a given context. For example, three policies that are applicable in a from-zoneA-to-zoneB context might be ordered with sequence numbers 1, 2, and 3. Also, in a from-zoneC-to-zoneD context, four policies might have sequence numbers 1, 2, 3, and 4.
From zone	Name of the source zone.
To zone	Name of the destination zone.
Source addresses	The names and corresponding IP addresses of the source addresses for a policy. Address sets are resolved to their individual address name-IP address pairs.
Destination addresses	The names and corresponding IP addresses of the destination addresses (or address sets) for a policy as entered in the destination zone's address book. A packet's destination address must match one of these addresses for the policy to apply to it.
Application	Name of a preconfigured or custom application, or **any** if no application is specified.

Table 76: show security match-policies Output Fields *(continued)*

Field Name	Field Description
IP protocol	Numeric value for the IP protocol used by the application, such as 6 for TCP or 1 for ICMP.
ALG	If an ALG is associated with the session, the name of the ALG. Otherwise, 0.
Inactivity timeout	Elapsed time without activity after which the application is terminated.
Source-port range	Range of matching source ports defined in the policy.
Destination-port range	Range of matching destination ports defined in the policy.
Source identities	One or more user roles defined in the matching policy.
global	Display information about global policies.
device-identity-profile-name	Device identity profile that specifies characteristics that can apply to one or more devices.

Sample Output

Example 1: show security match-policies

`user@host>` **show security match-policies from-zone z1 to-zone z2 source-ip 10.10.10.1 destination-ip 192.0.2.1 source-port 1 destination-port 21 protocol tcp**

```
Policy: p1, action-type: permit, State: enabled, Index: 4
  Sequence number: 1
  From zone: z1, To zone: z2
  Source addresses:
    a2: 198.51.100.0/24
    a3: 10.10.10.1/32
  Destination addresses:
    d2: 203.0.113.0/24
    d3: 192.0.2.1/32
  Application: junos-ftp
    IP protocol: tcp, ALG: ftp, Inactivity timeout: 1800
      Source port range: [0-0]
      Destination port range: [21-21]
```

Example 2: show security match policies ... result-count

`user@host>` **show security match-policies from-zone zone-A to-zone zone-B source-ip 10.10.10.1 destination-ip 192.0.2.5 source_port 1004 destination_port 80 protocol tcp result_count 5**

```
Policy: p1, action-type: permit, State: enabled, Index: 4
  Sequence number: 1
  From zone: zone-A, To zone: zone-B
  Source addresses:
    sa1: 10.10.0.0/16
  Destination addresses:
    da5: 192.0.2.0/24
  Application: any
    IP protocol: 1, ALG: 0, Inactivity timeout: 0
      Source port range: [1000-1030]
    Destination port range: [80-80]

Policy: p15, action-type: deny, State: enabled, Index: 18
  Sequence number: 15
  From zone: zone-A, To zone: zone-B
  Source addresses:
    sa11: 10.10.10.1/32
  Destination addresses:
    da15: 192.0.2.5/32
  Application: any
    IP protocol: 1, ALG: 0, Inactivity timeout: 0
      Source port range: [1000-1030]
    Destination port range: [80-80]
```

Example 3: show security match policies ... source-identity

`user@host>` **show security match-policies from-zone untrust to-zone trust source-ip 10.10.10.1 destination-ip 192.0.2.1 destination_port 21 protocol 6 source-port 1234 source-identity role1**

```
Policy: p1, action-type: permit, State: enabled, Index: 40
      Policy Type: Configured
      Sequence number: 1
      From zone: untrust, To zone: trust
      Source addresses:
        a1: 10.0.0.0/8
      Destination addresses:
        d1: 192.0.2.0/24
      Application: junos-ftp
        IP protocol: tcp, ALG: ftp, Inactivity timeout: 1800
```

```
          Source port range: [0-0]
          Destination port range: [21-21]
      Source identities: role1
      Per policy TCP Options: SYN check: No, SEQ check: No
```

Example 4: show security match policies ... global

`user@host>` **show security match-policies global source-ip 10.10.10.1 destination-ip 192.0.2.5 source_port 1004 destination_port 80 protocol tcp result_count 5**

```
Policy: gp1, action-type: permit, State: enabled, Index: 6, Scope Policy: 0
  Policy Type: Configured, global
  Sequence number: 1
  From zones:
    Any
  To zones:
    Any
  Source addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Destination addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Application: any
    IP protocol: 0, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
      Destination port range: [0-0]
  Per policy TCP Options: SYN check: No, SEQ check: No, Window scale: No
```

show security match-policies tenant TN1 from-zone trust to-zone untrust source-ip 10.10.10.1 destination-ip 192.0.2.1 source-port 1 destination-port 21 protocol tcp

`user@host>` **show security match-policies tenant TN1 from-zone trust to-zone untrust source-ip 10.10.10.1 destination-ip 192.0.2.1 source-port 1 destination-port 21 protocol tcp**

```
Policy: p1, action-type: permit, State: enabled, Index: 4
Sequence number: 1
From zone: trust, To zone: untrust
Source addresses:
a2: 198.51.100.0/24
a3: 10.10.10.1/32
Destination addresses:
```

```
d2: 203.0.113.0/24
d3: 192.0.2.1/32
Application: junos-ftp
IP protocol: tcp, ALG: ftp, Inactivity timeout: 1800
Source port range: [0-0]
Destination port range: [21-21]
```

show security nat destination rule

Syntax

```
show security nat destination rule
rule-name
all
logical-system (logical-system-name)
root-logical-system
tenant (tenant-name)
```

Release Information

Command introduced in Junos OS Release 9.2. The **Description** output field added in Junos OS Release 12.1.

Support for IPv6 logical systems and the **Successful sessions**, **Failed sessions** and **Number of sessions** output fields added in Junos OS Release 12.1X45-D10.

Output for multiple destination ports and the **application** option field added in Junos OS Release 12.1X47-D10.

The tenant option is introduced in Junos OS Release 18.3R1.

Description

Display information about the specified destination Network Address Translation (NAT) rule. Destination NAT rules are processed after static NAT rules but before source NAT rules.

Options

rule-name—Display information about the specified destination NAT rule.

all—Display information about all the destination NAT rules.

logical-system —Display information about the destination NAT rules for a specified logical system. Specify **all** to display information for all logical systems.

root-logical-system—Display information about the destination NAT rules for the master (root) logical system.

tenant—Display information about the destination NAT rules for a specified tenant system. Specify **all** to display information for all tenant systems.

Required Privilege Level

view

RELATED DOCUMENTATION

rule (Security Destination NAT)

List of Sample Output

show security nat destination rule dst2-rule on page 1067
show security nat destination rule all on page 1068
show security nat destination rule all tenant on page 1068

Output Fields

Table 77 on page 1066 lists the output fields for the **show security nat destination rule** command. Output fields are listed in the approximate order in which they appear.

Table 77: show security nat destination rule Output Fields

Field Name	Field Description
Total destination-nat rules	Number of destination NAT rules.
Total referenced IPv4/IPv6 ip-prefixes	Number of IP prefixes referenced in source, destination, and static NAT rules. This total includes the IP prefixes configured directly as address names and as address set names in the rule.
Destination NAT rule	Name of the destination NAT rule.
Description	Description of the destination NAT rule.
Rule-Id	Rule identification number.
Rule position	Position of the destination NAT rule.
From routing instance	Name of the routing instance from which the packets flow.
From interface	Name of the interface from which the packets flow.
From zone	Name of the zone from which the packets flow.
Source addresses	Name of the source addresses that match the rule. The default value is any.
Destination addresses	Name of the destination addresses that match the rule. The default value is any.
Action	The action taken when a packet matches the rule's tuples. Actions include the following: • **destination NAT pool**—Use user-defined destination NAT pool to perform destination NAT. • **off**—Do not perform destination NAT.

Table 77: show security nat destination rule Output Fields *(continued)*

Field Name	Field Description
Destination ports	Destination ports number that match the rule. The default value is any.
Application	Indicates whether the application option is configured.
Translation hits	Number of translation hits.
Successful sessions	Number of successful session installations after the NAT rule is matched.
Failed sessions	Number of unsuccessful session installations after the NAT rule is matched.
Number of sessions	Number of sessions that reference the specified rule.

Sample Output

show security nat destination rule dst2-rule

`user@host>` **show security nat destination rule dst2-rule**

```
 Destination NAT rule: dst2-rule            Rule-set: dst2
  Description               : The destination rule dst2-rule is for the sales
team
  Rule-Id                   : 1
  Rule position             : 1
  From routing instance     : ri1
                            : ri2
  Match
    Source addresses        : add1
                              add2
    Destination addresses   : add9
  Action                    : off

  Destination port          : 0
 Translation hits           : 68
   Successful sessions      : 25
   Failed sessions          : 43
 Number of sessions         : 2
```

Sample Output

show security nat destination rule all

user@host> **show security nat destination rule all**

```
Total destination-nat rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0

Destination NAT rule: r4                  Rule-set: rs4
  Rule-Id                   : 2
  Rule position             : 2
  From zone                 : untrust
  Match
    Source addresses        : 192.0.2.0 - 192.0.2.255
    Destination addresses   : 198.51.100.0 - 198.51.100.255
    Application             : configured
  Action                    : off
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

show security nat destination rule all tenant

user@host> **show security nat destination rule all tenant tn1**

```
Total destination-nat rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0
Destination NAT rule: r1                    Rule-set: from_zone
  Rule-Id                   : 1
  Rule position             : 1
  From zone                 : untrust
  Match
    Source addresses        : 192.0.2.0       - 192.0.2.255
    Destination addresses   : 203.0.113.202   - 203.0.113.202
  Action                    : h1
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

show security nat destination summary

Syntax

```
show security nat destination summary
logical-system (logical-system-name )
root-logical-system
tenant (tenant-name )
```

Release Information

Command introduced in Junos OS Release 9.2.
Support for IPv6 logical systems added in Junos OS Release 12.1X45-D10.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Display a summary of Network Address Translation (NAT) destination pool information.

Options

none—Display summary information about the destination NAT pool.

logical-system —Display summary information about the destination NAT for a specified logical system. Specify **all** to display information for all logical systems.

root-logical-system—Display summary information about the destination NAT for the master (root) logical system.

tenant —Display information about the destination NAT for a specified tenant system. Specify **all** to display information for all tenant systems.

Required Privilege Level

view

RELATED DOCUMENTATION

pool (Security Destination NAT)

rule (Security Destination NAT)

List of Sample Output

show security nat destination summary on page 1070
show security nat destination summary tenant on page 1071

Output Fields

Table 78 on page 1070 lists the output fields for the **show security nat destination summary** command. Output fields are listed in the approximate order in which they appear.

Table 78: show security nat destination summary Output Fields

Field Name	Field Description
Total destination nat pool number	Number of destination NAT pools.
Pool name	Name of the destination address pool.
Address range	IP address or IP address range for the pool.
Routing Instance	Name of the routing instance.
Port	Port number.
Total	Number of IP addresses that are in use.
Available	Number of IP addresses that are free for use.
Total destination nat rule number	Number of destination NAT rules.
Total hit times	Number of times a translation in the translation table is used for all the destination NAT rules.
Total fail times	Number of times a translation in the translation table failed to translate for all the destination NAT rules.

Sample Output

show security nat destination summary

`user@host>` **show security nat destination summary**

```
Total pools: 2
Pool name           Address                      Routing        Port  Total
                    Range                        Instance            Address
dst-p1              203.0.113.1 -203.0.113.1         default        0     1
dst-p2              2001:db8::1 - 2001:db8::1        default        0     1
```

```
Total rules: 171
Rule name            Rule set       From                                Action
dst2-rule            dst2           ri1
                                    ri2
                                    ri3
                                    ri4
                                    ri5
                                    ri6
                                    ri7
dst3-rule            dst3           ri9                                 off
                                    ri1
                                    ri2
                                    ri3
                                    ri4
                                    ri5

...
```

show security nat destination summary tenant

user@host> **show security nat destination summary tenant tn1**

```
Total pools: 1
Pool name            Address                          Routing        Port  Total

                    Range                            Instance            Address
h1                   192.168.1.200  - 192.168.1.200                   0     1

Total rules: 1
Rule name            Rule set       From                                Action
r1                   from_zone      untrust                             h1
```

show security nat source rule

Syntax

```
show security nat static rule
rule-name
all
logical-system (logical-system-name )
root-logical-system
tenant (tenant-name )
```

Release Information

Command introduced in Junos OS Release 9.2. Support for IPv6 addresses added in Junos OS Release 11.2.

The **Description** output field added in Junos OS Release 12.1.

Support for IPv6 logical systems and the **Source port**, **Successful sessions**, **Failed sessions**, and **Number of sessions** output fields added in Junos OS Release 12.1X45-D10.

Output for multiple destination ports and the **application** output field added in Junos OS Release 12.1X47-D10.

The tenant option is introduced in Junos OS Release 18.3R1.

Description

Display information about the specified source Network Address Translation (NAT) rule.

Options

rule-name—Name of the rule.

all—Display information about all the source NAT rules.

logical-system—Display information about the source NAT rules for a specified logical system. Specify **all** to display information for all logical systems.

root-logical-system—Display information about the source NAT rules for the master (root) logical system.

tenant—Display information about the source NAT rules for a specified tenant system. Specify **all** to display information for all tenant systems.

Required Privilege Level

view

RELATED DOCUMENTATION

rule (Security Source NAT)

List of Sample Output

show security nat source rule r2 on page 1074
show security nat source rule all on page 1075
show security nat source rule all tenant on page 1076

Output Fields

Table 79 on page 1073 lists the output fields for the **show security nat source rule** command. Output fields are listed in the approximate order in which they appear

Table 79: show security nat source rule Output Fields

Field Name	Field Description
Source NAT rule	Name of the source NAT rule.
Total rules	Number of source NAT rules.
Total referenced IPv4/IPv6 ip-prefixes	Number of IP prefixes referenced in source, destination, and static NAT rules. This total includes the IP prefixes configured directly, as address names, and as address set names in the rule.
Description	Description of the source NAT rule.
Rule-Id	Rule identification number.
Rule position	Position of the source NAT rule.
From zone	Name of the zone from which the packets flow.
To zone	Name of the zone to which the packets flow.
From routing instance	Name of the routing instance from which the packets flow.
To routing instance	Name of the routing instance to which the packets flow.
From interface	Name of the interface from which the packets flow.
To interface	Name of the interface to which the packets flow.
Source addresses	Name of the source addresses that match the rule.
Source port	Source port numbers that match the rule.
Destination address	Name of the destination addresses that match the rule.

Table 79: show security nat source rule Output Fields *(continued)*

Field Name	Field Description
Destination ports	Destination port numbers that match the rule.
Application	Indicates whether the application option is configured.
Action	The action taken in regard to a packet that matches the rule's tuples. Actions include the following: • **off**—Do not perform source NAT. • **source NAT pool**—Use user-defined source NAT pool to perform source NAT • **interface**—Use egress interface's IP address to perform source NAT.
Persistent NAT type	Persistent NAT type.
Persistent NAT mapping type	Persistent NAT mapping type.
Inactivity timeout	Inactivity timeout for persistent NAT binding.
Max session number	Maximum number of sessions.
Translation hits	Number of translation hits.
Successful sessions	Number of successful session installations after the NAT rule is matched.
Failed sessions	Number of unsuccessful session installations after the NAT rule is matched.
Number of sessions	Number of sessions that reference the specified rule.

Sample Output

show security nat source rule r2

```
user@host> show security nat source rule r2
```

```
source NAT rule: r2       Rule-set: src-nat
 Description              : The source rule r2 is for the sales team
 Rule-Id                  : 1
 Rule position            : 1
 From zone                : zone1
```

```
  To zone                   : zone9
  Match
   Source addresses         : add1
                              add2
   Destination addresses    : add9
                              add10
   Destination port         : 1002            - 1002
  Action                        : off
    Persistent NAT type         : N/A
    Persistent NAT mapping type : address-port-mapping
    Inactivity timeout          : 0
    Max session number          : 0
  Translation hits              : 4719
   Successful sessions      : 2000
   Failed sessions          : 2719
 Number of sessions         : 5
```

Sample Output

show security nat source rule all

`user@host>` **show security nat source rule all**

```
Logical system: root
Total rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 3/0

source NAT rule: r2                  Rule-set: rs2
  Rule-Id                   : 2
  Rule position             : 1
  From zone                 : trust
  To zone                   : untrust
  Match
    Source addresses        : 192.0.2.0 - 192.0.2.255
    Destination addresses   : 203.0.113.0 - 203.0.113.255
                              198.51.100.0 - 198.51.100.255
    Application             : configured
  Action                        : off
    Persistent NAT type         : N/A
    Persistent NAT mapping type : address-port-mapping
    Inactivity timeout          : 0
    Max session number          : 0
```

```
  Translation hits           : 0
    Successful sessions      : 0
    Failed sessions          : 0
  Number of sessions         : 0
```

Sample Output

show security nat source rule all tenant

`user@host>` **show security nat source rule all tenant tn1**

```
Total rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0
source NAT rule: r1                     Rule-set: from_intf
  Rule-Id                   : 1
  Rule position             : 1
  From interface            : ge-0/0/0.0
  To interface              : ge-0/0/1.0
  Match
    Source addresses        : 192.168.1.0     - 192.168.1.255
    Destination addresses   : 203.0.113.200   - 203.0.113.200
  Action                      : pat
    Persistent NAT type       : N/A
    Persistent NAT mapping type : address-port-mapping
    Inactivity timeout        : 0
    Max session number        : 0
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

show security nat source summary

Syntax

```
show security nat source summary
logical-system (logical-system-name )
root-logical-system
tenant (tenant-name )
```

Release Information

Command introduced in Junos OS Release 9.2.
Support for IPv6 logical systems added in Junos OS Release 12.1X45-D10.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Display a summary of Network Address Translation (NAT) source information.

Options

none—Display summary source NAT information.

logical-system—Display summary information about the source NAT for a specified logical system. Specify **all** to display information for all logical systems.

root-logical-system—Display summary information about the source NAT for the master (root) logical system.

tenant—Display summary information about the source NAT for a specified tenant system. Specify **all** to display information for all tenant systems.

Required Privilege Level

view

Release History Table

Release	Description
12.3X48-D55	Starting in Junos OS Release 12.3X48-D55, and Junos OS Release 15.1X49-D90, and Junos OS Release 17.3R1, the total number of addresses that are in use for pools with IPv6 prefixes is shown as zero (0).

RELATED DOCUMENTATION

pool (Security Source NAT)

rule (Security Source NAT)

List of Sample Output

show security nat source summary on page 1078
show security nat source summary tenant on page 1079

Output Fields

Table 80 on page 1078 lists the output fields for the **show security nat source summary** command. Output fields are listed in the approximate order in which they appear.

Table 80: show security nat source summary Output Fields

Field Name	Field Description
Total source nat pool number	Number of source NAT pools.
Pool name	Name of the source address pool.
Address range	IP address or IP address range for the pool.
Routing Instance	Name of the routing instance.
PAT	Whether Port Address Translation (PAT) is enabled (yes or no).
Total Address	Number of IP addresses that are in use. Starting in Junos OS Release 12.3X48-D55, and Junos OS Release 15.1X49-D90, and Junos OS Release 17.3R1, the total number of addresses that are in use for pools with IPv6 prefixes is shown as zero (0).
Total source nat rule number	Number of source NAT rules.
Total port number usage for port translation pool	Number of ports assigned to the pool.
Maximum port number for port translation pool	Maximum number of NAT or PAT transactions done at any given time.

Sample Output

show security nat source summary

```
user@host> show security nat source summary logical-system all
```

```
Logical system: root-logical-system
Total port number usage for port translation pool: 67108864
Maximum port number for port translation pool: 134217728

Logical system: lsys1
Total port number usage for port translation pool: 193536
Maximum port number for port translation pool: 134217728
Total pools: 2

Logical system: root-logical-system
Pool               Address                   Routing   PAT   Total
Name               Range                     Instance        Address
pool1              10.1.1.0-10.1.4.255-      default   yes   2048
                   10.1.5.0-10.1.8.255


Logical system: lsys1
Pool               Address                    Routing   PAT   Total
Name               Range                      Instance        Address
pool2              203.0.113.1-203.0.113.3     default   yes   3


Total rules: 1

Logical system: root-logical-system
Rule name         Rule set      From         To             Action
rule 1            ruleset1      ge-2/2/2.0   ge-2/2/3.0     pool1
rule 1                          ge-2/2/4.0   ge-2/2/5.0
```

show security nat source summary tenant

`user@host>` **show security nat source summary tenant tn1**

```
Total port number usage for port translation pool: 1548288
Maximum port number for port translation pool: 268435456
Total pools: 1
Pool                 Address                  Routing              PAT  Total
Name                 Range                    Instance                  Address
pat                  192.0.2.1-192.0.2.24     default              yes  24

Total rules: 1
```

```
Rule name          Rule set       From              To                  Action
r1                 from_intf      ge-0/0/0.0        ge-0/0/1.0          pat
```

show security nat static rule

Syntax

```
show security nat static rule
rule-name
all
logical-system (logical-system-name )
root-logical-system
tenant (tenant-name )
```

Release Information

Command introduced in Junos OS Release 9.3.
The **Description** output field added in Junos OS Release 12.1.
Support for IPv6 logical systems and the **Successful sessions**, **Failed sessions**, **Number of sessions**, **Source addresses** and **Source ports** output fields added in Junos OS Release 12.1X45-D10.
The **Destination NPTv6 addr** and **Destination NPTv6 Netmask** output fields added in Junos OS Release 12.3X48-D25.
The tenant option is introduced in Junos OS Release 18.3R1.

Description

Display information about the specified static Network Address Translation (NAT) rule. Traffic directions allows you to specify from interface, from zone, or from routing-instance and packet information can be source addresses and ports, and destination addresses and ports.

Options

rule-name—Name of the rule.

all—Display information about all the static NAT rules.

logical-system—Display information about the static NAT rules for a specified logical system. Specify **all** to display information for all logical systems.

root-logical-system—Display information about the static NAT rules for the master (root) logical system.

tenant—Display information about the static NAT rules for a specified tenant system. Specify **all** to display information for all tenant systems.

Required Privilege Level

view

RELATED DOCUMENTATION

rule (Security Static NAT)

List of Sample Output

show security nat static rule on page 1083
show security nat static rule all tenant on page 1084
show security nat static rule (IPv6) on page 1084
show security nat static rule all on page 1085

Output Fields

Table 81 on page 1082 lists the output fields for the **show security nat static rule** command. Output fields are listed in the approximate order in which they appear.

Table 81: show security nat static rule Output Fields

Field Name	Field Description
Static NAT rule	Name of the static NAT rule.
Total referenced IPv4/IPv6 ip-prefixes	Number of IP prefixes referenced in source, destination, and static NAT rules. This total includes the IP prefixes configured directly, as address names, and as address set names in the rule.
Rule-set	Name of the rule set. Currently, you can configure 8 rules within the same rule set.
Description	Description of the static NAT rule.
Rule-Id	Rule identification number.
Rule position	Position of the rule that indicates the order in which it applies to traffic.
From interface	Name of the interface from which the packets flow.
From routing instance	Name of the routing instance from which the packets flow.
From zone	Name of the zone from which the packets flow.
Destination addresses	Name of the destination addresses that match the rule.
Destination NPTv6 addr	Destination address that matches the rule.
Source addresses	Name of the source addresses that match the rule.
Host addresses	Name of the host addresses that match the rule.

Table 81: show security nat static rule Output Fields *(continued)*

Field Name	Field Description
Netmask	Subnet IP address.
Destination NPTv6 Netmask	Subnet IPv6 address.
Host routing-instance	Name of the host routing instance.
Destination port	Destination port numbers that match the rule. The default value is any.
Source port	Source port numbers that match the rule.
Total static-nat rules	Number of static NAT rules.
Translation hits	Number of times a translation in the translation table is used for a static NAT rule.
Successful sessions	Number of successful session installations after the NAT rule is matched.
Failed sessions	Number of unsuccessful session installations after the NAT rule is matched.
Number of sessions	Number of sessions that reference the specified rule.

Sample Output

show security nat static rule

`user@host>` **show security nat static rule sta-r2**

```
Static NAT rule: sta-r2                  Rule-set: sta-nat
 Description               : The static rule sta-r2 is for the sales team
 Rule-Id                   : 1
 Rule position             : 1
 From zone                 : zone9
 Destination addresses     : add3
 Host addresses            : add4
 Netmask                   : 24
 Host routing-instance     : N/A
 Translation hits          : 2
  Successful sessions      : 2
```

```
    Failed sessions          : 0
  Number of sessions         : 2
```

Sample Output

show security nat static rule all tenant

`user@host>` **show security nat static rule all tenant tn1**

```
 Total static-nat rules: 1
Total referenced IPv4/IPv6 ip-prefixes: 2/0
Static NAT rule: r1                     Rule-set: from_zone
  Rule-Id                   : 1
  Rule position             : 1
  From zone                 : untrust
  Source addresses          : 192.0.2.0       - 192.0.2.255
  Destination addresses     : 203.0.113.203
  Host addresses            : 192.168.1.203
  Netmask                   : 32
  Host routing-instance     : N/A
  Translation hits          : 0
    Successful sessions     : 0
    Failed sessions         : 0
  Number of sessions        : 0
```

Sample Output

show security nat static rule (IPv6)

`user@host>` **show security nat static rule r1**

```
Static NAT rule: r1                   Rule-set: rs1
   Rule-Id                  : 1
   Rule position            : 1
   From zone                : trust
   Destination NPTv6 addr   : 2001:db8::
   Destination NPTv6 Netmask  : 48
```

```
   Host addresses            : 2001:db8::3000
   Netmask                   : 48
   Host routing-instance     : N/A
   Translation hits          : 0
      Successful sessions     : 0
      Failed sessions         : 0
   Number of sessions        : 0
```

Sample Output

show security nat static rule all

`user@host>` **show security nat static rule all**

```
Static NAT rule: r1                   Rule-set: rs1
  Rule-Id                   : 1
  Rule position             : 1
  From zone                 : trust
  Source addresses          : 192.0.2.0 -192.0.2.3
                            : addr1
  Source ports              : 200 - 300
  Destination addresses     : 198.51.100.0
  Host addresses            : 203.0.113.0
  Netmask                   : 24
  Host routing-instance     : N/A
  Translation hits          : 4
   Successful sessions     : 4
   Failed sessions         : 0
 Number of sessions        : 4
Static NAT rule: r2                   Rule-set: rs1
  Rule-Id                   : 2
  Rule position             : 2
  From zone                 : trust
  Source addresses          : 192.0.2.0 -192.0.2.255
  Destination addresses     : 203.0.113.1
  Destination ports         : 100 - 200
  Host addresses            : 192.0.2.1
  Host ports                : 300 - 400
  Netmask                   : 32
  Host routing-instance     : N/A
  Translation hits          : 4
```

```
  Successful sessions      : 4
  Failed sessions          : 0
Number of sessions         : 4
```

show security policies

Syntax

```
show security policies
application-firewall
count
detail
from-zone <zone-name>
global
hit-count
interface
logical-system <logical-system-name>
policy <policy-name>
root-logical-system
service-set
start
tenant <tenant-name>
to-zone <zone-name>
unknown-source-identity
zone-context
```

Release Information

Command modified in Junos OS Release 9.2.
Support for IPv6 addresses is added in Junos OS Release 10.2.
Support for wildcard addresses is added in Junos OS Release 11.1.
Support for global policy and services offloading is added in Junos OS Release 11.4.
Support for source-identities and the **Description** output field is added in Junos OS Release 12.1.
Support for negated address added in Junos OS Release 12.1X45-D10.
The output fields for Policy Statistics expanded, and the output fields for the **global** and **policy-name** options are expanded to include from-zone and to-zone global match criteria in Junos OS Release 12.1X47-D10.
Support for the **initial-tcp-mss** and **reverse-tcp-mss** options is added in Junos OS Release 12.3X48-D20.
Output field and description for **source-end-user-profile** option is added in Junos OS Release 15.1x49-D70.
Output field and description for **dynamic-applications** option is added in Junos OS Release 15.1x49-D100.
Output field and description for **dynapp-redir-profile** option is added in Junos OS Release 18.2R1.
The **tenant** option is introduced in Junos OS Release 18.3R1.

Description

Displays a summary of all security policies configured on the device. If a particular policy is specified, display information specific to that policy. The existing show commands for displaying the policies configured with multiple tenant support are enhanced. A security policy controls the traffic flow from one zone to another zone. The security policies allow you to deny, permit, reject (deny and send a TCP RST or ICMP

port unreachable message to the source host), encrypt and decrypt, authenticate, prioritize, schedule, filter, and monitor the traffic attempting to cross from one security zone to another.

Options

- **application-firewall**—Displays the information of application-firewall.
- **count**—Displays the number of policies. Range is 1 through 65,535.
- **detail**—(Optional) Displays a detailed view of all of the policies configured on the device.
- **from-zone**—Displays the policy information matching the given source zone.
- **global**—(Optional) Displays information about global policies.
- **hit-count**—Displays the policies hit count.
- **interface**—Displays the name of the adaptive services interface.
- **logical-system**—Displays the logical system name.
- **policy-name**—(Optional) Displays the information about a specified policy.
- **root-logical-system**—Displays root logical system as default.
- **service-set**—Displays the name of the service set.
- **start**—Displays the policies from a given position. Range is 1 through 65,535.
- **tenant**—Displays the name of the tenant system.
- **to-zone**—Displays the policy information matching the given destination zone.
- **unknown-source-identity**—Displays the unknown-source-identity of a policy.
- **zone-context**—Displays the count of policies in each context (from-zone and to-zone).

Required Privilege Level

view

RELATED DOCUMENTATION

Security Policies Overview

Understanding Security Policy Rules

Understanding Security Policy Elements

Unified Policies Configuration Overview

List of Sample Output

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show security policies (Dynamic Applications) on page 1093
show security policies policy-name detail on page 1094

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show security policies detail on page 1097
show security policies detail (TCP Options) on page 1100
show security policies policy-name (Negated Address) on page 1100
show security policies policy-name detail (Negated Address) on page 1101
show security policies global on page 1101
show security policies detail tenant on page 1102

Output Fields

Table 82 on page 1089 lists the output fields for the **show security policies** command. Output fields are listed in the approximate order in which they appear.

Table 82: show security policies Output Fields

Field Name	Field Description
From zone	Name of the source zone.
To zone	Name of the destination zone.
Policy	Name of the applicable policy.
Description	Description of the applicable policy.
State	Status of the policy: • **enabled**: The policy can be used in the policy lookup process, which determines access rights for a packet and the action taken in regard to it. • **disabled**: The policy cannot be used in the policy lookup process, and therefore it is not available for access control.
Index	Internal number associated with the policy.
Sequence number	Number of the policy within a given context. For example, three policies that are applicable in a from-zoneA-to-zoneB context might be ordered with sequence numbers 1, 2, 3. Also, in a from-zoneC-to-zoneD context, four policies might have sequence numbers 1, 2, 3, 4.
Source addresses	For standard display mode, the names of the source addresses for a policy. Address sets are resolved to their individual names. For detail display mode, the names and corresponding IP addresses of the source addresses for a policy. Address sets are resolved to their individual address name-IP address pairs.

Table 82: show security policies Output Fields *(continued)*

Field Name	Field Description
Destination addresses	Name of the destination address (or address set) as it was entered in the destination zone's address book. A packet's destination address must match this value for the policy to apply to it.
source-end-user-profile	Name of the device identity profile (referred to as **end-user-profile** in the CLI) that contains attributes, or characteristics of a device. Specification of the device identity profile in the **source-end-user-profile** field is part of the device identity feature. If a device matches the attributes specified in the profile and other security policy parameters, then the security policy's action is applied to traffic issuing from the device.
Source addresses (excluded)	Name of the source address excluded from the policy.
Destination addresses (excluded)	Name of the destination address excluded from the policy.
Source identities	One or more user roles specified for a policy.
Applications	Name of a preconfigured or custom application whose type the packet matches, as specified at configuration time. • **IP protocol**: The Internet protocol used by the application—for example, TCP, UDP, ICMP. • **ALG**: If an ALG is explicitly associated with the policy, the name of the ALG is displayed. If **application-protocol ignore** is configured, **ignore** is displayed. Otherwise, **0** is displayed. However, even if this command shows **ALG: 0**, ALGs might be triggered for packets destined to well-known ports on which ALGs are listening, unless ALGs are explicitly disabled or when **application-protocol ignore** is not configured for custom applications. • **Inactivity timeout**: Elapsed time without activity after which the application is terminated. • **Source port range**: The low-high source port range for the session application.
Dynamic Applications	Application identification-based Layer 7 dynamic applications.
Destination Address Translation	Status of the destination address translation traffic: • **drop translated**—Drop the packets with translated destination addresses. • **drop untranslated**—Drop the packets without translated destination addresses.

Table 82: show security policies Output Fields *(continued)*

Field Name	Field Description

Application Firewall	An application firewall includes the following:
	• **Rule-set**—Name of the rule set.
	• **Rule**—Name of the rule.
	  ◦ **Dynamic applications**—Name of the applications.
	  ◦ **Dynamic application groups**—Name of the application groups.
	  ◦ **Action**—The action taken with respect to a packet that matches the application firewall rule set. Actions include the following:
	  ▪ **permit**
	  ▪ **deny**
	• **Default rule**—The default rule applied when the identified application is not specified in any rules of the rule set.

Action or Action-type	• The action taken for a packet that matches the policy's tuples. Actions include the following:
	  ◦ **permit**
	  ◦ **firewall-authentication**
	  ◦ **tunnel ipsec-vpn *vpn-name***
	  ◦ **pair-policy *pair-policy-name***
	  ◦ **source-nat pool *pool-name***
	  ◦ **pool-set *pool-set-name***
	  ◦ **interface**
	  ◦ **destination-nat *name***
	  ◦ **deny**
	  ◦ **reject**
	  ◦ **services-offload**

Session log	Session log entry that indicates whether the **at-create** and **at-close** flags were set at configuration time to log session information.
Scheduler name	Name of a preconfigured scheduler whose schedule determines when the policy is active and can be used as a possible match for traffic.

Table 82: show security policies Output Fields *(continued)*

Field Name	Field Description

Policy statistics	• **Input bytes**—The total number of bytes presented for processing by the device.
	  ◦ **Initial direction**—The number of bytes presented for processing by the device from the initial direction.
	  ◦ **Reply direction**—The number of bytes presented for processing by the device from the reply direction.
	• **Output bytes**—The total number of bytes actually processed by the device.
	  ◦ **Initial direction**—The number of bytes from the initial direction actually processed by the device.
	  ◦ **Reply direction**—The number of bytes from the reply direction actually processed by the device.
	• **Input packets**—The total number of packets presented for processing by the device.
	  ◦ **Initial direction**—The number of packets presented for processing by the device from the initial direction.
	  ◦ **Reply direction**—The number of packets presented for processing by the device from the reply direction.
	• **Output packets**—The total number of packets actually processed by the device.
	  ◦ **Initial direction**—The number of packets actually processed by the device from the initial direction.
	  ◦ **Reply direction**—The number of packets actually processed by the device from the reply direction.
	• **Session rate**—The total number of active and deleted sessions.
	• **Active sessions**—The number of sessions currently present because of access control lookups that used this policy.
	• **Session deletions**—The number of sessions deleted since system startup.
	• **Policy lookups**—The number of times the policy was accessed to check for a match.

dynapp-redir-profile	Displays unified policy redirect profile. See *profile(dynamic-application)*.
Per policy TCP Options	Configured syn and sequence checks, and the configured TCP MSS value for the initial direction, the reverse direction or, both.

Sample Output

show security policies

user@host> **show security policies**

```
From zone: trust, To zone: untrust
Policy: p1, State: enabled, Index: 4, Sequence number: 1
  Source addresses:
  sa-1-ipv4: 198.51.100.11/24
  sa-2-ipv6: 2001:db8:a0b:12f0::1/32
  sa-3-ipv6: 2001:db8:a0b:12f0::22/32
  sa-4-wc:   203.0.113.1/255.255.0.255
  Destination addresses:
  da-1-ipv4: 2.2.2.2/24
  da-2-ipv6: 2001:db8:a0b:12f0::8/32
  da-3-ipv6: 2001:db8:a0b:12f0::9/32
  da-4-wc:   192.168.22.11/255.255.0.255
  Source identities: role1, role2, role4
  Applications: any
  Action: permit, application services, log, scheduled
  Application firewall : my_ruleset1
Policy: p2, State: enabled, Index: 5, Sequence number: 2
  Source addresses:
  sa-1-ipv4:  198.51.100.11/24
  sa-2-ipv6:  2001:db8:a0b:12f0::1/32
  sa-3-ipv6:  2001:db8:a0b:12f0::22/32
  Destination addresses:
  da-1-ipv4:  2.2.2.2/24
  da-2-ipv6:  2001:db8:a0b:12f0::1/32
  da-3-ipv6:  2001:db8:a0b:12f0::9/32
  Source identities: role1, role4
  Applications: any
  Action: deny, scheduled
```

show security policies (Dynamic Applications)

user@host>**show security policies**

```
Policy: p1, State: enabled, Index: 4, Scope Policy: 0, Sequence number: 1
  Source addresses: any
  Destination addresses: any
```

```
    Applications: any
    Dynamic Applications: junos:YAHOO
    Action: deny, log
  Policy: p2, State: enabled, Index: 5, Scope Policy: 0, Sequence number: 2
    Source addresses: any
    Destination addresses: any
    Applications: any
    Dynamic Applications: junos:web, junos:web:social-networking:facebook,
    junos:TFTP, junos:QQ
    Action: permit, log
  Policy: p3, State: enabled, Index: 6, Scope Policy: 0, Sequence number: 3
    Source addresses: any
    Destination addresses: any
    Applications: any
    Dynamic Applications: junos:HTTP, junos:SSL
    Action: permit, application services, log
```

The following example displays the output with unified policies configured.

`user@host>` **show security policies**

```
Default policy: deny-all
Pre ID default policy: permit-all
From zone: trust, To zone: untrust
  Policy: p2, State: enabled, Index: 4, Scope Policy: 0, Sequence number: 1
    Source addresses: any
    Destination addresses: any
    Applications: junos-defaults
    Dynamic Applications: junos:GMAIL, junos:FACEBOOK-CHAT
    dynapp-redir-profile: profile1
```

show security policies policy-name detail

`user@host>` **show security policies policy-name p1 detail**

```
  Policy: p1, action-type: permit, State: enabled, Index: 4, Scope Policy: 0
  Description: The policy p1 is for the sales team
  Sequence number: 1
  From zone: trust, To zone: untrust
  Source addresses:
    sa-1-ipv4:  198.51.100.11/24
```

```
    sa-2-ipv6:  2001:db8:a0b:12f0::1/32
    sa-3-ipv6:  2001:db8:a0b:12f0::9/32
    sa-4-wc:    203.0.113.1/255.255.0.255
  Destination addresses:
    da-1-ipv4: 192.0.2.0/24
    da-2-ipv6: 2001:db8:a0b:12f0::1/32
    da-3-ipv6: 2001:db8:a0b:12f0::9/32
    da-4-wc:   192.168.22.11/255.255.0.255
Source identities:
  role1
  role2
  role4
  Application: any
    IP protocol: 0, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
      Destination port range: [0-0]
  Destination Address Translation: drop translated
  Application firewall :
  Rule-set: my_ruleset1
    Rule: rule1
      Dynamic Applications: junos:FACEBOOK-ACCESS, junos:YMSG
      Dynamic Application groups: junos:web, junos:chat
      Action: deny
    Default rule: permit
  Session log: at-create, at-close
  Scheduler name: sch20
  Per policy TCP Options: SYN check: No, SEQ check: No
  Policy statistics:
    Input  bytes       :               18144                 545 bps
      Initial direction:                9072                272 bps
      Reply direction  :                9072                 272 bps
    Output bytes       :               18144                 545 bps
      Initial direction:                9072                 272 bps
      Reply direction  :                9072                 272 bps
    Input  packets     :                 216                   6 pps
      Initial direction:                 108                   3 bps
      Reply direction  :                 108                   3 bps
    Output packets     :                 216                   6 pps
      Initial direction:                 108                   3 bps
      Reply direction  :                 108                   3 bps
    Session rate       :                 108                   3 sps
    Active sessions    :                  93
    Session deletions  :                  15
    Policy lookups     :                 108
```

The following example displays the output with unified policies configured.

user@host> **show security policies policy-name p1 detail**

```
Default policy: permit-all
Pre ID default policy: permit-all
From zone: trust, To zone: trust
  Policy: p1, State: enabled, Index: 4, Scope Policy: 0, Sequence number: 1
    Source addresses: any
    Destination addresses: any
    Applications: any
    Action: reject
    dynapp-redir-profile: profile1
```

show security policies (Services-Offload)

user@host> **show security policies**

```
  Policy: p1, action-type: reject, State: enabled, Index: 4, Scope Policy: 0
  Policy Type: Configured
  Sequence number: 1
  From zone: trust, To zone: trust
  Source addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Destination addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Application: any
    IP protocol: 0, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
      Destination port range: [0-0]
  dynapp-redir-profile: profile1(1)
  Per policy TCP Options: SYN check: No, SEQ check: No, Window scale: No
```

show security policies (Device Identity)

user@host> **show security policies**

```
From zone: trust, To zone: untrust
      Policy: dev-id-marketing, State: enabled, Index: 5, Scope Policy: 0, Sequence
```

```
 number: 1
         Source addresses: any
         Destination addresses: any
         source-end-user-profile: marketing-profile
         Applications: any
         Action: permit
```

show security policies detail

user@host> **show security policies detail**

```
Default policy: deny-all
Policy: p1, action-type: permit, services-offload:enabled , State: enabled, Index:
 4, Scope Policy: 0
  Policy Type: Configured
  Description: The policy p1 is for the sales team
  Sequence number: 1
  From zone: trust, To zone: untrust
  Source addresses:
    any-ipv4(global):  0.0.0.0/0
    any-ipv6(global): ::/0
  Destination addresses:
    any-ipv4(global):  0.0.0.0/0
    any-ipv6(global): ::/0
 Source identities:
  role1
  role2
  role4
  Application: any
    IP protocol: 0, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
      Destination port range: [0-0]
  Per policy TCP Options: SYN check: No, SEQ check: No
  Policy statistics:
    Input  bytes       :               18144                 545 bps
      Initial direction:                9072                272 bps
      Reply direction  :                9072                 272 bps
    Output bytes       :               18144                 545 bps
      Initial direction:                9072                 272 bps
      Reply direction  :                9072                 272 bps
    Input  packets     :                 216                   6 pps
      Initial direction:                 108                   3 bps
      Reply direction  :                 108                   3 bps
```

```
    Output packets     :                 216                   6 pps
      Initial direction:                 108                   3 bps
      Reply direction  :                 108                   3 bps
    Session rate       :                 108                   3 sps
    Active sessions    :                  93
    Session deletions  :                  15
    Policy lookups     :                 108
Policy: p2, action-type: permit, services-offload:enabled , State: enabled, Index:
 5, Scope Policy: 0
  Policy Type: Configured
  Description: The policy p2 is for the sales team
  Sequence number: 1
  From zone: untrust, To zone: trust
  Source addresses:
    any-ipv4(global):  0.0.0.0/0
    any-ipv6(global): ::/0
  Destination addresses:
    any-ipv4(global):  0.0.0.0/0
    any-ipv6(global): ::/0
 Source identities:
  role1
  role2
  role4
  Application: any
    IP protocol: 0, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
      Destination port range: [0-0]
  Per policy TCP Options: SYN check: No, SEQ check: No
```

The following example displays the output with unified policies configured.

`user@host>` **show security policies detail**

```
Default policy: deny-all
Pre ID default policy: permit-all
Policy: p2, action-type: reject, State: enabled, Index: 4, Scope Policy: 0
  Policy Type: Configured
  Sequence number: 1
  From zone: trust, To zone: untrust
  Source addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Destination addresses:
```

```
  any-ipv4(global): 0.0.0.0/0
  any-ipv6(global): ::/0
Application: junos-defaults
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [443-443]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [5432-5432]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [80-80]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [3128-3128]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [8000-8000]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [8080-8080]
  IP protocol: 17, ALG: 0, Inactivity timeout: 60
    Source port range: [0-0]
    Destination port range: [1-65535]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [443-443]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [5432-5432]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [80-80]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [3128-3128]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [8000-8000]
  IP protocol: 6, ALG: 0, Inactivity timeout: 1800
    Source port range: [0-0]
    Destination port range: [8080-8080]
  IP protocol: 17, ALG: 0, Inactivity timeout: 60
    Source port range: [0-0]
```

```
      Destination port range: [1-65535]
  Dynamic Application:
    junos:FACEBOOK-CHAT: 10704
    junos:GMAIL: 51
  dynapp-redir-profile: profile1(1)
  Per policy TCP Options: SYN check: No, SEQ check: No, Window scale: No
```

show security policies detail (TCP Options)

user@host> **show security policies policy-name p2 detail**

```
node0:
--------------------------------------------------------------------------
Policy:p2, action-type:permit, State: enabled,Index: 4, Scope Policy: 0
  Policy Type: Configured
  Sequence number: 1
  From zone: trust, To zone: trust
  Source addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Destination addresses:
    any-ipv4(global): 0.0.0.0/0
    any-ipv6(global): ::/0
  Application: junos-defaults
    IP protocol: tcp, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
 Destination port range: [80-80]
Per policy TCP Options: SYN check: No, SEQ check: No, Window scale: No
  Dynamic-application: junos:HTTP
```

show security policies policy-name (Negated Address)

user@host> **show security policies policy-name p1**

```
node0:
--------------------------------------------------------------------------
From zone: trust, To zone: untrust
  Policy: p1, State: enabled, Index: 4, Scope Policy: 0, Sequence number: 1
    Source addresses(excluded): as1
    Destination addresses(excluded): as2
    Applications: any
    Action: permit
```

show security policies policy-name detail (Negated Address)

```
user@host> show security policies policy-name p1 detail
```

```
node0:
--------------------------------------------------------------------------
Policy: p1, action-type: permit, State: enabled, Index: 4, Scope Policy: 0
  Policy Type: Configured
  Sequence number: 1
  From zone: trust, To zone: untrust
  Source addresses(excluded):
    ad1(ad): 255.255.255.255/32
    ad2(ad):  198.51.100.1/24
    ad3(ad):  198.51.100.6  ~ 198.51.100.56
    ad4(ad):  192.0.2.8/24
    ad5(ad):  198.51.100.99 ~ 198.51.100.199
    ad6(ad):  203.0.113.9/24
    ad7(ad):  203.0.113.23/24
  Destination addresses(excluded):
    ad13(ad2): 198.51.100.76/24
    ad12(ad2): 198.51.100.88/24
    ad11(ad2): 192.0.2.23 ~ 192.0.2.66
    ad10(ad2): 192.0.2.93
    ad9(ad2):  203.0.113.76 ~ 203.0.113.106
    ad8(ad2):  203.0.113.199
  Application: any
    IP protocol: 0, ALG: 0, Inactivity timeout: 0
      Source port range: [0-0]
      Destination port range: [0-0]
  Per policy TCP Options: SYN check: No, SEQ check: No
```

show security policies global

```
user@host> show security policies global policy-name Pa
```

```
node0:
--------------------------------------------------------------------------
  Global policies:
  Policy: Pa, State: enabled, Index: 6, Scope Policy: 0, Sequence number: 1
    From zones: any
    To zones: any
    Source addresses: H0
    Destination addresses: H1
    Applications: junos-http
```

```
    Action: permit
```

show security policies detail tenant

`user@host>` **show security policies detail tenant TN1**

```
Default policy: deny-all
Pre ID default policy: permit-all
Policy: p1, action-type: permit, State: enabled, Index: 4, Scope Policy: 0
Policy Type: Configured
Sequence number: 1
From zone: trust, To zone: untrust
Source addresses: any
Destination addresses: any
Application: junos-ping
IP protocol: 1, ALG: 0, Inactivity timeout: 60
ICMP Information: type=255, code=0
Application: junos-telnet
IP protocol: tcp, ALG: 0, Inactivity timeout: 1800
Source port range: [0-0]
Destination port range: [23-23]
Application: app_udp
IP protocol: udp, ALG: 0, Inactivity timeout: 1800
Source port range: [0-0]
Destination port range: [5000-5000]
Application: junos-icmp6-all
IP protocol: 58, ALG: 0, Inactivity timeout: 60
ICMP Information: type=255, code=0
Per policy TCP Options: SYN check: No, SEQ check: No, Window scale: No
Session log: at-create, at-close
Policy statistics:
Input  bytes     :                   0                   0 bps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Output bytes     :                   0                   0 bps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Input  packets   :                   0                   0 pps
Initial direction:                   0                   0 bps
Reply direction  :                   0                   0 bps
Output packets   :                   0                   0 pps
Initial direction:                   0                   0 bps
```

```
Reply direction  :                 0                   0 bps
Session rate     :                 0                   0 sps
Active sessions  :                 0
Session deletions:                 0
Policy lookups   :                 0
```

show security screen statistics

Syntax

```
show security screen statistics <zone zone-name | interface interface-name>
logical-system <logical-system-name | all>
root-logical-system
tenant <tenant-name >
```

Release Information

Command introduced in Junos OS Release 8.5.
The **node** option added in Junos OS Release 9.0.
The **logical-system all** option added in Junos OS Release 11.2R6.
Support for IPv6 extension header screens added in Junos OS Release 12.1X46-D10.
The **tenant** option is introduced in Junos OS Release 18.3R1.

Description

Display intrusion detection service (IDS) security screen statistics.

Options

- **zone *zone-name***—Display screen statistics for this security zone.
- **interface *interface-name*** —Display screen statistics for this interface.
- ***logical-system-name***—Display screen statistics for the named logical system.
- **root-logical-system**—(Optional) Display screen statistics for the master logical system only.
- **tenant**—Display the name of the tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

clear security screen statistics

clear security screen statistics interface

clear security screen statistics zone

Example: Configuring Multiple Screening Options

List of Sample Output

show security screen statistics zone scrzone on page 1107
show security screen statistics zone untrust (IPv6) on page 1108

show security screen statistics interface ge-0/0/3 on page 1109
show security screen statistics interface ge-0/0/1 (IPv6) on page 1110
show security screen statistics interface ge-0/0/1 node primary on page 1110
show security screen statistics zone trust logical-system all on page 1111
show security screen statistics zone trust tenant TN1 on page 1114
show security screen statistics zone trust tenant all on page 1115

Output Fields

Table 83 on page 1105 lists the output fields for the **show security screen statistics** command. Output fields are listed in the approximate order in which they appear.

Table 83: show security screen statistics Output Fields

Field Name	Field Description
ICMP flood	Internet Control Message Protocol (ICMP) flood counter. An ICMP flood typically occurs when ICMP echo requests use all resources in responding, such that valid network traffic can no longer be processed.
UDP flood	User Datagram Protocol (UDP) flood counter. UDP flooding occurs when an attacker sends IP packets containing UDP datagrams with the purpose of slowing down the resources, such that valid connections can no longer be handled.
TCP winnuke	Number of Transport Control Protocol (TCP) WinNuke attacks. WinNuke is a denial-of-service (DoS) attack targeting any computer on the Internet running Windows.
TCP port scan	Number of TCP port scans. The purpose of this attack is to scan the available services in the hopes that at least one port will respond, thus identifying a service to target.
ICMP address sweep	Number of ICMP address sweeps. An IP address sweep can occur with the intent of triggering responses from active hosts.
IP tear drop	Number of teardrop attacks. Teardrop attacks exploit the reassembly of fragmented IP packets.
TCP SYN flood	Number of TCP SYN attacks.
IP spoofing	Number of IP spoofs. IP spoofing occurs when an invalid source address is inserted in the packet header to make the packet appear to come from a trusted source.
ICMP ping of death	ICMP ping of death counter. Ping of death occurs when IP packets are sent that exceed the maximum legal length (65,535 bytes).

Table 83: show security screen statistics Output Fields *(continued)*

Field Name	Field Description
IP source route option	Number of IP source route attacks.
TCP address sweep	Number of TCP address sweeps.
TCP land attack	Number of land attacks. Land attacks occur when an attacker sends spoofed SYN packets containing the IP address of the victim as both the destination and source IP address.
TCP SYN fragment	Number of TCP SYN fragments.
TCP no flag	Number of TCP headers without flags set. A normal TCP segment header has at least one control flag set.
IP unknown protocol	Number of IPs.
IP bad options	Number of invalid options.
IP record route option	Number of packets with the IP record route option enabled. This option records the IP addresses of the network devices along the path that the IP packet travels.
IP timestamp option	Number of IP timestamp option attacks. This option records the time (in Universal Time) when each network device receives the packet during its trip from the point of origin to its destination.
IP security option	Number of IP security option attacks.
IP loose source route option	Number of IP loose source route option attacks. This option specifies a partial route list for a packet to take on its journey from source to destination.
IP strict source route option	Number of IP strict source route option attacks. This option specifies the complete route list for a packet to take on its journey from source to destination.
IP stream option	Number of stream option attacks. This option provides a way for the 16-bit SATNET stream identifier to be carried through networks that do not support streams.
ICMP fragment	Number of ICMP fragments. Because ICMP packets contain very short messages, there is no legitimate reason for ICMP packets to be fragmented. If an ICMP packet is so large that it must be fragmented, something is amiss.
ICMP large packet	Number of large ICMP packets.

Table 83: show security screen statistics Output Fields *(continued)*

Field Name	Field Description
TCP SYN FIN	Number of TCP SYN FIN packets.
TCP FIN no ACK	Number of TCP FIN flags without the acknowledge (ACK) flag.
Source session limit	Number of concurrent sessions that can be initiated from a source IP address.
TCP SYN-ACK-ACK proxy	Number of TCP flags enabled with SYN-ACK-ACK. To prevent flooding with SYN-ACK-ACK sessions, you can enable the SYN-ACK-ACK proxy protection screen option. After the number of connections from the same IP address reaches the SYN-ACK-ACK proxy threshold and SRX Series devices running Junos OS reject further connection requests from that IP address.
IP block fragment	Number of IP block fragments.
Destination session limit	Number of concurrent sessions that can be directed to a single destination IP address.
UDP address sweep	Number of UDP address sweeps.
IPv6 extension header	Number of packets filtered for the defined IPv6 extension headers.
IPv6 extension hop by hop option	Number of packets filtered for the defined IPv6 hop-by-hop option types.
IPv6 extension destination option	Number of packets filtered for the defined IPv6 destination option types.
IPv6 extension header limit	Number of packets filtered for crossing the defined IPv6 extension header limit.
IPv6 malformed header	Number of IPv6 malformed headers defined for the intrusion detection service (IDS).
ICMPv6 malformed packet	Number of ICMPv6 malformed packets defined for the IDS options.

Sample Output

show security screen statistics zone scrzone

```
user@host> show security screen statistics zone scrzone
```

```
Screen statistics:
IDS attack type                          Statistics
  ICMP flood                             0
  UDP flood                              0
  TCP winnuke                            0
  TCP port scan                          91
  ICMP address sweep                     0
  TCP sweep                              0
  UDP sweep                              0
  IP tear drop                           0
  TCP SYN flood                          0
  IP spoofing                            0
  ICMP ping of death                     0
  IP source route option                 0
  TCP land attack                        0
  TCP SYN fragment                       0
  TCP no flag                            0
  IP unknown protocol                    0
  IP bad options                         0
  IP record route option                 0
  IP timestamp option                    0
  IP security option                     0
  IP loose source route option           0
  IP strict source route option          0
  IP stream option                       0
  ICMP fragment                          0
  ICMP large packet                      0
  TCP SYN FIN                            0
  TCP FIN no ACK                         0
  Source session limit                   0
  TCP SYN-ACK-ACK proxy                  0
  IP block fragment                      0
  Destination session limit              0
```

Sample Output

show security screen statistics zone untrust (IPv6)

`user@host>` **show security screen statistics zone untrust**

```
Screen statistics:
```

```
IDS attack type                          Statistics
  ICMP flood                                   0
  UDP  flood                                   0
  TCP  winnuke                                 0
  ……
  IPv6   extension header                       0
  IPv6   extension hop by hop option            0
  IPv6   extension destination option           0
  IPv6   extension header limit                 0
  IPv6   malformed header                       0
  ICMPv6 malformed packet                       0
```

Sample Output

show security screen statistics interface ge-0/0/3

`user@host>` **show security screen statistics interface ge-0/0/3**

```
Screen statistics:
IDS attack type                          Statistics
  ICMP flood                             0
  UDP flood                              0
  TCP winnuke                            0
  TCP port scan                          91
  ICMP address sweep                     0
  TCP sweep                              0
  UDP sweep                              0
  IP tear drop                           0
  TCP SYN flood                          0
  IP spoofing                            0
  ICMP ping of death                     0
  IP source route option                 0
  TCP land attack                        0
  TCP SYN fragment                       0
  TCP no flag                            0
  IP unknown protocol                    0
  IP bad options                         0
  IP record route option                 0
  IP timestamp option                    0
  IP security option                     0
  IP loose source route option           0
```

```
  IP strict source route option              0
  IP stream option                           0
  ICMP fragment                              0
  ICMP large packet                          0
  TCP SYN FIN                                0
  TCP FIN no ACK                             0
  Source session limit                       0
  TCP SYN-ACK-ACK proxy                      0
  IP block fragment                          0
  Destination session limit                  0
```

Sample Output

show security screen statistics interface ge-0/0/1 (IPv6)

`user@host>` **show security screen statistics interface ge-0/0/1**

```
Screen statistics:

IDS attack type                                 Statistics
  ICMP flood                                         0
  UDP flood                                          0
  ……
  IPv6 extension header                              0
  IPv6 extension hop by hop option                   0
  IPv6 extension destination option                  0
  IPv6 extension header limit                        0
  IPv6 malformed header                              0
  ICMPv6 malformed packet                            0
```

Sample Output

show security screen statistics interface ge-0/0/1 node primary

`user@host>` **show security screen statistics interface ge-0/0/1 node primary**

```
node0:
--------------------------------------------------------------------------
```

```
Screen statistics:
IDS attack type                              Statistics
  ICMP flood                                 1
  UDP flood                                  1
  TCP winnuke                                1
  TCP port scan                              1
  ICMP address sweep                         1
  TCP sweep                                  1
  UDP sweep                                  1
  IP tear drop                               1
  TCP SYN flood                              1
  IP spoofing                                1
  ICMP ping of death                         1
  IP source route option                     1
  TCP land attack                            1
  TCP SYN fragment                           1
  TCP no flag                                1
  IP unknown protocol                        1
  IP bad options                             1
  IP record route option                     1
  IP timestamp option                        1
  IP security option                         1
  IP loose source route option               1
  IP strict source route option              1
  IP stream option                           1
  ICMP fragment                              1
  ICMP large packet                          1
  TCP SYN FIN                                1
  TCP FIN no ACK                             1
  Source session limit                       1
  TCP SYN-ACK-ACK proxy                      1
  IP block fragment                          1
  Destination session limit                  1
```

Sample Output

show security screen statistics zone trust logical-system all

`user@host>` **show security screen statistics zone trust logical-system all**

```
Logical system: root-logical-system
Screen statistics:
```

```
IDS attack type                          Statistics
  ICMP flood                             0
  UDP flood                              0
  TCP winnuke                            0
  TCP port scan                          0
  ICMP address sweep                     0
  TCP sweep                              0
  UDP sweep                              0
  IP tear drop                           0
  TCP SYN flood                          0
  IP spoofing                            0
  ICMP ping of death                     0
  IP source route option                 0
  TCP land attack                        0
  TCP SYN fragment                       0
  TCP no flag                            0
  IP unknown protocol                    0
  IP bad options                         0
  IP record route option                 0
  IP timestamp option                    0
  IP security option                     0
  IP loose source route option           0
  IP strict source route option          0
  IP stream option                       0
  ICMP fragment                          0
  ICMP large packet                      0
  TCP SYN FIN                            0
  TCP FIN no ACK                         0
  Source session limit                   0
  TCP SYN-ACK-ACK proxy                  0
  IP block fragment                      0
  Destination session limit              0

Logical system: ls1
Screen statistics:

IDS attack type                          Statistics
  ICMP flood                             0
  UDP flood                              0
  TCP winnuke                            0
  TCP port scan                          0
  ICMP address sweep                     0
  TCP sweep                              0
```

```
  UDP sweep                                0
  IP tear drop                             0
  TCP SYN flood                            0
  IP spoofing                              0
  ICMP ping of death                       0
  IP source route option                   0
  TCP land attack                          0
  TCP SYN fragment                         0
  TCP no flag                              0
  IP unknown protocol                      0
  IP bad options                           0
  IP record route option                   0
  IP timestamp option                      0
  IP security option                       0
  IP loose source route option             0
  IP strict source route option            0
  IP stream option                         0
  ICMP fragment                            0
  ICMP large packet                        0
  TCP SYN FIN                              0
  TCP FIN no ACK                           0
  Source session limit                     0
  TCP SYN-ACK-ACK proxy                    0
  IP block fragment                        0
  Destination session limit                0

Logical system: ls2
Screen statistics:

IDS attack type                          Statistics
  ICMP flood                             0
  UDP flood                              0
  TCP winnuke                            0
  TCP port scan                          0
  ICMP address sweep                     0
  TCP sweep                              0
  UDP sweep                              0
  IP tear drop                           0
  TCP SYN flood                          0
  IP spoofing                            0
  ICMP ping of death                     0
  IP source route option                 0
  TCP land attack                        0
  TCP SYN fragment                       0
```

```
TCP no flag                              0
IP unknown protocol                      0
IP bad options                           0
IP record route option                   0
IP timestamp option                      0
IP security option                       0
IP loose source route option             0
IP strict source route option            0
IP stream option                         0
ICMP fragment                            0
ICMP large packet                        0
TCP SYN FIN                              0
TCP FIN no ACK                           0
Source session limit                     0
TCP SYN-ACK-ACK proxy                    0
IP block fragment                        0
Destination session limit                0
```

show security screen statistics zone trust tenant TN1

user@host> **show security screen statistics zone trust tenant TN1**

```
Screen statistics:

IDS attack type                          Statistics
ICMP flood                               0
UDP flood                                0
TCP winnuke                              0
TCP port scan                            0
UDP port scan                            0
ICMP address sweep                       0
TCP sweep                                0
UDP sweep                                0
IP tear drop                             0
TCP SYN flood                            0
SYN flood source                         0
SYN flood destination                    0
IP spoofing                              0
ICMP ping of death                       0
IP source route option                   0
TCP land attack                          0
TCP SYN fragment                         0
TCP no flag                              0
```

```
IP unknown protocol                         0
IP bad options                              0
IP record route option                      0
IP timestamp option                         0
IP security option                          0
IP loose source route option                0
IP strict source route option               0
IP stream option                            0
ICMP fragment                               0
ICMP large packet                           0
TCP SYN FIN                                 0
TCP FIN no ACK                              0
Source session limit                        0
TCP SYN-ACK-ACK proxy                       0
IP block fragment                           0
Destination session limit                   0
IPv6 extension header                       0
IPv6 extension hop by hop option            0
IPv6 extension destination option           0
IPv6 extension header limit                 0
IPv6 malformed header                       0
ICMPv6 malformed packet                     0
IP tunnel summary                           0
```

show security screen statistics zone trust tenant all

user@host> **show security screen statistics zone trust tenant all**

```
Logical system: root-logical-system
creen statistics:

IDS attack type                             Statistics
ICMP flood                                  0
UDP flood                                   0
TCP winnuke                                 0
TCP port scan                               0
UDP port scan                               0
ICMP address sweep                          0
TCP sweep                                   0
UDP sweep                                   0
IP tear drop                                0
TCP SYN flood                               0
SYN flood source                            0
```

```
SYN flood destination                    0
IP spoofing                              0
ICMP ping of death                       0
IP source route option                   0
TCP land attack                          0
TCP SYN fragment                         0
TCP no flag                              0
IP unknown protocol                      0
IP bad options                           0
IP record route option                   0
IP timestamp option                      0
IP security option                       0
IP loose source route option             0
IP strict source route option            0
IP stream option                         0
ICMP fragment                            0
ICMP large packet                        0
TCP SYN FIN                              0
TCP FIN no ACK                           0
Source session limit                     0
TCP SYN-ACK-ACK proxy                    0
IP block fragment                        0
Destination session limit                0
IPv6 extension header                    0
IPv6 extension hop by hop option         0
IPv6 extension destination option        0
IPv6 extension header limit              0
IPv6 malformed header                    0
ICMPv6 malformed packet                  0
IP tunnel summary                        0

Tenant: TN1
Screen statistics:

IDS attack type                          Statistics
ICMP flood                               0
UDP flood                                0
TCP winnuke                              0
TCP port scan                            0
UDP port scan                            0
ICMP address sweep                       0
TCP sweep                                0
UDP sweep                                0
IP tear drop                             0
```

```
TCP SYN flood                              0
SYN flood source                           0
SYN flood destination                      0
IP spoofing                                0
ICMP ping of death                         0
IP source route option                     0
TCP land attack                            0
TCP SYN fragment                           0
TCP no flag                                0
IP unknown protocol                        0
IP bad options                             0
IP record route option                     0
IP timestamp option                        0
IP security option                         0
IP loose source route option               0
IP strict source route option              0
IP stream option                           0
ICMP fragment                              0
ICMP large packet                          0
TCP SYN FIN                                0
TCP FIN no ACK                             0
Source session limit                       0
TCP SYN-ACK-ACK proxy                      0
IP block fragment                          0
Destination session limit                  0
IPv6 extension header                      0
IPv6 extension hop by hop option           0
IPv6 extension destination option          0
IPv6 extension header limit                0
IPv6 malformed header                      0
ICMPv6 malformed packet                    0
IP tunnel summary                          0
```

show services user-identification authentication-table

Syntax

```
show services user-identification authentication-table
<authentication-source | counter | ip-address>
show services user-identification authentication-table authentication-source
<active-directory | all | aruba-clearpass | identity-management>
show services user-identification authentication-table authentication-source active-directory
<brief | domain | extensive | group | logical-system | root-logical-system |summary |user>
show services user-identification authentication-table authentication-source all
<brief | domain | extensive |group | logical-system | root-logical-system |summary | user>
<domain domain>
<group (group-name | brief | domain | extensive | logical-system | root-logical-system | summary)>
<logical-system (logical-system-name| all)>
<node (node-id | all | local | primary)>
<root-logical-system (enter |brief | domain | extensive | node)>
<user (user-name | brief | domain | extensive | logical-system | node | root-logical-system | summary)>
show services user-identification authentication-table authentication-source active-directory
<brief | domain | extensive | group | logical-system | root-logical-system |summary |user>
show services user-identification authentication-table authentication-source identity-management source-name
show services user-identification authentication-table authentication-source identity-management tenant
   <tenant-name> extensive
show services user-identification authentication-table counter
show services user-identification authentication-table ip-address
<summary>
<logical-system logical-system-name>
<root-logical-system>
<tenant tenant-name>
<node node-id>
<IP address ip-address>
```

Release Information

Command introduced in Junos OS Release 12.

Support for Aruba ClearPass added in Junos OS release 12.3X48-D30.

Support added for identity-management as an authentication source in Junos OS Release 15.1X49-D100.

Support added for logical-system for **authentication-source all** in Junos OS Release 18.2R1.

Support added for tenant system for **authentication-source identity management** in Junos OS Release 19.1R1.

Description

Display the user identity information authentication table entries for the specified authentication source. You can display the entire contents of the specified authentication source's authentication table, or you can constrain the displayed information to a specific domain, group, or user based on the user name. You

can also display identity information for a user based on the IP address of the user's device. You can show brief or extensive information for all of these instances.

authentication-source—User authentication source whose authentication table or identity management server entries are to be displayed.

Authentication sources include:

active-directory—Display the SRX Series active-directory table contents. You can display all of the table's contents or you can delimit the display of user identity information by domain, group, or user name. You can display brief or extensive information for each of these categories.

- domain—Display the entries in the authentication table for the specified domain. You can display summary, group, or user entries for the specified domain.
- group—Display the entries from the authentication table for the specified group.
- user—Display the entries from the authentication table for the specified user based on the user name.

aruba-clearpass—Display the SRX Series Aruba ClearPass authentication table contents. You can display all of the table's contents or you can delimit the display of user information by domain, group, or user name. You can display brief or extensive information for each of these categories.

- domain—Display the entries in the authentication table for the specified domain. You can display summary, group, or user entries for the specified domain.
- group—Display the entries from the authentication table for the specified group.
- user—Display the entries from the authentication table for the specified user based on the user name.

identity-management —Display user identity entries contained in the identity-management authentication system.

- source-name—Name of the identity -management source. This could be the Juniper Identity Management Service (JIMS) or any third-party authentication source.
  - If you specify a source, such as "JIMS – Active Directory" for Juniper Identity Management Service, the SRX Series device will show entries only for that authentication source.

    Possible values include:

    - For JIMS: "JIMS – Active Directory", "JIMS – Exchange"
    - For ClearPass: "Aruba ClearPass"
- domain—Display the entries in the identity management system for the specified domain. You can display summary, group, or user entries for the specified domain.

- group—Display the entries in the identity management system for the specified group.
- user—Display the entries in the identity management system for the specified user based on the user name.
- tenant—Display the entries in the identity management system for the specified tenant system.

Options

- **all**—Summary of the authentication entry information for all entries.
- **group *group-name***—Entries from the authentication table or identity management system for the specified group.
- **ip-address *ip-address***—Entries from the authentication table or identity management system for the specified IP address.
- **user *name***—Entries from the authentication table for the specified username.
- **domain *name***—Summary, group, or user entries for the specified domain.
- **node**—(Optional) For chassis cluster configurations, the summary, IP address, or user entries for a specific node.
  - ***node-id***—Identification number of the node. It can be 0 or 1.
  - **all**—Display information about all nodes.
  - **local**—Display information about the local node.
  - **primary**—Display information about the primary node.
- **brief | extensive**—Display the specified level of output (the default is brief).
- **logical-system**—Display the authentication entries based on the logical system name.
- **root-logical-system**—Display the authentication entries based on the root logical system.
- **tenant *tanant-name***—Display the authentication entries based on the specified tenant system name.

Required Privilege Level

view

List of Sample Output

show services user-identification active-directory-access active-directory-authentication-table ip-address on page 1122
show services user-identification authentication-table ip-address on page 1123
show services user-identification active-directory-access active-directory-authentication-table all on page 1123
show services user-identification active-directory-access active-directory-authentication-table all extensive on page 1124

show services user-identification active-directory-access active-directory-authentication-table all domain on page 1125
All Authentication Sources on page 1125
show services user-identification authentication-table authentication-source all all-logical-systems-tenants on page 1128
Aruba ClearPass on page 1129
show services user-identification authentication-table authentication-source aruba-clearpass domain brief on page 1131
show services user-identification authentication-table authentication-source aruba-clearpass extensive on page 1131
show services user-identification authentication-table authentication-source identity-management brief on page 1134
show services user-identification authentication-table authentication-source identity-management extensive on page 1134
show services user-identification authentication-table authentication-source all extensive on page 1135
show services user-identification authentication-table authentication-source identity-management brief on page 1135
show services user-identification authentication-table authentication-source identity-management extensive on page 1136
show services user-identification authentication-table authentication-source identity-management tenant tn1 extensive on page 1137
show services user-identification authentication-table authentication-source all extensive on page 1138

Output Fields

Field Name	Field Description
Domain	Name of the domain that the users belong to. User identity and authentication information is display for all users who belong to the domain and for whom there are entries in the specified authentication source table or repository.
Total entries	Number of user entries in the authentication table, by domain.
For each entry:	
Source IP	The IP address of the user's device. If a user is logged in to the network with more than one device, a separate entry is created for the user for each device. It showing the devices IP address.
Username	The name by which the user is logged in to the network.
Groups	A list of the groups that the user belongs to. The list can include a group that identifies the device posture.

Field Name	Field Description
State	The state of the entry. There are four states for an authentication entry: initial, valid, invalid, and pending. • An initial state is a temporary state, and it can be created from either a valid or an invalid entry. The entry had not been pushed to the Packet Forwarding Engine. • A valid state indicates that the authentication entry has a valid IP address, domain, and username. The authentication entry is pushed to the Packet Forwarding Engine. • An invalid state indicates that the entry does not have a valid IP address, domain, and username. If the entry is invalid, it is put in the null domain. • A pending state indicates that the entry was created after the user query was sent and before the response was received. The IP address is being probed.
Source	Authentication source.
Access start date	The date when the authentication entry was created by the SRX Series device.
Access start time	The time when the authentication entry was created by the SRX Series device.
Last updated timestamp	The time when the user information was created. This value is taken from the timestamp field in the user information.
Age time	The time, in minutes, after which the entry expires, as configured by the authentication-entry-timeout statement. If a value of 0 was specified, the entry never expires.
Forced Age time	The rest value and the forced value. This information is made available if you configure the firewall-authentication-forced-timeout statement for active directory.

Active Directory

show services user-identification active-directory-access active-directory-authentication-table ip-address

Output of this command displays authentication and identity information for a specific user based on the IP address of the user's device.

user@host> **show services user-identification active-directory-access active-directory-authentication-table ip-address 198.51.100.3.**

```
Domain: ad.example.net
 Source-ip: 198.51.100.3
  Username: user1
  Groups:group1
  State: Valid
  Source: wmic
  Access start date: 2014-03-10
  Access start time: 13:59:56
  Age time: 1437
```

show services user-identification authentication-table ip-address

Output of this command displays authentication and identity information for a specific user based on the IP address of the user's device.

user@host> **show services user-identification authentication-table ip-address 2001:db8::1:1**

```
Domain: ac.example.net
 Source-ip: 2001:db8::1:1
  Username: user1
  Groups:group1
  State: Valid
  Source: wmic
  Access start date: 2017-05-10
  Access start time: 13:59:56
  Age time: 1437
```

show services user-identification active-directory-access active-directory-authentication-table all

Output of this command displays user authentication and identity information for all users for whom there are entries in the active directory authentication table.

user@host> **show services user-identification active-directory-access active-directory-authentication-table all**

```
Domain: www.engineering-example.net
Total count: 2
Source IP       Username      Groups          State
198.51.100.22     u2           r1, r3, r4      initial
198.51.100.23     u3           r5, r6, r4      pending
```

```
Domain: www.hr-example.net
Total count: 2
Source IP       Username      Groups          State
 198.51.100.26    u4           r1, r3, r4      initial
 198.51.100.27    u5           r5, r6, r4      pending
```

show services user-identification active-directory-access active-directory-authentication-table all extensive

Output of this command, which specifies the **extensive** option, shows state and access information for all entries in the active directory authentication table, in addition to basic information displayed when the **brief** option is used and by default.

`user@host>` **show services user-identification active-directory-access active-directory-authentication-table all extensive**

```
Domain: www.mycompany-example.com
Total entries: 2

Source IP: 198.51.100.29
Username: u2
Groups: r1, r3, r4
State: inital
Access start date: 2013-05-22
Access start time: 10:56:58
Age time: 20 min

Source IP: 198.51.100.30
Username: u3
Groups: r5, r6, r4
State: pending
Access start date: 2013-05-22
Access start time: 10:56:58
Age time: 20 min

Domain: www.hr-example.net
Total entries: 2

Source IP: 198.51.100.31
Username: u2
Groups: r1, r3, r4
State: inital
Access start date: 2013-05-22
```

```
Access start time: 10:56:58
Age time: 20 min

Source IP: 198.51.100.32
Username: u3
Groups: r5, r6, r4
State: pending
Access start date: 2013-05-22
Access start time: 10:56:58
Age time: 20
```

show services user-identification active-directory-access active-directory-authentication-table all domain

Output of this command shows by default brief user identity and authentication information for all users for whom there are entries in the active directory authentication table and whose devices belong to the specified domain.

`user@host>` **show services user-identification active-directory-access active-directory-authentication-table all domain www.mydomain-example.com**

```
Domain: www.mydomain-example.com
Total count: 2
Source IP       Username      Groups          State
 198.51.100.36    u2          r1, r3, r4      initial
 198.51.100.37    u3          r5, r6, r4      pending
```

All Authentication Sources

Output of this command shows extensive user identity and authentication information for all users with entries in authentication tables of any authentication source. This example shows only one entry to illustrate the content that is displayed with the extensive option.

`user@host>` **show services user-identification authentication-table authentication-source all extensive**

```
Domain: ad-userfw-example.net
       Total entries: 1
       Source-ip: 198.51.100.1/24
       Username: administrator
       State: Valid
       Source: firewall-authentication
       Access start date: 2016-10-27
```

```
       Access start time: 09:30:27
       Age time: 30
```

user@host> **show services user-identification authentication-table authentication-source all logical-system**

```
lsys1
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system

Domain: ad2012.jims.com
Total entries: 18003
Source IP       Username       groups(Ref by policy)          state
bbbb:bbbb:bbbb: jimsuser18000                                 Valid
bbbb:bbbb:bbbb: jimsuser17999                                 Valid
bbbb:bbbb:bbbb: jimsuser17998                                 Valid
bbbb:bbbb:bbbb: jimsuser17997                                 Valid
bbbb:bbbb:bbbb: jimsuser17996                                 Valid
bbbb:bbbb:bbbb: jimsuser17995                                 Valid
bbbb:bbbb:bbbb: jimsuser17994                                 Valid
bbbb:bbbb:bbbb: jimsuser17993                                 Valid
```

user@host> **show services user-identification authentication-table authentication-source all root-logical-system**

```
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system

Domain: ad2012.jims.com
Total entries: 18003
Source IP       Username       groups(Ref by policy)          state
bbbb:bbbb:bbbb: jimsuser10745
bbbb:bbbb:bbbb: jimsuser18000                                 Valid
bbbb:bbbb:bbbb: jimsuser17999                                 Valid
bbbb:bbbb:bbbb: jimsuser17998                                 Valid
bbbb:bbbb:bbbb: jimsuser17997                                 Valid
bbbb:bbbb:bbbb: jimsuser17996                                 Valid
bbbb:bbbb:bbbb: jimsuser17995                                 Valid
```

```
bbbb:bbbb:bbbb: jimsuser17994                                  Valid
bbbb:bbbb:bbbb: jimsuser17993                                  Valid
bbbb:bbbb:bbbb: jimsuser17992                                  Valid
user@host> show services user-identification authentication-table
authentication-source all node 0
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system

Domain: ad2012.jims.com
Total entries: 18003
Source IP       Username       groups(Ref by policy)          state
bbbb:bbbb:bbbb: jimsuser14716
bbbb:bbbb:bbbb: jimsuser18000                                  Valid
bbbb:bbbb:bbbb: jimsuser17999                                  Valid
bbbb:bbbb:bbbb: jimsuser17998                                  Valid
bbbb:bbbb:bbbb: jimsuser17997                                  Valid
bbbb:bbbb:bbbb: jimsuser17996                                  Valid
bbbb:bbbb:bbbb: jimsuser17995                                  Valid
bbbb:bbbb:bbbb: jimsuser17994                                  Valid
bbbb:bbbb:bbbb: jimsuser17993                                  Valid
```

`user@host>` **show services user-identification authentication-table authentication-source all node 0 logical-system lsys1**

```
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system

Domain: ad2012.jims.com
Total entries: 18003
Source IP       Username       groups(Ref by policy)          state
bbbb:bbbb:bbbb: jimsuser18000                                  Valid
bbbb:bbbb:bbbb: jimsuser17999                                  Valid
bbbb:bbbb:bbbb: jimsuser17998                                  Valid
bbbb:bbbb:bbbb: jimsuser17997                                  Valid
bbbb:bbbb:bbbb: jimsuser17996                                  Valid
bbbb:bbbb:bbbb: jimsuser17995                                  Valid
bbbb:bbbb:bbbb: jimsuser17994                                  Valid
```

```
bbbb:bbbb:bbbb: jimsuser17993                                  Valid
bbbb:bbbb:bbbb: jimsuser17992                                  Valid
```

user@host> **show services user-identification authentication-table authentication-source all node 0**

```
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system

Domain: ad2012.jims.com
Total entries: 18003
Source IP       Username       groups(Ref by policy)          state
bbbb:bbbb:bbbb: jimsuser1213
bbbb:bbbb:bbbb: jimsuser18000                                  Valid
bbbb:bbbb:bbbb: jimsuser17999                                  Valid
bbbb:bbbb:bbbb: jimsuser17998                                  Valid
bbbb:bbbb:bbbb: jimsuser17997                                  Valid
bbbb:bbbb:bbbb: jimsuser17996                                  Valid
bbbb:bbbb:bbbb: jimsuser17995                                  Valid
bbbb:bbbb:bbbb: jimsuser17994                                  Valid
bbbb:bbbb:bbbb: jimsuser17993                                  Valid
```

show services user-identification authentication-table authentication-source all all-logical-systems-tenants

Output of this command displays brief user authentication and identity information for all users for whom there are entries in the identity-management authentication source.

user@host> **show services user-identification authentication-table authentication-source all all-logical-systems-tenants**

```
node0:
--------------------------------------------------------------------------
Logical System: ld1
Domain: ad03.net
Total entries: 4
Source IP       Username       groups(Ref by policy)          state
12.0.0.2        administrator  posture-healthy                Valid
12.0.0.15       administrator  posture-healthy                Valid
3000::5         N/A            posture-healthy                Valid
2001:db8:::302b N/A        posture-healthy               Valid

Logical System: tn1
```

```
Domain: ad03.net
Total entries: 4
Source IP       Username       groups(Ref by policy)          state
12.0.0.2        administrator  posture-healthy                Valid
12.0.0.15       administrator  posture-healthy                Valid
3000::5         N/A            posture-healthy                Valid
2001:db8:::302b N/A            posture-healthy                Valid
```

Aruba ClearPass

show services user-identification authentication-table authentication-source aruba-clearpass domain extensive

Output of this command shows extensive user identity and authentication information, when Aruba ClearPass is used as the authentication source, for all users whose devices belong to the GLOBAL domain.

`user@host>` **show services user-identification authentication-table authentication-source aruba-clearpass domain GLOBAL extensive**

```
Domain: GLOBAL
Total entries: 7
  Source-ip: 203.0.113.21
    Username: vikiyr
    Groups:posture-healthy, accounting-grp, accounting-grp-and-company-device,
    corporate-limited, [user authenticated]
    Groups referenced by policy:accounting-grp-and-company-device,
    corporate-limited
    State: Valid
    Source: Aruba ClearPass
    Access start date: 2016-03-08
    Access start time: 17:20:30
    Last updated timestamp: 2015-12-22 04:02:48
    Age time: 0
  Source-ip: 203.0.113.89
    Username: abewhfy
    Groups:posture-unknown, marketing-access-limited-grp, [user authenticated]
    Groups referenced by policy:marketing-access-limited-grp
    State: Valid
    Source: Aruba ClearPass
    Access start date: 2016-03-08
    Access start time: 17:31:40
    Last updated timestamp: 2015-12-22 04:18:48
    Age time: 0
  Source-ip: 203.0.113.52
```

```
  Username: jjxchan
  Groups:posture-healthy, marketing-access-for-pcs-limited-group,
  marketing-general, sales-limited, corporate-limited, [user authenticated]
  Groups referenced by policy:marketing-access-for-pcs-limited-group,
  corporate-limited
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:22:48
  Last updated timestamp: 2015-12-22 05:46:21
  Age time: 0
Source-ip: 203.0.113.53
  Username: ltchen1
  Groups:posture-healthy, human-resources-grp, accounting-limited,
  corporate-limited, [user authenticated]
  Groups referenced by policy:corporate-limited
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:21:37
  Last updated timestamp: 2015-12-22 05:41:18
  Age time: 0
Source-ip: 203.0.113.54
  Username: guest1
  Groups:posture-healthy, guest, [user authenticated]
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:23:10
  Last updated timestamp: 2015-12-22 05:50:47
  Age time: 0
Source-ip: 203.0.113.55
  Username: guest2
  Groups:posture-healthy, guest-device-byod, [user authenticated]
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:23:21
  Last updated timestamp: 2015-12-22 05:52:44
  Age time: 0
Source-ip: 2001:db8:4136:e378:8000:63bf:3fff:fdd2
  Username: guest3
  Groups:posture-healthy, guest-device-grp, [user authenticated]
  State: Valid
```

```
    Source: Aruba ClearPass
    Access start date: 2016-03-08
    Access start time: 17:23:21
    Last updated timestamp: 2015-12-22 05:52:44
    Age time: 0
```

show services user-identification authentication-table authentication-source aruba-clearpass domain brief

Output of this command shows brief user identity and authentication information for users whose devices belong to the GLOBAL domain.

If you do not specify brief, the same information would be displayed. The default behavior is to show brief output.

`user@host>` **show services user-identification authentication-table authentication-source aruba-clearpass domain GLOBAL brief**

```
Domain: GLOBAL
Total entries: 6
Source IP                               Username       groups(Ref by policy)
      state
203.0.113.71                            taviki2
accounting-grp-and-company-dev  Valid
203.0.113.89                            gabewb1
marketing-access-limited-grp    Valid
203.0.113.92                            tljxchan
marketing-access-for-pcs-limit  Valid
203.0.113.93                            tjlchen1         corporate-limited
         Valid
203.0.113.94                            guest1
         Valid
203.0.113.95                            guest2
         Valid
2001:db8:4136:e378:8000:63bf:3fff:fdd2  guest2
         Valid
```

show services user-identification authentication-table authentication-source aruba-clearpass extensive

Output of the following command shows extensive user identity and authentication information for all users authenticated by Aruba ClearPass for whom entries exist in the aruba-clearpass authentication table.

user@host> **show services user-identification authentication-table authentication-source aruba-clearpass extensive**

```
Domain: GLOBAL
Total entries: 7
  Source-ip: 203.0.113.31
    Username: vjki2
    Groups:posture-healthy, accounting-grp, accounting-grp-and-company-device,
    corporate-limited, [user authenticated]
    Groups referenced by policy:accounting-grp-and-company-device,
    corporate-limited
    State: Valid
    Source: Aruba ClearPass
    Access start date: 2016-03-08
    Access start time: 17:20:30
    Last updated timestamp: 2015-12-22 04:02:48
    Age time: 0
  Source-ip: 203.0.113.89
    Username: labew11
    Groups:posture-unknown, marketing-access-limited-grp, [user authenticated]
    Groups referenced by policy:marketing-access-limited-grp
    State: Valid
    Source: Aruba ClearPass
    Access start date: 2016-03-08
    Access start time: 17:31:40
    Last updated timestamp: 2015-12-22 04:18:48
    Age time: 0
  Source-ip: 203.0.113.62
    Username: dxchan45
    Groups:posture-healthy, marketing-access-for-pcs-limited-group,
    marketing-general, sales-limited, corporate-limited, [user authenticated]
    Groups referenced by policy:marketing-access-for-pcs-limited-group,
    corporate-limited
    State: Valid
    Source: Aruba ClearPass
    Access start date: 2016-03-08
    Access start time: 17:22:48
    Last updated timestamp: 2015-12-22 05:46:21
    Age time: 0
  Source-ip: 2001:db8:4136:e378:8000:63bf:3fff:fdd2
    Username: efchan47
    Groups:posture-healthy, marketing-access-for-pcs-limited-group,
    marketing-general, sales-limited, corporate-limited, [user authenticated]
```

```
  Groups referenced by policy:marketing-access-for-pcs-limited-group,
  corporate-limited
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:22:48
  Last updated timestamp: 2015-12-22 05:46:21
  Age time: 0
Source-ip: 203.0.113.83
  Username: ljhen1
  Groups:posture-healthy, human-resources-grp, accounting-limited,
  corporate-limited, [user authenticated]
  Groups referenced by policy:corporate-limited
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:21:37
  Last updated timestamp: 2015-12-22 05:41:18
  Age time: 0
Source-ip: 203.0.113.34
  Username: guest1
  Groups:posture-healthy, guest, [user authenticated]
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:23:10
  Last updated timestamp: 2015-12-22 05:50:47
  Age time: 0
Source-ip: 203.0.113.95
  Username: guest2
  Groups:posture-healthy, guest-device-byod, [user authenticated]
  State: Valid
  Source: Aruba ClearPass
  Access start date: 2016-03-08
  Access start time: 17:23:21
  Last updated timestamp: 2015-12-22 05:52:44
  Age time: 0
```

Identity Management

show services user-identification authentication-table authentication-source identity-management brief

Output of this command displays brief user authentication and identity information for all users for whom there are entries in the identity-management authentication source.

`user@host>` **show services user-identification authentication-table authentication-source identity-management brief**

```
Domain: ad-domaine-example.net
Total entries: 5
Source IP       Username       groups(Ref by policy)          state
198.51.100.63    N/A                                          Valid
203.0.113.30     administrator                                Valid
203.0.113.18     N/A                                          Valid
198.51.100.69    N/A                                          Valid
198.51.100.66    administrator                                Valid

Domain: NULL
Total entries: 1
Source IP       Username       groups(Ref by policy
```

show services user-identification authentication-table authentication-source identity-management extensive

Output of this command displays extensive user authentication and identity information for all users for whom there are entries in the identity-management authentication source.

`user@host>` **show services user-identification authentication-table authentication-source identity-management extensive**

```
Domain: ad-domain2-example.net
Total entries: 5
  Source-ip: 198.51.100.63
    Username: N/A
    Groups:posture-healthy
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-06-05
    Access start time: 09:28:45
    Last updated timestamp: 2017-06-06 08:41:56
    Age time: 0
  Source-ip: 198.51.100.66
    Username: administrator
```

```
   Groups:posture-healthy, group policy creator owners, enterprise admins, schema
admins, domain admins,
    administrators, denied rodc password replication group
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-06-05
    Access start time: 09:23:44
    Last updated timestamp: 2017-06-06 08:11:45
    Age time: 0
```

show services user-identification authentication-table authentication-source all extensive

Output of this command, which specifies the extensive option, shows state and access information for all entries.

`user@host>` **show services user-identification authentication-table authentication-source identity-management extensive**

```
Domain: jims-dom1.local
Total entries: 1
Source-ip: 2001:db8:4136:e378:8000:63bf:3fff:fdd2
Username: user1
Groups:posture-healthy
Groups referenced by policy:posture-healthy
State: Valid
Source: JIMS - Active Directory
Access start date: 2017-08-23
Access start time: 15:06:32
Last updated timestamp: 2017-06-07 02:50:10
Age time: 30
```

Identity Management

show services user-identification authentication-table authentication-source identity-management brief

Output of this command displays brief user authentication and identity information for all users for whom there are entries in the identity-management authentication source.

`user@host>` **show services user-identification authentication-table authentication-source identity-management brief**

```
Domain: ad-domaine-example.net
Total entries: 5
Source IP       Username       groups(Ref by policy)          state
198.51.100.63    N/A                                          Valid
203.0.113.30     administrator                                Valid
203.0.113.18     N/A                                          Valid
198.51.100.69    N/A                                          Valid
198.51.100.66    administrator                                Valid

Domain: NULL
Total entries: 1
Source IP       Username       groups(Ref by policy
```

show services user-identification authentication-table authentication-source identity-management extensive

Output of this command displays extensive user authentication and identity information for all users for whom there are entries in the identity-management authentication source.

`user@host>` **show services user-identification authentication-table authentication-source identity-management extensive**

```
Domain: ad-domain2-example.net
Total entries: 5
  Source-ip: 198.51.100.63
    Username: N/A
    Groups:posture-healthy
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-06-05
    Access start time: 09:28:45
    Last updated timestamp: 2017-06-06 08:41:56
    Age time: 0
  Source-ip: 198.51.100.66
    Username: administrator
    Groups:posture-healthy, group policy creator owners, enterprise admins, schema
 admins, domain admins,
    administrators, denied rodc password replication group
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-06-05
    Access start time: 09:23:44
    Last updated timestamp: 2017-06-06 08:11:45
    Age time: 0
```

show services user-identification authentication-table authentication-source identity-management tenant tn1 extensive

Output of this command, which specifies the extensive option, shows state and access information for all entries.

`user@host>` **show services user-identification authentication-table authentication-source identity-management tenant tn1 extensive**

```
node0:
--------------------------------------------------------------------------
Logical System: root-logical-system

Domain: ad03.net
Total entries: 4
  Source-ip: 12.0.0.15
    Username: administrator
    Groups:posture-healthy, admin, group policy creator owners, domain admins,
enterprise admins, schema admins, administrators, denied rodc password replication
 group
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-12-05
    Access start time: 09:36:30
    Last updated timestamp: 2017-12-04 15:45:51
    Age time: 0
  Source-ip: 3000::12
    Username: jasonlee
    Groups:posture-healthy, domain users, users, group1
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-12-05
    Access start time: 09:36:30
    Last updated timestamp: 2017-12-04 15:46:46
    Age time: 0
  Source-ip: 3000::5
    Username: N/A
    Groups:posture-healthy
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-12-05
    Access start time: 09:36:30
    Last updated timestamp: 2017-12-04 16:01:18
    Age time: 0
  Source-ip: fe80::342c:302b:6cb4:e109
    Username: N/A
```

```
    Groups:posture-healthy
    State: Valid
    Source: JIMS - Active Directory
    Access start date: 2017-12-05
    Access start time: 09:36:30
Last updated timestamp: 2017-12-04 16:01:14
Age time: 0
```

Firewall Authentication Forced Age Timeout

Output shows the “Forced Age timeout” value is displayed when the firewall authentication forced timeout function is configured, but only for when the extensive option is used. The value shows the remaining time left based on the forced timeout setting.

show services user-identification authentication-table authentication-source all extensive

```
user@host> show services user-identification authentication-table
authentication-source all extensive
```

```
Domain: ad-userfw.net
Total entries: 1
  Source-ip: 198.51.100.98
    Username: administrator
    State: Valid
    Source: firewall-authentication
    Access start date: 2016-10-27
    Access start time: 09:30:27
    Age time: 30
    Forced Age time:  30/180
```

show services user-identification logical-domain-identity-management

Syntax

```
show services user-identification logical-domain-identity-management
<counters>
<status>
```

Release Information

Command introduced in Junos OS Release 19.3R1.

Description

Displays the information about the logical domain identity-management.

Options

counters—Displays the logical domain identity management query counters.

status—Displays logical domain identity management query status.

Required Privilege Level

view

RELATED DOCUMENTATION

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List of Sample Output

show services user-identification logical-domain-identity-management status on page 1141
show services user-identification logical-domain-identity-management counters on page 1141

Output Fields

Table 84 on page 1139 lists the output fields for the **show services user-identification logical-domain-identity-management** command. Output fields are listed in the approximate order in which they appear.

Table 84: show services user-identification logical-domain-identity-management Output Fields

Field Name	Field Description
Node	Node (device) in the Juniper Identity Management Service server (node0 or node1).

Table 84: show services user-identification logical-domain-identity-management Output Fields *(continued)*

Field Name	Field Description
Query server name	A Juniper Identity Management Service server stores the records for a domain name and responds to queries from clients based on these records.
For primary server:	
Address	For the status option, the IP address of the primary server.
Port	The name of the port.
Connection method	The SRX Series device that connects to the Juniper Identity Management Service server to obtain user identity information.
Connection status	The status of SRX series device connection to the Juniper Identity Management Service server.
Last received status message	The last message received.
Access token	Token string.
Token expiry time	The access token expiry time.
For secondary server:	
Address	For the status option, the IP address of the secondary server.
Batch query sent number	A number indicating how many batch queries the SRX Series device sent to the Juniper Identity Management Service server.
Batch query total response number	A number indicating how many responses the SRX Series device received from the Juniper Identity Management Service server in response to its batch queries.
Batch query error response number	A number indicating how many error responses the SRX Series device received from the Juniper Identity Management Service server in response to its batch queries.
Batch query last response time	Timestamp indicating when the last response was received.
IP query sent number	A number indicating how many IP queries the SRX Series device sent to the Juniper Identity Management Service server.

Table 84: show services user-identification logical-domain-identity-management Output Fields *(continued)*

Field Name	Field Description
IP query total response number	A number indicating how many responses the SRX Series device received from the Juniper Identity Management Service server in response to its IP queries.
IP query error response number	A number indicating how many error responses the SRX Series device received from the Juniper Identity Management Service server in response to its IP queries.
IP query last response time	Timestamp indicating when the last response was received.

Sample Output

show services user-identification logical-domain-identity-management status

`user@host>` **show services user-identification logical-domain-identity-management status**

```
node0:
--------------------------------------------------------------------------
Query server name                :jims1
   Primary server :
     Address                     : 192.0.2.0/24
     Port                        : 443
     Connection method           : HTTPS
     Connection status           : Online
     Last received status message : OK (200)
     Access token                : isdHIbl8BXwxFftMRubGVsELRukYXtW3rtKmHiL
     Token expire time           : 2017-11-27 23:45:22
  Secondary server :
     Address                     : Not configured
```

show services user-identification logical-domain-identity-management counters

`user@host>` **show services user-identification logical-domain-identity-management counters**

```
node0:
--------------------------------------------------------------------------
Query server name                    :jims1
  Primary server :
```

```
    Address                          : 203.0.113.0/24
    Batch query sent number          : 65381
    Batch query total response number : 64930
    Batch query error response number : 38
    Batch query last response time    : 2018-08-14 15:10:52
    IP query sent number             : 10
    IP query total response number    : 10
    IP query error response number    : 0
    IP query last response time       : 2018-08-13 12:41:56
 Secondary server :
Address                          : Not configured
```

show system security-profile

Syntax

```
show system security-profile (all-resource | resource)
detail | terse
logical-system (logical-system-name )
root-logical-system
tenant (tenant-name )
```

Release Information

Command introduced in Junos OS Release 11.2.
Support for application firewall added in Junos OS Release 11.3.
Option to display all resources for a logical system added in Junos OS Release 11.
Resource information for ports in source NAT pools with port translation added in Release Junos OS 11.4.
The tenant option is introduced in Junos OS Release 18.3R1.
The icap redirect profile option is introduced in Junos OS Release 18.3R1.

Description

Display information about a resource allocated to the logical system in a security profile. For each resource specified, the number used by the logical system and the configured maximum and reserved values are displayed.

The **show system security-profile** command can be used by the master administrator to display resource information for the master logical system or user logical system. This command can also be used by the user logical system administrator to display resource information for a user logical system.

Options

Either specify **all-resource** to display information about all resources allocated for the logical system, or specify one of the following resources:

- address-book—Address books.
- appfw-rule-set—Application firewall rule set entries.
- appfw-rule—Application firewall rule entries.
- auth-entry—Firewall authentication entries.
- cpu—CPU utilization.
- flow-gate—Flow gates, also known as pinholes.
- flow-session—Flow sessions.
- icap-redirect-profile—ICAP redirect profile resource information.
- nat-cone-binding—Network Address Translation (NAT) cone bindings.

- nat-destination-pool—NAT destination pools.
- nat-destination-rule—NAT destination rules.
- nat-nopat-address—NAT without port address translations.
- nat-pat-address—NAT with port address translations.
- nat-pat-portnum—NAT source port numbers for port translation
- nat-port-ol-ipnumber—NAT port overloading IP numbers.
- nat-rule-referenced-prefix—NAT rule referenced IP-prefixes.
- nat-source-pool—NAT source pools.
- nat-source-rule—NAT source rules.
- nat-static-rule—NAT static rules.
- policy—Security policies.
- policy-with-count—Security policies with a count.
- scheduler—Schedulers.
- zone—Security zones.

detail | terse—(Optional) Display the specified level of output.

The following options are available only to the master administrator:

- logical-system—Display resource information for a specified user logical system. Specify **all** to display resource information for all logical systems, including the master logical system.
- root-logical-system—Display resource information for the master (root) logical system.
- summary—Display summary information about the resource for all logical systems.
- tenant—Display resource information for a specified tenant system. Specify **all** to display resource information for all tenant systems.

Required Privilege Level
view

RELATED DOCUMENTATION

security-profile-resources | 809

List of Sample Output
show system security-profile all-resource on page 1145
show system security-profile all-resource tenant all on page 1146
show system security-profile policy on page 1147

show system security-profile cpu on page 1147
show system security-profile cpu logical-system all on page 1148
show system security-profile cpu summary on page 1148
show system security-profile nat-pat-portnum on page 1149
show system security-profile nat-pat-portnum summary on page 1149
show system security-profile icap-redirect-profile logical-system all on page 1149

Output Fields

Table 85 on page 1145 lists the output fields for the **show system security-profile** command. Output fields are listed in the approximate order in which they appear.

Table 85: show system security-profile Output Fields

Field Name	Field Description
logical system name	Name of the logical system.
tenant name	Name of the tenant system.
security profile name	Name of the security profile bound to the logical system.
usage	Number of resources that are currently being used by the logical system.
reserved	Number of resources that are guaranteed to be available to the logical system.
maximum	Number of resources that the logical system can use. The maximum does not guarantee that the amount specified for the resource in the security profile is available. The maximum is not applicable for CPU resources.
CPU control	**TRUE** if CPU control is enabled or **FALSE** if CPU control is not enabled.
CPU control target	Upper limit for CPU utilization on the device. The default value is 80 percent.
CPU name	Central point (CP) or services processing unit (SPU). CP utilization and average utilization of all SPUs is shown. The **detail** option shows CPU utilization on each SPU.
drop rate	Packets dropped for CPU control.

Sample Output

show system security-profile all-resource

```
user@host> show system security-profile all-resource
```

```
resource                                usage    reserved     maximum

[logical system name:   root-logical-system]
[security profile name: Default-Profile]
address-book                                0           0         512
auth-entry                                  0           0  2147483647
cpu on CP                                0.00%       1.00%      80.00%
cpu on SPU                               0.00%       1.00%      80.00%
flow-gate                                   0           0      524288
flow-session                                2           0     6291456
nat-cone-binding                            0           0       65536
nat-destination-pool                        0           0        4096
nat-destination-rule                        0           0        8192
nat-nopat-address                           0           0     1048576
nat-pat-address                             0           0        2048
nat-port-ol-ipnumber                        0           0           4
nat-rule-referenced-prefix                  0           0     1048576
nat-source-pool                             0           0        2048
nat-source-rule                             0           0        8192
nat-static-rule                             0           0       20480
policy                                      0           0       40000
policy-with-count                           0           0        1024
scheduler                                   0           0          64
zone                                        0           0         512
```

show system security-profile all-resource tenant all

`user@host>` **show system security-profile all-resource tenant all**

```
resource                                usage    reserved     maximum

[logical system or tenant name: tn1]
[security profile name:         SP1]
address-book                                0           0        2000
appfw-profile                               0           0        2048
appfw-rule                                  0           0      114688
appfw-rule-set                              0           0       57344
auth-entry                                  0           0       50000
cpu on CP                                0.00%       0.00%      80.00%
cpu on SPU                               0.00%       0.00%      80.00%
dslite-softwire-initiator                   0           0      100000
flow-gate                                   0           0      524288
```

```
flow-session                                0          0   119537664
icap-redirect-profile                       0          0          64
nat-cone-binding                            0          0     2097152
nat-destination-pool                        0          0        8192
nat-destination-rule                        0          0       30720
nat-interface-port-ol                       0          0         256
nat-nopat-address                           0          0     4194304
nat-pat-address                             0          0     1048576
nat-pat-portnum                             0          0  2576980378
nat-port-ol-ipnumber                        0          0         128
nat-rule-referenced-prefix                  0          0     1048576
nat-source-pool                             0          0       12288
nat-source-rule                             0          0       30720
nat-static-rule                             0          0       30720
policy                                      0          0       80000
policy-with-count                           0          0        1024
scheduler                                   0          0          64
security-log-stream-number                  1          0           3
sla-policy                                  0          0        1024
zone                                        0          0        2000
```

show system security-profile policy

user@host> **show system security-profile policy**

```
logical system name   security profile name       usage    reserved     maximum

ls-product-design     ls-design-profile              0          40          50
```

show system security-profile cpu

user@host> **show system security-profile cpu**

```
CPU control: TRUE
CPU control target: 80.00%
logical system name    profile name    CPU name    usage(%)    reserved(%)    drop
 rate(%)
root-logical-system    Default-Profile CP             0.00%          1.00%
    0.00%
root-logical-system    Default-Profile SPU            0.00%          1.00%
    0.00%
```

show system security-profile cpu logical-system all

user@host> **show system security-profile cpu logical-system all**

```
CPU control: TRUE
CPU control target: 80.00%
logical system name    profile name    CPU name    usage(%)    reserved(%)    drop
 rate(%)
root-logical-system    Default-Profile CP             0.00%          1.00%
    0.00%
root-logical-system    Default-Profile SPU            0.00%          1.00%
    0.00%
ls-product-design      ls-design-profile CP           0.00%          0.00%
    0.00%
ls-product-design      ls-design-profile SPU          0.00%          0.00%
    0.00%
ls-marketing-dept      ls-acct-mrkt-profile CP        0.00%          0.00%
    0.00%
ls-marketing-dept      ls-acct-mrkt-profile SPU       0.00%          0.00%
    0.00%
```

```
logical system name    security profile name    usage    reserved    maximum
root-logical-system    Default-Profile         67108864     0      134217728
lsys1                  profile1                193536     6000     134217728
```

show system security-profile cpu summary

user@host> **show system security-profile cpu summary**

```
CPU control: TRUE
CPU control target: 80.00%

CPU type                :     CP
global used amount      :  0.00%
global maximum quota    : 80.00%
global available amount : 80.00%
total logical systems   :      3
total security profiles :      3
heaviest usage / user   :  0.00%      / root-logical-system
lightest usage / user   :  0.00%      / root-logical-system

CPU type                :    SPU
global used amount      :  0.00%
global maximum quota    : 80.00%
```

```
global available amount : 80.00%
total logical systems   :      3
total security profiles :      3
heaviest usage / user   :  0.00%      / root-logical-system
lightest usage / user   :  0.00%      / root-logical-system
```

show system security-profile nat-pat-portnum

```
user@host> show system security-profile cpu nat-pat-portnum
```

```
CPU control: TRUE
CPU control target: 80.00%
logical system name    security profile name        usage(%)    reserved(%)
maximum
root-logical-system    Default-Profile CP             67108864          0
   134217728
```

show system security-profile nat-pat-portnum summary

```
user@host> show system security-profile nat-pat-portnum summary
```

```
global used amount    :67302400
global maximum quota    :134217728
global available amount   :66915328
total logical systems    :2
total security profiles   :1
heaviest usage / user    :193536 / lsys1
```

show system security-profile icap-redirect-profile logical-system all

```
user@host> show system security-profile icap-redirect-profile logical-system all
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                2           0
   64
LSYS1                        SP1                            1          30
   64
LSYS2                        SP2                            1          30
```

64

show system security-profile secure-wire

Syntax

```
show system security-profile secure-wire
<all-logical-systems-tenants>
<detail>
<logical-system (all | logical-system-name)>
<root-logical-system>
<summary>
<tenant (all | tenant-system-name)>
<terse>
```

Release Information

Command introduced in Junos OS Release 12.3X48-D10.
logical-system option introduced in Junos OS Release 19.3R1.

Description

Display information about secure wire resource allocation.

Options

- none—Display information about all configured secure wire resource allocation.
- all-logical-systems-tenants—Display information about all configured logical system and tenant system.
- detail—Display detailed information about all configured logical system and tenant system.
- logical-system (all | *logical-system-name*)—Perform this operation on all logical systems or on a particular logical system.
- root-logical-system—Perform this operation for master logical systems.
- summary—Display detailed summary of resource allocation.
- tenant (all | *tenant-system-name*)—Secure wire does not support tenant system.
- terse—Display summary of resource allocation.

Required Privilege Level

view

RELATED DOCUMENTATION

Understanding Secure Wire on Security Devices

Secure Wire for Logical Systems | 222

List of Sample Output

show system security-profile secure-wire on page 1152
show system security-profile secure-wire logical-system LSYS1 on page 1153
show system security-profile secure-wire all-logical-systems-tenants on page 1153
show system security-profile secure-wire detail on page 1153
show system security-profile secure-wire summary on page 1154
show system security-profile secure-wire terse on page 1154

Output Fields

Table 86 on page 1152 lists the output fields for the **show system security-profile secure-wire** command in the approximate order in which they appear.

Table 86: show system security-profile secure-wire Output Fields

Field Name	Field Description
logical-system tenant name	Name of the logical system and tenant system.
security profile name	Name of the security profile name.
usage	Number of usage that are currently being used by the logical system.
reserved	Number of resources that are guaranteed to be available to the logical system.
maximum	Number of resources that the logical system can use. The maximum does not guarantee that the amount specified for the resource in the security profile is available. The maximum is not applicable for CPU resources.

Sample Output

show system security-profile secure-wire

```
user@host> show system security-profile secure-wire

logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                0          0
  255
```

Sample Output

show system security-profile secure-wire logical-system LSYS1

```
user@host> show system security-profile secure-wire logical-system LSYS1

logical-system tenant name   security profile name       usage    reserved
maximum

LSYS1                        prof1                           1           1
    100
```

Sample Output

show system security-profile secure-wire all-logical-systems-tenants

```
user@host> show system security-profile secure-wire all-logical-systems-tenants

logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                0           0
  255
LSYS1                        prof1                          1           1
  100
```

Sample Output

show system security-profile secure-wire detail

```
user@host> show system security-profile secure-wire detail

logical-system tenant name : root-logical-system
security profile name      : Default-Profile
used amount                : 0
```

```
reserved amount            : 0
maximum quota              : 255
```

Sample Output

show system security-profile secure-wire summary

`user@host>` **show system security-profile secure-wire summary**

```
global used amount            : 1
global maximum quota          : 255
global available amount       : 254
total logical systems/tenants : 2
total security profiles       : 1
heaviest usage / user         : 1     / LSYS1
lightest usage / user         : 0     / root-logical-system
```

Sample Output

show system security-profile secure-wire terse

`user@host>` **show system security-profile secure-wire terse**

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                0          0
  255
```

show system security-profile scheduler

Syntax

```
show system security-profile scheduler
detail
logical-system <logical-system-name>
root-logical-system
summary
tenant <tenant-name>
terse
```

Release Information

Statement introduced in Junos OS Release 11.2.
The **tenant** option is added in Junos OS Release 18.3R1.

Description

Displays the number of schedulers that the user logical system administrators and master logical system administrators can configure for their logical systems if the security profile is bound to the logical systems. The existing show command for the security-profile scheduler is enhanced with tenant support.

Options

- **detail**—Displays the detailed output.
- **logical-system**—Displays the name of the logical system.
- **root-logical-system**—Displays root logical system as default.
- **summary**—Displays the summary output.
- **tenant**—Displays the name of the tenant system.
- **terse**—Displays the terse output.

Required Privilege Level

view

RELATED DOCUMENTATION

show security policies | 1087

List of Sample Output

show system security-profile scheduler on page 1157
show system security-profile scheduler detail on page 1157

show system security-profile scheduler summary on page 1157
show system security-profile scheduler terse on page 1158
show system security-profile scheduler tenant all on page 1158

Output Fields

Table 87 on page 1156 lists the output fields for the **show system security-profile scheduler** command. Output fields are listed in the approximate order in which they appear.

Table 87: show security-profile scheduler Output Fields

Field Name	Field Description
logical-system tenant name	Name of the logical system or tenant system name.
security profile name	Name of the security profile bound to the logical system or tenant system.
usage/used amount	Number of resources that are currently being used.
reserved amount	Number of resources that are guaranteed to be available to the logical system or the tenant system.
maximum quota	Number of resources that the logical system or the tenant system can use. The maximum does not guarantee that the amount specified for the resource in the security profile is available. The maximum is not applicable for CPU resources.
global maximum quota	If a logical system or the tenant system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems or tenant system.
global available amount	Number of resources available across all the logical systems or tenant system.
total logical systems/tenants	Total number of logical systems and tenant systems.
heaviest usage/user	Using the most security log streams with the detailed number.
lightest usage/user	Using the least security log streams with the detailed number.
total security profiles	Total number of the resources configured for the security profile.
global used amount	Number of resources used across all the logical systems or tenant systems.

Sample Output

show system security-profile scheduler

root@host> **show system security-profile scheduler**

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                0           0
  256
```

Sample Output

show system security-profile scheduler detail

root@host> **show system security-profile scheduler detail**

```
logical-system tenant name : root-logical-system
security profile name      : Default-Profile
used amount                : 0
reserved amount            : 0
maximum quota              : 256
```

Sample Output

show system security-profile scheduler summary

root@host> **show system security-profile scheduler summary**

```
global used amount            : 0
global maximum quota          : 256
global available amount       : 256
total logical systems/tenants : 2
total security profiles       : 2
heaviest usage / user         : 0     / root-logical-system ...(2 logical system
& tenants)
lightest usage / user         : 0     / root-logical-system ...(2 logical system
& tenants)
```

Sample Output

show system security-profile scheduler terse

```
root@host> show system security-profile scheduler terse
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                0          0
  256
```

Sample Output

show system security-profile scheduler tenant all

```
root@host> show system security-profile scheduler tenant all
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                0          0
  256
```

show system security-profile security-log-stream-number detail

Syntax

```
show system security-profile security-log-stream-number detail
logical-system (all | logical-system-name)
tenant (all | tenant-system-name)
```

Release Information

Command introduced in Junos OS Release 18.2R1.
The **tenant** option introduced in Junos OS Release 18.3R1.

Description

Display information about a resource allocated to the logical system or tenant system in a security profile with security log stream number.

Options

logical-system-name (all | *logical-system-name*)—Display resource information for all logical systems, including the master logical system or a particular logical system.

tenant (all | *tenant-system-name*)—Display resource information for all tenant systems, including the master logical system or a particular tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

security-profile-resources | 809

Output Fields

Table 88 on page 1159 lists the output fields for the **show system security-profile security-log-stream-number summary** command. Output fields are listed in the approximate order in which they appear.

Table 88: show system security-profile security-log-stream-number summary Output Fields

Field Name	Field Description
logical system name	Displays the logical system name
security profile name	Name of the security profile

Table 88: show system security-profile security-log-stream-number summary Output Fields *(continued)*

Field Name	Field Description
used amount	Number of resources that are currently being used by the logical system.
reserved amount	Reserved quota that guarantees that the resource amount specified is always available to the logical system.
maximum quota	Maximum allowed quota. If a logical system requires more of a resource than its reserved amount allows, it can utilize resources configured for the global maximum amount if they are available—that is, if they are not allocated to other logical systems. The maximum allowed quota specifies the portion of the free global resources that the logical system can use. The maximum allowed quota does not guarantee that the amount specified for the resource in the security profile is available. Logical systems compete for global resources.

Sample Output

show system security-profile security-log-stream-number detail logical-system all

`user@host>` **show system security-profile security-log-stream-number detail logical-system all**

```
logical system name     : root-logical-system
security profile name   : Default-Profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8

logical system name     : lsys0
security profile name   : lsys_profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8

logical system name     : lsys1
security profile name   : lsys_profile
used amount             : 0
reserved amount         : 0
maximum quota           : 8

logical system name     : lsys2
security profile name   : lsys_profile
```

```
used amount             : 0
reserved amount         : 0
maximum quota           : 8
```

show system security-profile security-log-stream-number detail tenant all

user@host> **show system security-profile security-log-stream-number detail tenant all**

```
logical-system tenant name : root-logical-system
security profile name      : Default-Profile
used amount                : 1
reserved amount            : 0
maximum quota              : 8

logical-system tenant name : LSYS1
security profile name      : p1
used amount                : 1
reserved amount            : 1
maximum quota              : 2

logical-system tenant name : TN1
security profile name      : sp2
used amount                : 0
reserved amount            : 0
maximum quota              : 8
```

show system security-profile security-log-stream-number

Syntax

```
show system security-profile security-log-stream-number
logical-system (all |logical-system-name)
tenant (all |tenant-system-name)
```

Release Information

Command introduced in Junos OS Release 18.2R1.
tenant option introduced in Junos OS Release 18.3R1.

Description

Display information about a resource allocated to the logical system or tenant system in a security profile. This command can be used by the master administrator to display resource information for the master logical system or user logical system.

Options

logical-system (all |*logical-system-name*)—Display resource information for all logical systems, including the master logical system or a particular logical system.

tenant (all |*tenant-system-name*)—Display resource information for all tenant systems, including the master logical system or a particular tenant system.

Required Privilege Level

view

RELATED DOCUMENTATION

security-profile-resources

Output Fields

Table 89 on page 1162 lists the output fields for the **show system security-profile security-log-stream-number logical-system all** command. Output fields are listed in the approximate order in which they appear.

Table 89: show system security-profile security-log-stream-number logical-system all Output Fields

Field Name	Field Description
logical system name	Name of the logical system.

Table 89: show system security-profile security-log-stream-number logical-system all Output Fields *(continued)*

Field Name	Field Description
security profile name	Name of the security profile bound to the logical system.
usage	Number of resources that are currently being used by the logical system.
reserved	Number of resources that are guaranteed to be available to the logical system.
maximum	Number of resources that the logical system can use. The maximum does not guarantee that the amount specified for the resource in the security profile is available. The maximum is not applicable for CPU resources.
root-logical-system	Display resource information for the master (root) logical system.
Default-Profile	Specify the authentication profile to use if no profile is specified.

Table 90 on page 1163 lists the output fields for the **show system security-profile security-log-stream-number tenant all** command. Output fields are listed in the approximate order in which they appear.

Table 90: show system security-profile security-log-stream-number tenant all Output Fields

Field Name	Field Description
logical-system tenant name	Name of the tenant system.
security profile name	Name of the security profile bound to the tenant system.
usage	Number of resources that are currently being used by the tenant system.
reserved	Number of resources that are guaranteed to be available to the tenant system.
maximum	Number of resources that the tenant system can use. The maximum resource does not guarantee that the amount specified for the resource in the security profile is available. The maximum resource is not applicable for CPU resources.
root-logical-system	Display resource information for the master (root) logical system.
Default-Profile	Specify the authentication profile to use if no profile is specified.

Sample Output

show system security-profile security-log-stream-number logical-system all

```
user@host> show system security-profile security-log-stream-number logical-system all
```

```
logical system name   security profile name       usage    reserved     maximum
root-logical-system   Default-Profile                1           0           3
LSYS1                 sp1                            0           1           3
LSYS2                 sp2                            1           0           3
```

show system security-profile security-log-stream-number tenant all

```
user@host> show system security-profile security-log-stream-number tenant all
```

```
logical-system tenant name   security profile name       usage    reserved
maximum

root-logical-system          Default-Profile                1           0
    8
LSYS1                        p1                             1           1
    2
TN1                          sp2                            0           0
    8
```

show system security-profile security-log-stream-number summary

Syntax

```
show system security-profile security-log-stream-number summary (detail |terse)
```

Release Information

Command introduced in Junos OS Release 18.2R1.

Description

Display summary information about the resource for all logical systems.

Options

detail—Display detailed output.

terse—Display terse output (default).

Required Privilege Level

view

RELATED DOCUMENTATION

security-profile-resources

Output Fields

Table 91 on page 1165 lists the output fields for the **show system security-profile security-log-stream-number summary** command. Output fields are listed in the approximate order in which they appear.

Table 91: show system security-profile security-log-stream-number summary Output Fields

Field Name	Field Description
global used amount	Number of resources that are currently being used by the logical system.
global maximum quota	Number of resources that the logical system can use. The maximum does not guarantee that the amount specified for the resource in the security profile is available. The maximum is not applicable for CPU resources.
global available amount	Number of resources that are guaranteed to be available to the logical system.
total logical systems	Total number of logical systems

Table 91: show system security-profile security-log-stream-number summary Output Fields *(continued)*

Field Name	Field Description
total security profiles	Total number of resources configured for the security profile
heaviest usage / user	Using the most security log streams with the detailed number
lightest usage / user	Using the least security log streams with the detailed number

Sample Output

show system security-profile security-log-stream-number summary

`user@host>` **show system security-profile security-log-stream-number summary**

```
global used amount      : 0
global maximum quota    : 32
global available amount : 32
total logical systems   : 1
total security profiles : 0
heaviest usage / user   : 0     / root-logical-system
lightest usage / user   : 0     / root-logical-system
```

show system security-profile security-log-stream-number summary

`user@host>` **show system security-profile security-log-stream-number summary**

```
global used amount           : 1
global maximum quota         : 100
global available amount      : 99
total logical systems/tenants : 1
total security profiles      : 2
heaviest usage / user        : 1     / root-logical-system
lightest usage / user        : 1     / TN1
```

show security softwires

Syntax

```
show security softwires <softwire-name softwire-name>
<logical-system (all | logical-system-name)>
```

Release Information

Command introduced in Junos OS Release 10.4. The **logical-system** option introduced in Junos OS Release 12.1.

Description

Display a summary of information of all the softwire concentrators and details on concentrators with specified name.

Options

softwire-name *softwire-name*—Display the details of the specified softwire concentrator.

logical-system (all | *logical-system-name*)—Display softwire information for all logical systems or for a specified logical system. This option is only available to the master administrator.

Required Privilege Level

view

RELATED DOCUMENTATION

Understanding Traffic Processing on Security Devices

Sample Output

`user@host>` **show security softwires**

```
Softwire Name           SC Address         Status   Number of SI connected
  SC-CSSI-1                3001::1          Connected      2
  SC-CSSI-str00            3100::1          Active         0
  SC-CSSI-str01            3101::1          Inactive       0
  SC-CSSI-str02            3001::1          Connected      2520
```

user@host> **show security softwires softwire-name SC-CSSI-1**

```
Name of softwire: SC-CSSI-1
   SC status: Connected
   SC address: 3001::1
   Zone: trust
   VR ID: 0
 SI Address              SI Status                  SPU
 3001::2                 Active                     spu-1
 3001::2                 Active                     spu-21
 SI number: 2
```

user@host> **show security softwires logical-system ls-product-design**

```
Softwire Name            SC Address         Status   Number of SI connected
  sc_1                      3000::1         Connected      1
```

show security zones

Syntax

```
show security zones
<zone-name>
<all-logical-systems-tenants>
<detail>
<logical-system (logical-system-name | all)>
<root-logical-system>
<tenant (tenant-name | all)>
<terse>
<type (functional | security)>
```

Release Information

Command introduced in Junos OS Release 8.5.
tenant option introduced in Junos OS Release 18.3R1.

Description

Displays the information about the security zones. You can define a security zone, which allows you to divide the network into different segments and apply different security options to each segment.

Options

- ***none***—Displays information about all the security zones configured.
- ***zone-name***—(Optional) Displays information about the specified security zone.
- **all-logical-systems-tenants**—(Optional) Displays the information about the security zone of all logical systems and tenant systems.
- **detail**—(Optional) Displays the detail level information about the security zone.
- **logical-system *logical-system-name***—(Optional) Displays the information about the security zones of a specified logical system.
- **logical-system all**—(Optional) Displays the information about the security zones of all logical systems.
- **root-logical-system**—(Optional) Displays the information about the security zones of the root logical system.
- **tenant *tenant-name***—(Optional) Displays the information about the security zones of a specified tenant system.
- **tenant all**—(Optional) Displays the information about the security zones of all tenant systems.
- **terse**—(Optional) Displays the specified level information about the security zone.

- **type functional**—(Optional) Displays the information for functional zones.
- **type security**—(Optional) Displays the information for security zones.

Required Privilege Level
view

RELATED DOCUMENTATION

> *Security Zones Overview*
>
> *Supported System Services for Host Inbound Traffic*
>
> *security-zone*

List of Sample Output

show security zones on page 1171
show security zones abc on page 1172
show security zones all-logical-systems-tenants on page 1172
show security zones abc detail on page 1173
show security zones logical-system LSYS1 on page 1174
show security zones logical-system all on page 1174
show security zones root-logical-system on page 1174
show security zones tenant TSYS1 on page 1175
show security zone tenant all on page 1175
show security zones terse on page 1176
show security zones type security on page 1176

Output Fields

Table 92 on page 1170 lists the output fields for the **show security zones** command. Output fields are listed in the approximate order in which they appear.

Table 92: show security zones Output Fields

Field Name	Field Description	Level of Output
Functional zone	Name of the functional zone.	none
Security zone	Name of the security zone.	detail none
Description	Description of the security zone.	detail none

Table 92: show security zones Output Fields *(continued)*

Field Name	Field Description	Level of Output
Policy configurable	Whether the policy can be configured or not.	detail none
Interfaces bound	Number of interfaces in the zone.	detail none
Interfaces	List of the interfaces in the zone.	detail none
Zone	Name of the zone.	terse
Type	Type of the zone.	terse
Logical system	Name of the logical system.	detail
Tenant	Name of the tenant system.	detail

Sample Output

show security zones

`user@host>` **show security zones**

```
Functional zone: management
   Description: This is the management zone.
   Policy configurable: No
   Interfaces bound: 1
   Interfaces:
     ge-0/0/0.0
Security zone: Host
   Description: This is the host zone.
   Send reset for non-SYN session TCP packets: Off
   Policy configurable: Yes
   Interfaces bound: 1
   Interfaces:
     fxp0.0
Security zone: abc
```

```
    Description: This is the abc zone.
    Send reset for non-SYN session TCP packets: Off
    Policy configurable: Yes
    Interfaces bound: 1
    Interfaces:
      ge-0/0/1.0
Security zone: def
    Description: This is the def zone.
    Send reset for non-SYN session TCP packets: Off
    Policy configurable: Yes
    Interfaces bound: 1
    Interfaces:
      ge-0/0/2.0
```

show security zones abc

user@host> **show security zones abc**

```
Security zone: abc
    Description: This is the abc zone.
    Send reset for non-SYN session TCP packets: Off
    Policy configurable: Yes
    Interfaces bound: 1
    Interfaces:
      ge-0/0/1.0
```

show security zones all-logical-systems-tenants

user@host> **show security zones all-logical-systems-tenants**

```
Logical system: root-logical-system

Security zone: HOST
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: all
  Interfaces:

Security zone: junos-host
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
```

```
  Interfaces:

Logical system: LSYS1

Security zone: z1
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

Logical system: TSYS1

Security zone: z3a
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

Security zone: z3b
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

Security zone: z3c
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```

show security zones abc detail

user@host> **show security zones abc detail**

```
Security zone: abc
   Description: This is the abc zone.
   Send reset for non-SYN session TCP packets: Off
   Policy configurable: Yes
   Interfaces bound: 1
   Interfaces:
     ge-0/0/1.0
```

show security zones logical-system LSYS1

```
user@host> show security zones logical-system LSYS1
```

```
Security zone: z1
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```

show security zones logical-system all

```
user@host> show security zones logical-system all
```

```
Logical system: root-logical-system

Security zone: HOST
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: all
  Interfaces:

Security zone: junos-host
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

Logical system: LSYS1

Security zone: z1
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```

show security zones root-logical-system

```
user@host> show security zones root-logical-system
```

```
Security zone: HOST
```

```
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: all
  Interfaces:

Security zone: junos-host
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```

show security zones tenant TSYS1

user@host> **show security zones tenant TSYS1**

```
Security zone: z3a
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

Security zone: z3b
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

Security zone: z3c
 Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```

show security zone tenant all

user@host> **show security zone tenant all**

```
  Tenant: TSYS1


  Security zone: Host
```

```
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:

  Security zone: abc
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:xe-0/0/1.0

  Security zone: def
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 1
  Interfaces:xe-0/0/3.0
```

show security zones terse

user@host> **show security zones terse**

```
Zone                    Type
my-internal             Security
my-external             Security
dmz                     Security
```

show security zones type security

user@host> **show security zones type security**

```
Security zone: HOST
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: all
  Interfaces:

Security zone: junos-host
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```