



Junos[®] OS

Building Blocks Feature Guide for Security Devices



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About the Documentation

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- Supported Platforms on page xv
- Using the Examples in This Manual on page xv
- Documentation Conventions on page xvii
- Documentation Feedback on page xix
- Requesting Technical Support on page xix

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 <http://www.juniper.net/techpubs/>.

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

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Supported Platforms

For the features described in this document, the following platforms are supported:

- vSRX
- SRX Series

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.xml;
    }
  }
}
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.xml; }
```

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 xvii](#) 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 xvii](#) 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

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

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	<code>user@host> show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	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 <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> 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 [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.

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

Convention	Description	Examples
> (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, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/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 J-Care or Partner Support Service 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 <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://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: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>

- Download the latest versions of software and review release notes:
<http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications:
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

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

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- 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 <http://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [Introduction to Security Building Blocks on page 3](#)

CHAPTER 1

Introduction to Security Building Blocks

- [Understanding Security Building Blocks for Security Devices on page 3](#)

Understanding Security Building Blocks for Security Devices

This guide provides information about the building blocks used to configure features for security devices.

- A security zone is a collection of one or more network segments requiring the regulation of inbound and outbound traffic through policies. Security zones are logical entities to which one or more interfaces are bound. With many types of Juniper Networks devices, you can define multiple security zones, the exact number of which you determine based on your network needs.
- An address book is a collection of addresses and address sets. Junos OS allows you to configure multiple address books. Address books are like components, or building blocks, that are referenced in other configurations such as security policies or NAT. You can add addresses to address books or use the predefined addresses available to each address book by default.
- A security policy is a stateful firewall policy that provides a set of tools to network administrators, enabling them to implement network security for their organizations. Security policies enforce rules for transit traffic, in terms of what traffic can pass through the firewall, and the actions that need to take place on traffic as it passes through the firewall.
- An application set is a group of applications. Junos OS simplifies the process by allowing you to manage a small number of application sets, rather than a large number of individual application entries. The application (or application set) is referred to by security policies as match criteria for packets initiating sessions.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Understanding Address Books on page 27](#)
- [Security Policies Overview on page 43](#)
- [Security Policy Applications Overview on page 129](#)

PART 2

Configuring Security Zones and Interfaces

- [Configuring Security Zones on page 7](#)
- [Managing Inbound Traffic for Security Zones on page 13](#)
- [Identifying Duplicate Sessions by Configuring TCP-Reset Parameters on page 23](#)

CHAPTER 2

Configuring Security Zones

- [Security Zones and Interfaces Overview on page 7](#)
- [Understanding Functional Zones on page 8](#)
- [Understanding Security Zones on page 8](#)
- [Example: Creating Security Zones on page 9](#)

Security Zones and Interfaces Overview

Interfaces act as a doorway through which traffic enters and exits a Juniper Networks device. Many interfaces can share exactly the same security requirements; however, different interfaces can also have different security requirements for inbound and outbound data packets. Interfaces with identical security requirements can be grouped together into a single security zone.

A security zone is a collection of one or more network segments requiring the regulation of inbound and outbound traffic through policies.

Security zones are logical entities to which one or more interfaces are bound. With many types of Juniper Networks devices, you can define multiple security zones, the exact number of which you determine based on your network needs.

On a single device, you can configure multiple security zones, dividing the network into segments to which you can apply various security options to satisfy the needs of each segment. At a minimum, you must define two security zones, basically to protect one area of the network from the other. On some security platforms, you can define many security zones, bringing finer granularity to your network security design—and without deploying multiple security appliances to do so.

From the perspective of security policies, traffic enters into one security zone and goes out on another security zone. This combination of a **from-zone** and a **to-zone** is defined as a *context*. Each context contains an ordered list of policies. For more information on policies, see [“Security Policies Overview” on page 43](#).

This topic includes the following sections:

- [Understanding Security Zone Interfaces on page 8](#)

Understanding Security Zone Interfaces

An interface for a security zone can be thought of as a doorway through which TCP/IP traffic can pass between that zone and any other zone.

Through the policies you define, you can permit traffic between zones to flow in one direction or in both. With the routes that you define, you specify the interfaces that traffic from one zone to another must use. Because you can bind multiple interfaces to a zone, the routes you chart are important for directing traffic to the interfaces of your choice.

An interface can be configured with an IPv4 address, IPv6 address, or both.

Related Documentation

- [Understanding Functional Zones on page 8](#)
- [Example: Creating Security Zones on page 9](#)
- [Understanding How to Control Inbound Traffic Based on Traffic Types on page 13](#)

Understanding Functional Zones

A functional zone is used for special purposes, like management interfaces. Currently, only the management (MGT) zone is supported. Management zones have the following properties:

- Management zones host management interfaces.
- Traffic entering management zones does not match policies; therefore, traffic cannot transit out of any other interface if it was received in the management interface.
- Management zones can only be used for dedicated management interfaces.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Example: Creating Security Zones on page 9](#)

Understanding Security Zones

Security zones are the building blocks for policies; they are logical entities to which one or more interfaces are bound. Security zones provide a means of distinguishing groups of hosts (user systems and other hosts, such as servers) and their resources from one another in order to apply different security measures to them.

Security zones have the following properties:

- Policies—Active security policies that enforce rules for the transit traffic, in terms of what traffic can pass through the firewall, and the actions that need to take place on the traffic as it passes through the firewall. For more information, see [“Security Policies Overview” on page 43](#).
- Screens—A Juniper Networks stateful firewall secures a network by inspecting, and then allowing or denying, all connection attempts that require passage from one security

zone to another. 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. For more information, see *Reconnaissance Deterrence Overview*.

- Address books—IP addresses and address sets that make up an address book to identify its members so that you can apply policies to them. Address book entries can include any combination of IPv4 addresses, IPv6 addresses, and Domain Name System (DNS) names. For more information, see “[Example: Configuring Address Books and Address Sets](#)” on page 34.
- TCP-RST—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.
- Interfaces—List of interfaces in the zone.

Security zones have the following preconfigured zone:

- Trust zone—Available only in the factory configuration and is used for initial connection to the device. After you commit a configuration, the trust zone can be overridden.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Understanding Functional Zones on page 8](#)
- [Example: Creating Security Zones on page 9](#)

Example: Creating Security Zones

This example shows how to configure zones and assign interfaces to them. When you configure a security zone, you can specify many of its parameters at the same time.

- [Requirements on page 9](#)
- [Overview on page 9](#)
- [Configuration on page 10](#)
- [Verification on page 11](#)

Requirements

Before you begin, configure network interfaces. See the *Interfaces Feature Guide for Security Devices*.

Overview

An interface for a security zone can be thought of as a doorway through which TCP/IP traffic can pass between that zone and any other zone.



NOTE: By default, interfaces are in the null zone. The interfaces will not pass traffic until they have been assigned to a zone.



NOTE: You can configure 2000 interfaces within a security zone on SRX3400, SRX3600, SRX5400, SRX5600, or SRX5800 devices, depending on the Junos OS release in your installation.

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-0/0/1 unit 0 family inet address 203.0.113.1/24
set interfaces ge-0/0/1 unit 0 family inet6 address 2001:db8::1/64
set security security-zone ABC interfaces ge-0/0/1.0
```

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 CLI User guide.

To create zones and assign interfaces to them:

1. Configure an Ethernet interface and assign an IPv4 address to it.

```
[edit]
user@host# set interfaces ge-0/0/1 unit 0 family inet address 203.0.113.1/24
```
2. Configure an Ethernet interface and assign an IPv6 address to it.

```
[edit]
user@host# set interfaces ge-0/0/1 unit 0 family inet6 address 2001:db8::1/32
```
3. Configure a security zone and assign it to an Ethernet interface.

```
[edit]
user@host# set security security-zone ABC interfaces ge-0/0/1.0
```

Results From configuration mode, confirm your configuration by entering the **show security zones security-zone ABC** and **show interfaces ge-0/0/1** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

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

```
[edit]
user@host# show security zones security-zone ABC
...
    interfaces {
        ge-0/0/1.0 {
            ...
        }
    }

[edit]
user@host# show interfaces ge-0/0/1
```

```
...
    unit 0 {
        family inet {
            address 203.0.113.1/24;
        }
        family inet6 {
            address 2001:db8:1::1/64;
        }
    }
```

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

Verification

Troubleshooting with Logs

Purpose	Use these logs to identify any issues.
Action	From operational mode, enter the show log messages command and the show log dcd command.
Related Documentation	<ul style="list-style-type: none">• Security Zones and Interfaces Overview on page 7• Understanding Functional Zones on page 8• Understanding Security Zones on page 8

CHAPTER 3

Managing Inbound Traffic for Security Zones

- [Understanding How to Control Inbound Traffic Based on Traffic Types on page 13](#)
- [Example: Controlling Inbound Traffic Based on Traffic Types on page 14](#)
- [Understanding How to Control Inbound Traffic Based on Protocols on page 16](#)
- [Example: Controlling Inbound Traffic Based on Protocols on page 17](#)
- [Supported System Services for Host Inbound Traffic on page 19](#)

Understanding How to Control Inbound Traffic Based on Traffic Types

This topic describes how to configure zones to specify the kinds of traffic that can reach the device from systems that are directly connected to its interfaces.

Note the following:

- 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.)
- You must enable all expected host-inbound traffic. Inbound traffic destined to this device is dropped by default.
- You can also configure a zone's interfaces to allow for use by dynamic routing protocols.

This feature allows you to protect the device against attacks launched from systems that are directly or indirectly connected to any of its interfaces. It also enables you to selectively configure the device so that administrators can manage it using certain applications on certain interfaces. You can prohibit use of other applications on the same or different interfaces of a zone. For example, most likely you would want to ensure that outsiders not use the Telnet application from the Internet to log in to the device because you would not want them connecting to your system.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Supported System Services for Host Inbound Traffic on page 19](#)
- [Understanding How to Identify Duplicate Sessions Using the TCP-Reset Parameter on page 23](#)

- [Example: Controlling Inbound Traffic Based on Traffic Types on page 14](#)

Example: Controlling Inbound Traffic Based on Traffic Types

This example shows how to configure inbound traffic based on traffic types.

- [Requirements on page 14](#)
- [Overview on page 14](#)
- [Configuration on page 14](#)
- [Verification on page 16](#)

Requirements

Before you begin:

- Configure network interfaces. See *Interfaces Feature Guide for Security Devices*.
- Understand Inbound traffic types. See “[Understanding How to Control Inbound Traffic Based on Traffic Types](#)” on page 13.

Overview

By allowing system services to run, you can configure zones to specify different types of traffic that can reach the device from systems that are directly connected to its interfaces. You can configure the different system services 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.)

You must enable all expected host-inbound traffic. Inbound traffic from devices directly connected to the device's interfaces is dropped by default.

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 ABC host-inbound-traffic system-services all
set security zones security-zone ABC interfaces ge-0/0/1.3 host-inbound-traffic
  system-services telnet
set security zones security-zone ABC interfaces ge-0/0/1.3 host-inbound-traffic
  system-services ftp
set security zones security-zone ABC interfaces ge-0/0/1.3 host-inbound-traffic
  system-services snmp
set security zones security-zone ABC interfaces ge-0/0/1.0 host-inbound-traffic
  system-services all
set security zones security-zone ABC interfaces ge-0/0/1.0 host-inbound-traffic
  system-services ftp except
set security zones security-zone ABC interfaces ge-0/0/1.0 host-inbound-traffic
  system-services http except
```

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 inbound traffic based on traffic types:

1. Configure a security zone.

```
[edit]
user@host# edit security zones security-zone ABC
```
2. Configure the security zone to support inbound traffic for all system services.

```
[edit security zones security-zone ABC]
user@host# set host-inbound-traffic system-services all
```
3. Configure the Telnet, FTP, and SNMP system services at the interface level (not the zone level) for the first interface.

```
[edit security zones security-zone ABC]
user@host# set interfaces ge-0/0/1.3 host-inbound-traffic system-services telnet
user@host# set interfaces ge-0/0/1.3 host-inbound-traffic system-services ftp
user@host# set interfaces ge-0/0/1.3 host-inbound-traffic system-services snmp
```
4. Configure the security zone to support inbound traffic for all system services for a second interface.

```
[edit security zones security-zone ABC]
user@host# set interfaces ge-0/0/1.0 host-inbound-traffic system-services all
```
5. Exclude the FTP and HTTP system services from the second interface.

```
[edit security zones security-zone ABC]
user@host# set interfaces ge-0/0/1.0 host-inbound-traffic system-services ftp
except
user@host# set interfaces ge-0/0/1.0 host-inbound-traffic system-services http
except
```

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

```
[edit]
user@host# show security zones security-zone ABC
host-inbound-traffic {
  system-services {
    all;
  }
}
interfaces {
  ge-0/0/1.3 {
    host-inbound-traffic {
      system-services {
        ftp;
        telnet;
        snmp;
      }
    }
  }
  ge-0/0/1.0 {
```

```

host-inbound-traffic {
  system-services {
    all;
    ftp {
      except;
    }
    http {
      except;
    }
  }
}

```

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

Verification

Troubleshooting with Logs

Purpose Use these logs to identify any issues.

Action From operational mode, enter the **show log messages** command and the **show log dcd** command.

Related Documentation

- [Understanding How to Control Inbound Traffic Based on Traffic Types on page 13](#)

Understanding How to Control Inbound Traffic Based on Protocols

This topic describes the inbound system protocols on the specified zone or interface.

Any host-inbound traffic that corresponds to a protocol listed under the host-inbound traffic option is allowed. For example, if anywhere in the configuration, you map a protocol to a port number other than the default, you can specify the protocol in the host-inbound traffic option, and the new port number will be used. [Table 3 on page 16](#) lists the supported protocols. A value of **all** indicates that traffic from all of the following protocols is allowed inbound on the specified interfaces (of the zone, or a single specified interface).

Table 3: Supported Inbound System Protocols

Supported System Services			
all	igmp	pim	sap
bfd	ldp	rip	vrrp
bgp	msdp	ripng	nhrp
router-discovery	dvmrp	ospf	rsvp
pgm	ospf3		



NOTE: If DVMRP or PIM is enabled for an interface, IGMP and MLD host-inbound traffic is enabled automatically. Because IS-IS uses OSI addressing and should not generate any IP traffic, there is no host-inbound traffic option for the IS-IS protocol.



NOTE: You do not need to configure Neighbor Discovery Protocol (NDP) on host-inbound traffic, because the NDP is enabled by default.

Configuration option for IPv6 Neighbor Discovery Protocol (NDP) is available. The configuration option is **set protocol neighbor-discovery onlink-subnet-only** command. This option will prevent the device from responding to a Neighbor Solicitation (NS) from a prefix which was not included as one of the device interface prefixes.



NOTE: The Routing Engine needs to be rebooted after setting this option to remove any possibility of a previous IPv6 entry remaining in the forwarding-table.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Understanding How to Control Inbound Traffic Based on Traffic Types on page 13](#)
- [Understanding How to Identify Duplicate Sessions Using the TCP-Reset Parameter on page 23](#)
- [Example: Controlling Inbound Traffic Based on Protocols on page 17](#)

Example: Controlling Inbound Traffic Based on Protocols

This example shows how to enable inbound traffic for an interface.

- [Requirements on page 17](#)
- [Overview on page 18](#)
- [Configuration on page 18](#)
- [Verification on page 19](#)

Requirements

Before you begin:

- Configure security zones. See [“Example: Creating Security Zones” on page 9](#).
- Configure network interfaces. See the *Interfaces Feature Guide for Security Devices*.

Overview

Any host-inbound traffic that corresponds to a protocol listed under the host-inbound traffic option is allowed. For example, if anywhere in the configuration you map a protocol to a port number other than the default, you can specify the protocol in the host-inbound traffic option, and the new port number will be used.

A value of **all** indicates that traffic from all of the protocols is allowed inbound on the specified interfaces (of the zone, or a single specified interface).

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 ABC interfaces ge-0/0/1.0 host-inbound-traffic protocols
ospf
set security zones security-zone ABC interfaces ge-0/0/1.0 host-inbound-traffic protocols
ospf3
```

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 inbound traffic based on protocols:

1. Configure a security zone.

```
[edit]
user@host# edit security zones security-zone ABC
```

2. Configure the security zone to support inbound traffic based on the ospf protocol for an interface.

```
[edit security zones security-zone ABC]
user@host# set interfaces ge-0/0/1.0 host-inbound-traffic protocols ospf
```

3. Configure the security zone to support inbound traffic based on the ospf3 protocol for an interface.

```
[edit security zones security-zone ABC]
user@host# set interfaces ge-0/0/1.0 host-inbound-traffic protocols ospf3
```

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

```
[edit]
user@host# show security zones security-zone ABC
interfaces {
  ge-0/0/1.0 {
    host-inbound-traffic {
      protocols {
        ospf;
      }
    }
  }
}
```

```

ospf3;
    }
}

```

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

Verification

Troubleshooting with Logs

Purpose Use these logs to identify any issues.

Action From operational mode, enter the **show log messages** command and the **show log dcd** command.

Related Documentation

- [Understanding How to Control Inbound Traffic Based on Protocols on page 16](#)

Supported System Services for Host Inbound Traffic

This topic describes the supported system services for host inbound traffic on the specified zone or interface.

For example, suppose a user whose system was connected to interface **203.0.113.4** in zone **ABC** wanted to telnet into interface **198.51.100.4** in zone **ABC**. For this action to be allowed, the Telnet application must be configured as an allowed inbound service on both interfaces and a policy must permit the traffic transmission.

[Table 4 on page 19](#) shows the system services that can be used for host inbound traffic.

Table 4: System Services for Host Inbound Traffic

Host Inbound System Services	
all	any-service
dns	finger
ftp	http
https	indent-reset
ike	netconf
ntp	ping
reverse-ssh	reverse-telnet
rlogin	rpm

Table 4: System Services for Host Inbound Traffic (*continued*)

Host Inbound System Services	
rsh	sip
snmp	snmp-trap
ssh	telnet
tftp	traceroute
xnm-clear-text	xnm-ssl



NOTE: On SRX Series Services Gateways, the xnm-clear-text field is enabled in the factory-default configuration. This setting enables incoming Junos XML protocol traffic in the trust zone for the device when the device is operating with factory-default settings. We recommend that you replace the factory-default settings with a user-defined configuration that provides additional security once the box is configured. You must delete the xnm-clear-text field manually by using the CLI command `delete system services xnm-clear-text`.

Table 5 on page 20 shows the supported protocols that can be used for host inbound traffic.

Table 5: Protocols for Host Inbound Traffic

Protocols	
all	bfd
bgp	dvmrp
igmp	msdp
ospf	nhrp
pgm	ospf3
rip	pim
sap	ripng
	vrrp



NOTE: All services (except DHCP and BOOTP) can be configured either per zone or per interface. A DHCP server is configured only per interface because the incoming interface must be known by the server to be able to send out DHCP replies.



NOTE: You do not need to configure Neighbor Discovery Protocol (NDP) on host-inbound traffic, because the NDP is enabled by default.

Configuration option for IPv6 Neighbor Discovery Protocol (NDP) is available. The configuration option is **set protocol neighbor-discovery onlink-subnet-only** command. This option will prevent the device from responding to a Neighbor Solicitation (NS) from a prefix which was not included as one of the device interface prefixes.



NOTE: The Routing Engine needs to be rebooted after setting this option to remove any possibility of a previous IPv6 entry from remaining in the forwarding-table.

**Related
Documentation**

- [Understanding How to Control Inbound Traffic Based on Traffic Types on page 13](#)
- [Example: Controlling Inbound Traffic Based on Traffic Types on page 14](#)

CHAPTER 4

Identifying Duplicate Sessions by Configuring TCP-Reset Parameters

- [Understanding How to Identify Duplicate Sessions Using the TCP-Reset Parameter on page 23](#)
- [Example: Configuring the TCP-Reset Parameter on page 23](#)

Understanding How to Identify Duplicate Sessions Using the TCP-Reset Parameter

When the TCP-RST 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.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Understanding How to Control Inbound Traffic Based on Traffic Types on page 13](#)
- [Understanding How to Control Inbound Traffic Based on Protocols on page 16](#)
- [Example: Configuring the TCP-Reset Parameter on page 23](#)

Example: Configuring the TCP-Reset Parameter

This example shows how to configure the TCP-Reset parameter for a zone.

- [Requirements on page 23](#)
- [Overview on page 24](#)
- [Configuration on page 24](#)
- [Verification on page 24](#)

Requirements

Before you begin, configure security zones. See [“Example: Creating Security Zones” on page 9](#).

Overview

When the TCP-Reset parameter 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 SYN flag set.

Configuration

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 TCP-Reset parameter for a zone:

1. Configure a security zone.

```
[edit]  
user@host# edit security zones security-zone ABC
```
2. Configure the TCP-Reset parameter for the zone.

```
[edit security zones security-zone ABC]  
user@host# set tcp-rst
```
3. If you are done configuring the device, commit the configuration.

```
[edit]  
user@host# commit
```

Verification

To verify the configuration is working properly, enter the **show security zones** command.

Related Documentation

- [Understanding How to Identify Duplicate Sessions Using the TCP-Reset Parameter on page 23](#)

PART 3

Configuring Address Books and Address Sets

- [Configuring Address, Address Books, and Address Sets on page 27](#)

CHAPTER 5

Configuring Address, Address Books, and Address Sets

- [Understanding Address Books on page 27](#)
- [Understanding Address Sets on page 29](#)
- [Understanding Global Address Books on page 29](#)
- [Configuring Addresses and Address Sets on page 30](#)
- [Example: Configuring Address Books and Address Sets on page 34](#)
- [Limitations of Addresses and Address Sets in a Security Policy on page 39](#)

Understanding Address Books

An address book is a collection of addresses and address sets. Junos OS allows you to configure multiple address books. Address books are like components, or building blocks, that are referenced in other configurations such as security policies or NAT. You can add addresses to address books or use the predefined addresses available to each address book by default.

Address book entries include addresses of hosts and subnets whose traffic is either allowed, blocked, encrypted, or user-authenticated. These addresses can be any combination of IPv4 addresses, IPv6 addresses, wildcard addresses, or Domain Name System (DNS) names.

- [Predefined Addresses on page 27](#)
- [Network Prefixes in Address Books on page 28](#)
- [Wildcard Addresses in Address Books on page 28](#)
- [DNS Names in Address Books on page 28](#)

Predefined Addresses

You can either create addresses or use any of the following predefined addresses that are available by default:

- **Any**—This address matches any IP address. When this address is used as a source or destination address in a policy configuration, it matches the source and destination address of any packet.

- **Any-ipv4**—This address matches any IPv4 address.
- **Any-ipv6**—This address matches any IPv6 address.

Network Prefixes in Address Books

You can specify addresses as network prefixes in the prefix/length format. For example, 203.0.113.0/24 is an acceptable address book address because it translates to a network prefix. However, 203.0.113.4/24 is not acceptable for an address book because it exceeds the subnet length of 24 bits. Everything beyond the subnet length must be entered as 0 (zero). In special scenarios, you can enter a hostname because it can use the full 32-bit address length.

An IPv6 address prefix is a combination of an IPv6 prefix (address) and a prefix length. The prefix takes the form `ipv6-prefix/prefix-length` and represents a block of address space (or a network). The `ipv6-prefix` variable follows general IPv6 addressing rules. The `/prefix-length` variable is a decimal value that indicates the number of contiguous, higher-order bits of the address that make up the network portion of the address. For example, `2001:db8::/32` is a possible IPv6 prefix. For more information on text representation of IPv6 addresses and address prefixes, see RFC 4291, *IP Version 6 Addressing Architecture*.

Wildcard Addresses in Address Books

Besides IP addresses and domain names, you can specify a wildcard address in an address book. A wildcard address is represented as `A.B.C.D/wildcard-mask`. The wildcard mask determines which of the bits in the IP address `A.B.C.D` should be ignored. For example, the source IP address `192.168.0.11/255.255.0.255` in a security policy implies that the security policy match criteria can discard the third octet in the IP address (symbolically represented as `192.168.*.11`). Therefore, packets with source IP addresses such as `192.168.1.11` and `192.168.22.11` conform to the match criteria. However, packets with source IP addresses such as `192.168.0.1` and `192.168.1.21` do not satisfy the match criteria.

The wildcard address usage is not restricted to full octets only. You can configure any wildcard address. For example, the wildcard address `192.168. 7.1/255.255.7.255` implies that you need to ignore only the first 5 bits of the third octet of the wildcard address while making the policy match. If the wildcard address usage is restricted to full octets only, then wildcard masks with either 0 or 255 in each of the four octets only will be permitted.

DNS Names in Address Books

By default, you can resolve IPv4 and IPv6 addresses for a DNS. If IPv4 or IPv6 addresses are designated, you can resolve only those addresses by using the keywords `ipv4-only` and `ipv6-only`, respectively.

Before you can use domain names for address entries, you must configure the security device for DNS services. For information about DNS, see *DNS Overview*.

Related Documentation

- [Understanding Global Address Books on page 29](#)
- [Understanding Address Sets on page 29](#)
- [Configuring Addresses and Address Sets on page 30](#)

Understanding Address Sets

An address book can grow to contain large numbers of addresses and become difficult to manage. You can create groups of addresses called address sets to manage large address books. Using address sets, you can organize addresses in logical groups and use them to easily configure other features, such as policies and NAT rules.

The predefined address set, **any**, which contains both **any-ipv4** and **any-ipv6** addresses, is automatically created for each security zone.

You can create address sets with existing users, or create empty address sets and later fill them with users. When creating address sets, you can combine IPv4 and IPv6 addresses, but the addresses must be in the same security zone.

You can also create an address set within an address set. This allows you to apply policies more effectively. For example, if you want to apply a policy to two address sets, **set1** and **set2**, instead of using two statements, you can use just one statement to apply the policy to a new address set, **set3**, that includes address sets **set1** and **set2**.

When you add addresses to policies, sometimes the same subset of addresses can be present in multiple policies, making it difficult to manage how policies affect each address entry. Reference an address set entry in a policy like an individual address book entry to allow you to manage a small number of address sets, rather than manage a large number of individual address entries.

Related Documentation

- [Understanding Address Books on page 27](#)
- [Configuring Addresses and Address Sets on page 30](#)
- [Limitations of Addresses and Address Sets in a Security Policy on page 39](#)

Understanding Global Address Books

An address book called “global” is always present on your system. Similar to other address books, the global address book can include any combination of IPv4 addresses, IPv6 addresses, wildcard addresses, or Domain Name System (DNS) names.

You can create addresses in the global address book or use the predefined addresses (**any**, **any-ipv4**, and **any-ipv6**). However, to use the addresses in the global address book, you do not need to attach the security zones to it. The global address book is available to all security zones that have no address books attached to them.

Global address books are used in the following cases:

- NAT configurations—NAT rules can use address objects only from the global address book. They cannot use addresses from zone-based address books.
- Global policies—Addresses used in a global policy must be defined in global address book. Global address book objects do not belong to any particular zone.

- Related Documentation**
- [Understanding Address Books on page 27](#)
 - [Understanding Address Sets on page 29](#)
 - [Configuring Addresses and Address Sets on page 30](#)

Configuring Addresses and Address Sets

You can define addresses and address sets in an address book and then use them when configuring different features. You can also use predefined addresses **any**, **any-ipv4**, and **any-ipv6** that are available by default. However, you cannot add the predefined address **any** to an address book.

After address books and sets are configured, they are used in configuring different features, such as security policies, security zones, and NAT.

- [Addresses and Address Sets on page 30](#)
- [Address Books and Security Zones on page 31](#)
- [Address Books and Security Policies on page 31](#)
- [Address Books and NAT on page 33](#)

Addresses and Address Sets

You can define IPv4 addresses, IPv6 addresses, wildcard addresses, or Domain Name System (DNS) names as address entries in an address book.

The following sample address book called **book1** contains different types of addresses and address sets. Once defined, you can leverage these addresses and address sets when you configure security zones, policies, or NAT rules.

```
[edit security address-book book1]
user@host# set address a1 203.0.113.1
user@host# set address a2 203.0.113.4/30
user@host# set address a4 2001:db8::/32
user@host# set address a5 2001:db8:1::1/127
user@host# set address example dns-name www.example.com
user@host# set address-set set1 address a1
user@host# set address-set set1 address a2
user@host# set address-set set1 address a2
user@host# set address-set set2 address bbc
```

When defining addresses and address sets, follow these guidelines:

- Address sets can only contain address names that belong to the same security zone.
- Address names **any**, **any-ipv4** and **any-ipv6** are reserved; you cannot use them to create any addresses.
- Addresses and address sets in the same zone must have distinct names.

- Address names cannot be the same as address set names. For example, if you configure an address with the name **add1**, do not create the address set with the name **add1**.
- When deleting an individual address book entry from the address book, you must remove the address (wherever it is referred) from all the address sets; otherwise, the system will cause a commit failure.

Address Books and Security Zones

A security zone is a logical group of interfaces with identical security requirements. You attach security zones to address books that contain entries for the addressable networks and end hosts (and, thus, users) belonging to the zone.

A zone can use two address books at a time—the global address book and the address book that the zone is attached to. When a security zone is not attached to any address book, it automatically uses the global address book. Thus, when a security zone is attached to an address book, the system looks up addresses from this attached address book; otherwise, the system looks up addresses from the default global address book. The global address book is available to all security zones by default; you do not need to attach zones to the global address book.

The following guidelines apply when attaching security zones to address books:

- Addresses attached to a security zone conform to the security requirements of the zone.
- The address book that you attach to a security zone must contain all IP addresses that are reachable within that zone.
- When you configure policies between two zones, you must define the addresses for each of the zone's address books.
- Addresses in a user-defined address book have a higher lookup priority than addresses in the global address book. Thus, for a security zone that is attached to a user-defined address book, the system searches the user-defined address book first; if no address is found, then it searches the global address book.

Address Books and Security Policies

Addresses and address sets are used when specifying the match criteria for a policy. Before you can configure policies to permit, deny, or tunnel traffic to and from individual hosts and subnets, you must make entries for them in address books. You can define different types of addresses, such as IPv4 addresses, IPv6 addresses, wildcard addresses, and DNS names, as match criteria for security policies.

Policies contain both source and destination addresses. You can refer to an address or address set in a policy by the name you give to it in the address book attached to the zone specified in the policy.

- When traffic is sent to a zone, the zone and address to which the traffic is sent are used as the destination zone and address-matching criteria in policies.

- When traffic is sent from a zone, the zone and address from which the traffic is sent are used as the source zone and address-matching criteria in policies.

Addresses Available for Security Policies

When configuring the source and destination addresses for a policy rule, you can type a question mark in the CLI to list all the available addresses that you can choose from.

You can use the same address name for different addresses that are in different address books. However, the CLI lists only one of these addresses—the address that has the highest lookup priority.

For example, suppose you configure addresses in two address books—**global** and **book1**. Then, display the addresses that you can configure as source or destination addresses in a policy (see [Table 6 on page 32](#)).

Table 6: Available Addresses Displayed in the CLI

Addresses Configured	Addresses Displayed in the CLI
<pre>[edit security address-book] set global address a1 203.0.113.0/24; set global address a2 198.51.100.0/24; set global address a3 192.0.2.0/24; set book1 address a1 203.113.128/25;</pre>	<pre>[edit security policies from-zone trust to-zone untrust] user@host# set policy p1 match set match source-address ?</pre> <p>Possible completions:</p> <pre>[Open a set of values a1 The address in address book book1 a2 The address in address book global a3 The address in address book global any Any IPv4 or IPv6 address any-ipv4 Any IPv4 address any-ipv6 Any IPv6 address</pre>

The addresses displayed in this example illustrate:

- Addresses in a user-defined address book have a higher lookup priority than addresses in the global address book.
- Addresses in a global address book have a higher priority than the predefined addresses **any**, **any-ipv4**, and **any-ipv6**.
- When the same address name is configured for two or more different addresses, only the highest priority address, based on the address lookup, is available. In this example, the CLI displays address **a1** from **book1** (203.0.113.128/25) because that address has a higher lookup priority than the global address **a1** (203.0.113.0/24).

Applying Policies to Address Sets

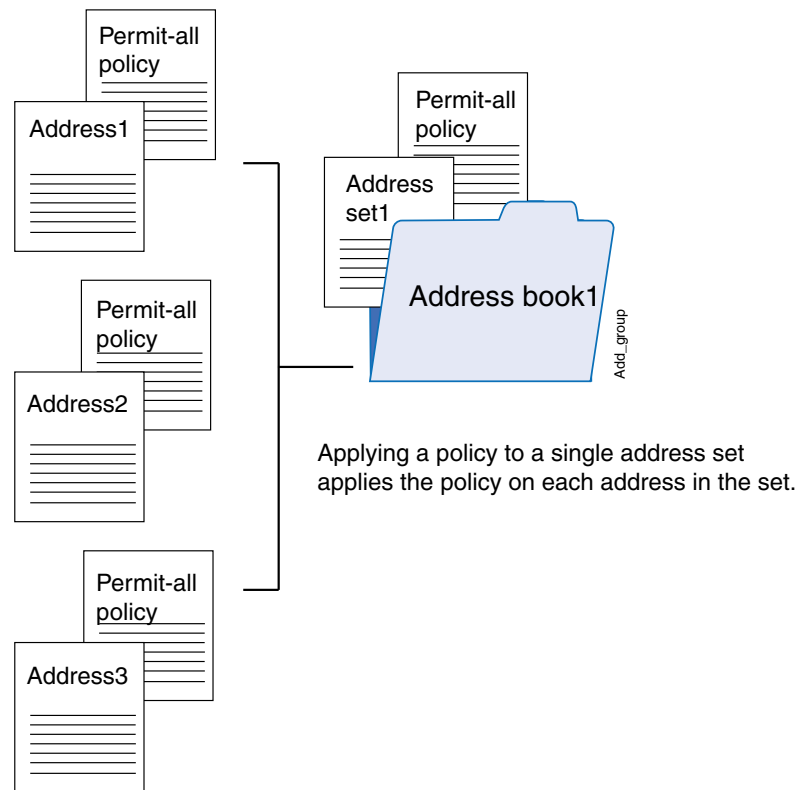
When you specify an address set in policies, Junos OS applies the policies automatically to each address set member, so you do not have to create them one by one for each address. Also, if an address set is referenced in a policy, the address set cannot be removed without removing its reference in the policy. It can, however, be edited.



NOTE: Consider that for each address set, the system creates individual rules for its members. It creates an internal rule for each member in the group as well as for each service configured for each user. If you configure address books without taking this into account, you can exceed the number of available policy resources, especially if both the source and destination addresses are address groups and the specified service is a service group.

Figure 1 on page 33 shows how policies are applied to address sets.

Figure 1: Applying Policies to Address Sets



Address Books and NAT

Once you define addresses in address books, you can specify them in the source, destination, or static NAT rules. It is simpler to specify meaningful address names instead of IP prefixes as source and destination addresses in the NAT rule configuration. For example, instead of specifying 10.208.16.0/22 as source address, you can specify an address called **local** that includes address 10.208.16.0/22.

You can also specify address sets in NAT rules, allowing you to add multiple addresses within an address set and therefore manage a small number of address sets, rather than manage a large number of individual address entries. When you specify an address set in a NAT rule, Junos OS applies the rule automatically to each address set member, so you do not have to specify each address one by one.



NOTE: The following address and address set types are not supported in NAT rules—wildcard addresses, DNS names, and a combination of IPv4 and IPv6 addresses.

When configuring address books with NAT, follow these guidelines:

- In a NAT rule, you can specify addresses from a global address book only. User-defined address books are not supported with NAT.
- You can configure an address set as a source address name in a source NAT rule. However, you cannot configure an address set as a destination address name in a destination NAT rule.

The following sample NAT statements show the address and address set types that are supported with source and destination NAT rules:

```
[edit security nat source rule-set src-nat rule src-rule1]
set match source-address 2001:db8:1::/64
set match source-address-name add1
set match source-address-name add-set1
set match destination-address 2001:db8::/64
set match destination-address-name add2
set match destination-address-name add-set2

[edit security nat destination rule-set dst-nat rule dst-rule1]
set match source-address 2001:db8::/64
set match source-address-name add2
set match source-address-name add-set2
set match destination-address-name add1
```

- In a static NAT rule, you cannot configure an address set as a source or destination address name. The following sample NAT statements show the types of address that are supported with static NAT rules:

```
[edit security nat static rule-set stat]
set rule stat-rule1 match destination-address 203.0.113.0/24
set rule stat-rule2 match destination-address-name add1
```

**Related
Documentation**

- [Understanding Address Books on page 27](#)
- [Understanding Global Address Books on page 29](#)
- [Understanding Address Sets on page 29](#)

Example: Configuring Address Books and Address Sets

This example shows how to configure addresses and address sets in address books. It also shows how to attach address books to security zones.

- [Requirements on page 35](#)
- [Overview on page 35](#)

- [Configuration on page 36](#)
- [Verification on page 38](#)

Requirements

Before you begin:

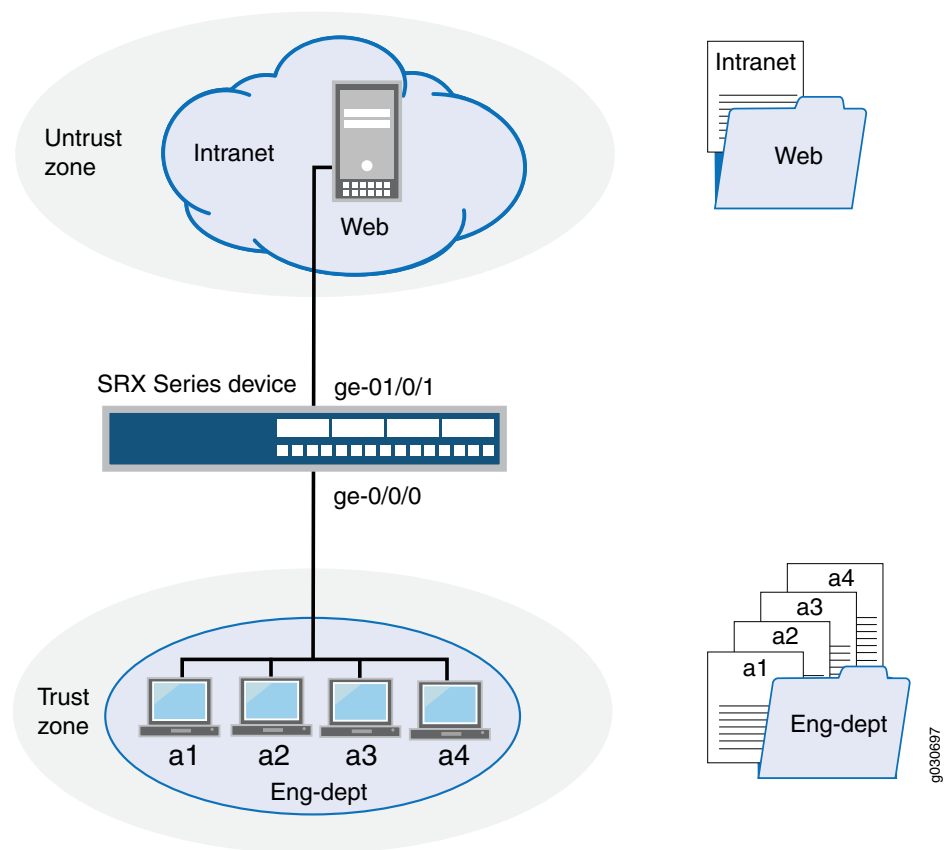
- Configure the Juniper Networks security devices for network communication.
- Configure network interfaces on server and member devices. See the *Interfaces Feature Guide for Security Devices*.
- Configure Domain Name System (DNS) services. For information about DNS, see *DNS Overview*.

Overview

In this example, you configure an address book with addresses and address sets (see [Figure 2 on page 36](#)) to simplify configuring your company's network. You create an address book called **Eng-dept** and add addresses of members from the Engineering department. You create another address book called **Web** and add a DNS name to it. Then you attach a security zone trust to the **Eng-dept** address book and security zone untrust to the **Web** address book. You also create address sets to group software and hardware addresses in the Engineering department. You plan to use these addresses as source address and destination addresses in your future policy configurations.

In addition, you add an address to the global address book, to be available to any security zone that has no address book attached to it.

Figure 2: Configuring Addresses and Address Sets



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 trust interfaces ge-0/0/0
set security zones security-zone untrust interfaces ge-0/0/1
set security address-book Eng-dept address a1 203.0.113.1
set security address-book Eng-dept address a2 203.0.113.2
set security address-book Eng-dept address a3 203.0.113.3
set security address-book Eng-dept address a4 203.0.113.4
set security address-book Eng-dept address-set sw-eng address a1
set security address-book Eng-dept address-set sw-eng address a2
set security address-book Eng-dept address-set hw-eng address a3
set security address-book Eng-dept address-set hw-eng address a4
set security address-book Eng-dept attach zone trust
set security address-book Web address Intranet dns-name
www-int.device1.example.com.com
set security address-book Web attach zone untrust
set security address-book global address g1 198.51.100.2/24
```

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 CLI User guide.

To configure addresses and address sets:

1. Create security zones and assign interfaces to them.

```
[edit]
user@host# set security zones security-zone trust interfaces ge-0/0/0
user@host# set security zones security-zone untrust interfaces ge-0/0/1
```

2. Create an address book and define addresses in it.

```
[edit security address-book Eng-dept ]
user@host# set address a1 203.0.113.1
user@host# set address a2 203.0.113.2
user@host# set address a3 203.0.113.3
user@host# set address a4 203.0.113.4
```

3. Create address sets.

```
[edit security address-book Eng-dept]
user@host# set address-set sw-eng address a1
user@host# set address-set sw-eng address a2
user@host# set address-set hw-eng address a3
user@host# set address-set hw-eng address a4
```

4. Attach the address book to a security zone.

```
[edit security address-book Eng-dept]
user@host# set attach zone trust
```

5. Create another address book and attach it to a security zone.

```
[edit security address-book Web ]
user@host# set address Intranet dns-name www-int.device1.example.com.com
user@host# set attach zone untrust
```

6. Define an address in the global address book.

```
[edit]
user@host# set security address-book global address g1 198.51.100.2/24
```

Results From configuration mode, confirm your configuration by entering the **show security zones** and **show security address-book** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show security zones
security-zone untrust {
  interfaces {
    ge-0/0/1.0;
  }
}
security-zone trust {
  interfaces {
    ge-0/0/0.0;
  }
}
```

```
}
[edit]
user@host# show security address-book
Eng-dept {
    address a1 203.0.113.1/24;
    address a2 203.0.113.2/24;
    address a3 203.0.113.3/24;
    address a4 203.0.113.4/24;
    address-set sw-eng {
        address a1;
        address a2;
    }
    address-set hw-eng {
        address a3;
        address a4;
    }
    attach {
        zone trust;
    }
}
Web {
    address Intranet {
        dns-name www-int.device1.example.com.com ;
    }
    attach {
        zone untrust;
    }
}
global {
    address g1 198.51.100.2/24;
}
```

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

Verification

Confirm that the configuration is working properly.

- [Verifying Address Book Configuration on page 38](#)
- [Verifying Global Address Book Configuration on page 38](#)

Verifying Address Book Configuration

Purpose Display information about configured address books and addresses.

Action From configuration mode, enter the **show security address-book** command.

Verifying Global Address Book Configuration

Purpose Display information about configured addresses in the global address book.

Action From configuration mode, enter the **show security address-book global** command.

- Related Documentation**
- [Understanding Address Books on page 27](#)
 - [Understanding Address Sets on page 29](#)

Limitations of Addresses and Address Sets in a Security Policy

On SRX Series devices, one policy can reference multiple address sets, multiple address entries, or both. One address set can reference a maximum of 1024 address entries and a maximum of 256 address sets. There is a limit to the number of address objects that a policy can reference; the maximum number of address objects per policy is 1024. Starting with Junos OS Release 12.3X48-D15, the maximum number of policies per context for SRX3400 and SRX3600 devices increases from 10,240 to 40,000, and for SRX5400, SRX5600, and SRX5800 devices, from 10240 to 80,000.

For example, if policy p1 references 10 address entries and 10 address sets (which in turn reference 3 address entries), then the number of address objects under this policy is 40 (10 address entries + [10 address sets x 3 address entries] = 40).

Note that every IPv6 address entry is equal to 4 IPv4 address entries. For example, a policy configured for 1000 IPv4 address entries and 5 IPv6 address entries has 1020 address objects (1000 + [5 x 4] = 1020), which is within the 1024 value, and can be committed. However, a policy configured for 1000 IPv4 address entries and 7 IPv6 address entries has 1028 address objects (1000 + [7 x 4] = 1028), which exceeds the 1024 value, cannot be committed, and consequently generates an error message.

Release History Table

Release	Description
12.3X48-D15	Starting with Junos OS Release 12.3X48-D15, the maximum number of policies per context for SRX3400 and SRX3600 devices increases from 10,240 to 40,000, and for SRX5400, SRX5600, and SRX5800 devices, from 10240 to 80,000.

- Related Documentation**
- [Understanding Address Sets on page 29](#)
 - [Example: Configuring Address Books and Address Sets on page 34](#)

PART 4

Configuring Security Policies

- [Enforcing Transit Traffic Rules by Configuring Security Policies on page 43](#)
- [Configuring Negated Addresses on page 67](#)
- [Configuring Global Security Policy on page 73](#)
- [Managing Security Policy Activation By Configuring Schedulers on page 81](#)
- [Configuring User Role Firewall Security Policies on page 85](#)
- [Setting Security Policy Reorder on page 107](#)
- [Monitoring and Troubleshooting Security Policies on page 111](#)
- [Handling Security Policy Violations on page 123](#)

CHAPTER 6

Enforcing Transit Traffic Rules by Configuring Security Policies

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)
- [Understanding Security Policies for Self Traffic on page 50](#)
- [Security Policies Configuration Overview on page 51](#)
- [Configuring Policies Using the Firewall Wizard on page 52](#)
- [Example: Configuring a Security Policy to Permit or Deny All Traffic on page 52](#)
- [Example: Configuring a Security Policy to Permit or Deny Selected Traffic on page 56](#)
- [Example: Configuring a Security Policy to Permit or Deny Wildcard Address Traffic on page 60](#)
- [Example: Configuring a Security Policy to Redirect Traffic Logs to an External System Log Server on page 63](#)

Security Policies Overview

To secure their business, organizations must control access to their LAN and their resources. Security policies are commonly used for this purpose. 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. The stateful firewall policy syntax is widened to include additional tuples for the application firewall and the user identity firewall.

In a Junos OS stateful firewall, the security policies enforce rules for transit traffic, in terms of what traffic can pass through the firewall, and the actions that need to take place on traffic as it passes through the firewall. From the perspective of security policies, the traffic enters one security zone and exits another security zone. This combination of a *from-zone* and *to-zone* is called a *context*. Each context contains an *ordered list* of policies. Each policy is processed in the order that it is defined within a context.

A security policy, which can be configured from the user interface, controls the traffic flow from one zone to another zone by defining the kind(s) of traffic permitted from specified IP sources to specified IP destinations at scheduled times.

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. You decide which users and what data can enter and exit, and when and where they can go.



NOTE: For an SRX Series device that supports virtual systems, policies set in the root system do not affect policies set in virtual systems.

An SRX Series device secures a network by inspecting, and then allowing or denying, all connection attempts that require passage from one security zone to another.

Logging capability can also be enabled with security policies during session initialization (**session-init**) or session close (**session-close**) stage.

- To view logs from denied connections, enable log on **session-init**.
- To log sessions after their conclusion/tear-down, enable log on **session-close**.



NOTE: Session log is enabled at real time in the flow code which impacts the user performance. If both **session-close** and **session-init** are enabled, performance is further degraded as compared to enabling **session-init** only.

For SRX Series branch devices, a factory-default security policy is provided that:

- Allows all traffic from the trust zone to the untrust zone.
- Allows all traffic between trusted zones, that is from the trust zone to intrazone trusted zones.
- Denies all traffic from the untrust zone to the trust zone.

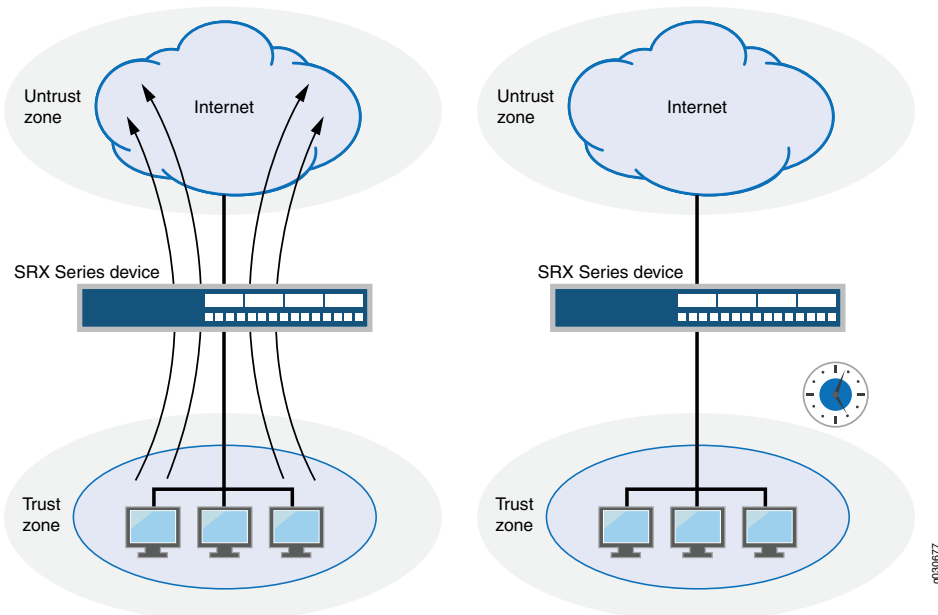
Through the creation of policies, you can control the traffic flow from zone to zone by defining the kinds of traffic permitted to pass from specified sources to specified destinations at scheduled times.

At the broadest level, you can allow all kinds of traffic from any source in one zone to any destination in all other zones without any scheduling restrictions. At the narrowest level, you can create a policy that allows only one kind of traffic between a specified host in one zone and another specified host in another zone during a scheduled interval of time. See [Figure 3 on page 45](#).

Figure 3: Security Policy

Broadly defined Internet access: Any service from any point in the trust zone to any point in the untrust zone at any time.

Narrowly defined Internet access: SMTP service from a mail server in the trust zone to a mail server in the untrust zone from 5:00 AM to 7:00 PM.



Every time a packet attempts to pass from one zone to another or between two interfaces bound to the same zone, the device checks for a policy that permits such traffic (see [“Understanding Security Zones” on page 8](#) and [“Policy Application Sets Overview” on page 130](#)). To allow traffic to pass from one security zone to another—for example, from zone A to zone B—you must configure a policy that permits zone A to send traffic to zone B. To allow traffic to flow the other way, you must configure another policy permitting traffic from zone B to zone A.

To allow data traffic to pass between zones, you must configure firewall policies.

Related Documentation

- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)
- [Security Policies Configuration Overview on page 51](#)
- [Understanding Security Policy Ordering on page 107](#)
- [Security Zones and Interfaces Overview on page 7](#)

Understanding Security Policy Rules

The security policy applies the security rules to the transit traffic within a context (**from-zone** to **to-zone**). Each policy is uniquely identified by its name. The traffic is classified by matching its source and destination zones, the source and destination addresses, and the application that the traffic carries in its protocol headers with the policy database in the data plane.

Each policy is associated with the following characteristics:

- A source zone
- A destination zone
- One or many source address names or address set names
- One or many destination address names or address set names
- One or many application names or application set names

These characteristics are called the *match criteria*. Each policy also has actions associated with it: permit, deny, reject, count, log, and VPN tunnel. You have to specify the match condition arguments when you configure a policy, source address, destination address, and application name.

You can specify to configure a policy with IPv4 or IPv6 addresses using the wildcard entry **any**. When flow support is not enabled for IPv6 traffic, **any** matches IPv4 addresses. When flow support is enabled for IPv6 traffic, **any** matches both IPv4 and IPv6 addresses. To enable flow-based forwarding for IPv6 traffic, use the **set security forwarding-options family inet6 mode flow-based** command. You can also specify the wildcard **any-ipv4** or **any-ipv6** for the source and destination address match criteria to include only IPv4 or only IPv6 addresses, respectively.

When flow support for IPv6 traffic is enabled, the maximum number of IPv4 or IPv6 addresses that you can configure in a security policy is based on the following match criteria:

- $\text{Number_of_src_IPv4_addresses} + \text{number_of_src_IPv6_addresses} * 4 \leq 1024$
- $\text{Number_of_dst_IPv4_addresses} + \text{number_of_dst_IPv6_addresses} * 4 \leq 1024$

The reason for the match criteria is that an IPv6 address uses four times the memory space that an IPv4 address uses.



NOTE: You can configure a security policy with IPv6 addresses only if flow support for IPv6 traffic is enabled on the device.

If you do not want to specify a specific application, enter **any** as the default application. To look up the default applications, from configuration mode, enter **show groups junos-defaults | find applications (predefined applications)**. For example, if you do not supply an application name, the policy is installed with the application as a wildcard (default). Therefore, any data traffic that matches the rest of the parameters in a given policy would match the policy regardless of the application type of the data traffic.



NOTE: If a policy is configured with multiple applications, and more than one of the applications match the traffic, then the application that best meets the match criteria is selected.

The action of the first policy that the traffic matches is applied to the packet. If there is no matching policy, the packet is dropped. Policies are searched from top to bottom, so it is a good idea to place more specific policies near the top of the list. You should also place IPsec VPN tunnel policies near the top. Place the more general policies, such as one that would allow certain users access to all Internet applications, at the bottom of the list. For example, place deny-all or reject-all policies at the bottom after all of the specific policies have been parsed before and legitimate traffic has been allowed/count/logged.



NOTE: Support for IPv6 addresses is added in Junos OS Release 10.2. Support for IPv6 addresses in active/active chassis cluster configurations (in addition to the existing support of active/passive chassis cluster configurations) is added in Junos OS Release 10.4.

Policies are looked up during flow processing after firewall filters and screens have been processed and route look up has been completed by the Services Processing Unit (SPU) (for high-end SRX Series devices). Policy look up determines the destination zone, destination address, and egress interface.

When you are creating a policy, the following policy rules apply:

- Security policies are configured in a **from-zone** to **to-zone** direction. Under a specific zone direction, each security policy contains a name, match criteria, an action, and miscellaneous options.
- The policy name, match criteria, and action are required.
- The policy name is a keyword.
- The source address in the match criteria is composed of one or more address names or address set names in the **from-zone**.
- The destination address of the match criteria is composed of one or more address names or address set names in the **to-zone**.
- The application name in the match criteria is composed of the name of one or more applications or application sets.
- One of the following actions is required: permit, deny, or reject.
- Accounting and auditing elements can be specified: count and log.
- You can enable logging at the end of a session with the **session-close** command, or at the beginning of the session with the **session-init** command.
- When the count alarm is turned on, specify alarm thresholds in bytes per second or kilobytes per minute.
- You cannot specify **global** as either the **from-zone** or the **to-zone** except under following condition:

Any policy configured with the **to-zone** as a global zone must have a single destination address to indicate that either static NAT or incoming NAT has been configured in the policy.

- In SRX Series Services Gateways, the policy permit option with NAT is simplified. Each policy will optionally indicate whether it allows NAT translation, does not allow NAT translation, or does not care.
- Address names cannot begin with the following reserved prefixes. These are used only for address NAT configuration:
 - `static_nat_`
 - `incoming_nat_`
 - `junos_`
- Application names cannot begin with the `junos_` reserved prefix.

Understanding Wildcard Addresses

Source and destination addresses are two of the five match criteria that should be configured in a security policy. You can now configure wildcard addresses for the source and destination address match criteria in a security policy. A wildcard address is represented as A.B.C.D/wildcard-mask. The wildcard mask determines which of the bits in the IP address A.B.C.D should be ignored by the security policy match criteria. For example, the source IP address 192.168.0.11/255.255.0.255 in a security policy implies that the security policy match criteria can discard the third octet in the IP address (symbolically represented as 192.168.*.11). Therefore, packets with source IP addresses such as 192.168.1.11 and 192.168.22.11 conform to the match criteria. However, packets with source IP addresses such as 192.168.0.1 and 192.168.1.21 do not satisfy the match criteria.

The wildcard address usage is not restricted to full octets only. You can configure any wildcard address. For example, the wildcard address 192.168. 7.1/255.255.7.255 implies that you need to ignore only the first 5 bits of the third octet of the wildcard address while making the policy match. If the wildcard address usage is restricted to full octets only, then wildcard masks with either 0 or 255 in each of the four octets only will be permitted.



NOTE: The first octet of the wildcard mask should be greater than 128. For example, a wildcard mask represented as 0.255.0.255 or 1.255.0.255 is invalid.

A wildcard security policy is a simple firewall policy that allows you to permit, deny, and reject the traffic trying to cross from one security zone to another. You should not configure security policy rules using wildcard addresses for services such as Unified Threat Management (UTM).



NOTE: Only Intrusion and Prevention (IDP) for IPv6 sessions is supported for all high-end SRX Series devices. UTM for IPv6 sessions is not supported. If your current security policy uses rules with the IP address wildcard any, and UTM features are enabled, you will encounter configuration commit errors because UTM features do not yet support IPv6 addresses. To resolve the errors, modify the rule returning the error so that the any-ipv4 wildcard is used; and create separate rules for IPv6 traffic that do not include UTM features.

Configuring wildcard security policies on a device affects performance and memory usage based on the number of wildcard policies configured per from-zone and to-zone context. Therefore, you can only configure a maximum of 480 wildcard policies for a specific from-zone and to-zone context.

Release History Table

Release	Description
10.4	Support for IPv6 addresses in active/active chassis cluster configurations (in addition to the existing support of active/passive chassis cluster configurations) is added in Junos OS Release 10.4.
10.2	Support for IPv6 addresses is added in Junos OS Release 10.2.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Elements on page 49](#)
- [Security Policies Configuration Overview on page 51](#)
- [Understanding Security Policy Ordering on page 107](#)

Understanding Security Policy Elements

A security policy is a set of statements that controls traffic from a specified source to a specified destination using a specified service. A policy permits, denies, or tunnels specified types of traffic unidirectionally between two points.

Each policy consists of:

- A unique name for the policy.
- A **from-zone** and a **to-zone**, for example: `user@host# set security policies from-zone untrust to-zone untrust`
- A set of match criteria defining the conditions that must be satisfied to apply the policy rule. The match criteria are based on a source IP address, destination IP address, and applications. The user identify firewall provides greater granularity by including an additional tuple, source-identity, as part of the policy statement.

- A set of actions to be performed in case of a match—permit, deny, or reject.
- Accounting and auditing elements—counting, logging, or structured system logging.

If the SRX Series receives a packet that matches those specifications, it performs the action specified in the policy.

Security policies enforce a set of rules for transit traffic, identifying which traffic can pass through the firewall and the actions taken on the traffic as it passes through the firewall. Actions for traffic matching the specified criteria include permit, deny, reject, log, or count.

For SRX Series branch devices, a factory default security policy is provided that:

- permits all traffic from the trust zone to the untrust zone.
- denies all traffic from the untrust zone to the trust zone.
- allows all traffic from the trust zone to the untrust zone.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Ordering on page 107](#)
- [Security Policies Configuration Overview on page 51](#)

Understanding Security Policies for Self Traffic

Security policies are configured on the devices to apply services to the traffic flowing through the device. For example UAC and UTM policies are configured to apply services to the transient traffic.

Self-traffic or host traffic, is the host-inbound traffic; that is, the traffic terminating on the device or the host-outbound traffic that is the traffic originating from the device. You can now configure policies to apply services on self traffic. Services like the SSL stack service that must terminate the SSL connection from a remote device and perform some processing on that traffic, IDP services on host-inbound traffic, or IPsec encryption on host-outbound traffic must be applied through the security policies configured on self-traffic.

When you configure a security policy for self-traffic, the traffic flowing through the device is first checked against the policy, then against the **host-inbound-traffic** option configured for the interfaces bound to the zone.

You can configure the security policy for self-traffic to apply services to self-traffic. The host-outbound policies will work only in cases where the packet that originated in the host device goes through the flow and the incoming interface of this packet is set to local.

The advantages of using the self-traffic are:

- You can leverage most of the existing policy or flow infrastructure used for the transit traffic.

- You do not need a separate IP address to enable any service.
- You can apply services or policies to any host-inbound traffic with the destination IP address of any interface on the device.



NOTE: You can configure the security policy for self-traffic with relevant services only. For example, it is not relevant to configure the fwauth service on host-outbound traffic, and gprs-gtp services are not relevant to the security policies for self-traffic.

The security policies for the self traffic are configured under the new default security zone called the *junos-host* zone. The *junos-host* zone will be part of the *junos-defaults* configuration, so users can delete it. The existing zone configurations such as interfaces, screen, tcp-rst, and host-inbound-traffic options are not meaningful to the *junos-host* zone. Therefore there is no dedicated configuration for the *junos-host* zone.



NOTE: You can use host-inbound-traffic to control incoming connections to a device; however it does not restrict traffic going out of the device. Whereas, *junos-host-zone* allows you to select the application of your choice and also restrict outgoing traffic. For example, services like NAT, IDP, UTM, and so forth can now be enabled for traffic going in or out of the SRX Series device using *junos-host-zone*.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Ordering on page 107](#)

Security Policies Configuration Overview

You must complete the following tasks to create a security policy:

1. Create zones. See [“Example: Creating Security Zones” on page 9](#).
2. Configure an address book with addresses for the policy. See [“Example: Configuring Address Books and Address Sets” on page 34](#).
3. Create an application (or application set) that indicates that the policy applies to traffic of that type. See [“Example: Configuring Applications and Application Sets” on page 130](#).
4. Create the policy. See [“Example: Configuring a Security Policy to Permit or Deny All Traffic” on page 52](#), [“Example: Configuring a Security Policy to Permit or Deny Selected Traffic” on page 56](#), and [“Example: Configuring a Security Policy to Permit or Deny Wildcard Address Traffic” on page 60](#).

5. Create schedulers if you plan to use them for your policies. See [“Example: Configuring Schedulers for a Daily Schedule Excluding One Day” on page 82.](#)

The Firewall Policy Wizard enables you to perform basic security policy configuration. For more advanced configuration, use the J-Web interface or the CLI.

**Related
Documentation**

- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)
- [Troubleshooting Security Policies on page 121](#)

Configuring Policies Using the Firewall Wizard

The Firewall Policy Wizard enables you to perform basic security policy configuration. For more advanced configuration, use the J-Web interface or the CLI.

To configure policies using the Firewall Policy Wizard:

1. Select **Configure>Tasks>Configure FW Policy** in the J-Web interface.
2. Click the Launch Firewall Policy Wizard button to launch the wizard.
3. Follow the prompts in the wizard.

The upper-left area of the wizard page shows where you are in the configuration process. The lower-left area of the page shows field-sensitive help. When you click a link under the Resources heading, the document opens in your browser. If the document opens in a new tab, be sure to close only the tab (not the browser window) when you close the document.

**Related
Documentation**

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Ordering on page 107](#)

Example: Configuring a Security Policy to Permit or Deny All Traffic

This example shows how to configure a security policy to permit or deny all traffic.

- [Requirements on page 52](#)
- [Overview on page 53](#)
- [Configuration on page 54](#)
- [Verification on page 56](#)

Requirements

Before you begin:

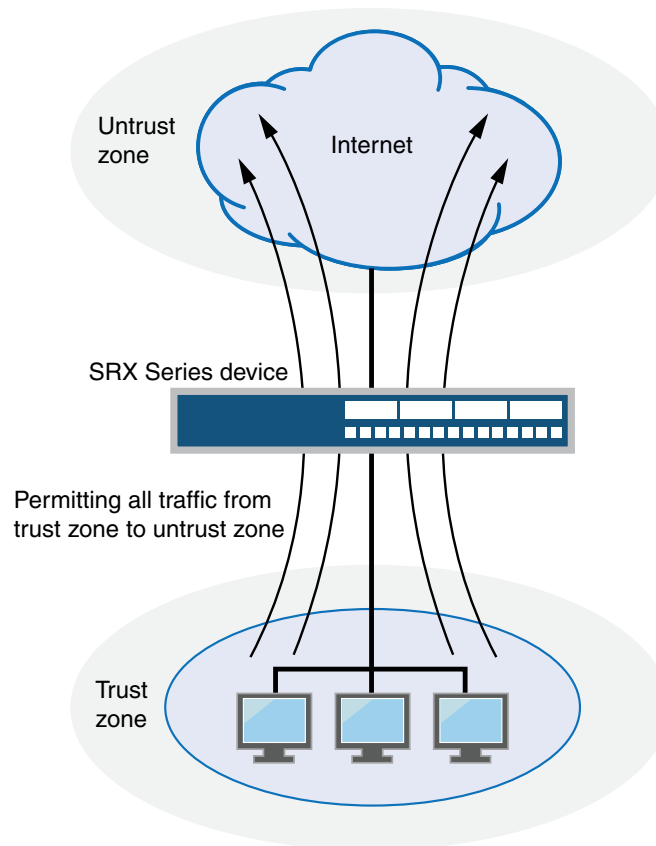
- Create zones. See [“Example: Creating Security Zones” on page 9.](#)

- Configure an address book and create addresses for use in the policy. See [“Example: Configuring Address Books and Address Sets” on page 34](#).
- Create an application (or application set) that indicates that the policy applies to traffic of that type. See [“Example: Configuring Applications and Application Sets” on page 130](#).

Overview

In the Junos OS, security policies enforce rules for transit traffic, in terms of what traffic can pass through the device, and the actions that need to take place on traffic as it passes through the device. From the perspective of security policies, the traffic enters one security zone and exits another security zone. In this example, you configure the trust and untrust interfaces, ge-0/0/2 and ge-0/0/1. See [Figure 4 on page 53](#).

Figure 4: Permitting All Traffic



This configuration example shows how to:

- Permit or deny all traffic from the trust zone to the untrust zone but block everything from the untrust zone to the trust zone.
- Permit or deny selected traffic from a host in the trust zone to a server in the untrust zone at a particular time.

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 trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
set security zones security-zone untrust interfaces ge-0/0/1 host-inbound-traffic
system-services all
set security policies from-zone trust to-zone untrust policy permit-all match
source-address any
set security policies from-zone trust to-zone untrust policy permit-all match
destination-address any
set security policies from-zone trust to-zone untrust policy permit-all match application
any
set security policies from-zone trust to-zone untrust policy permit-all then permit
set security policies from-zone untrust to-zone trust policy deny-all match source-address
any
set security policies from-zone untrust to-zone trust policy deny-all match
destination-address any
set security policies from-zone untrust to-zone trust policy deny-all match application
any
set security policies from-zone untrust to-zone trust policy deny-all then deny
```

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 a security policy to permit or deny all traffic:

1. Configure the interfaces and security zones.

```
[edit security zones]
user@host# set security-zone trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
user@host# set security-zone untrust interfaces ge-0/0/1 host-inbound-traffic
system-services all
```
2. Create the security policy to permit traffic from the trust zone to the untrust zone.

```
[edit security policies from-zone trust to-zone untrust]
user@host# set policy permit-all match source-address any
user@host# set policy permit-all match destination-address any
user@host# set policy permit-all match application any
user@host# set policy permit-all then permit
```
3. Create the security policy to deny traffic from the untrust zone to the trust zone.

```
[edit security policies from-zone untrust to-zone trust]
user@host# set policy deny-all match source-address any
user@host# set policy deny-all match destination-address any
user@host# set policy deny-all match application any
user@host# set policy deny-all then deny
```

Results From configuration mode, confirm your configuration by entering the **show security policies** and **show security zones** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.



NOTE: The configuration example is a default permit-all from the trust zone to the untrust zone.

```
[edit]
user@host# show security policies
from-zone trust to-zone untrust {
  policy permit-all {
    match {
      source-address any;
      destination-address any;
      application any;
    }
    then {
      permit;
    }
  }
}
from-zone untrust to-zone trust {
  policy deny-all {
    match {
      source-address any;
      destination-address any;
      application any;
    }
    then {
      deny;
    }
  }
}

user@host# show security zones
security-zone trust {
  interfaces {
    ge-0/0/2.0 {
      host-inbound-traffic {
        system-services {
          all;
        }
      }
    }
  }
}
security-zone untrust {
  interfaces {
    ge-0/0/1.0 {
      host-inbound-traffic {
        system-services {
          all;
        }
      }
    }
  }
}
```

```
    }  
  }  
}
```

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

Verification

Verifying Policy Configuration

Purpose	Verify information about security policies.
Action	From operational mode, enter the show security policies detail command to display a summary of all security policies configured on the device.
Meaning	<p>The output displays information about policies configured on the system. Verify the following information:</p> <ul style="list-style-type: none">• From and to zones• Source and destination addresses• Match criteria
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43• Understanding Security Policy Rules on page 45• Understanding Security Policy Elements on page 49

Example: Configuring a Security Policy to Permit or Deny Selected Traffic

This example shows how to configure a security policy to permit or deny selected traffic.

- [Requirements on page 56](#)
- [Overview on page 57](#)
- [Configuration on page 57](#)
- [Verification on page 60](#)

Requirements

Before you begin:

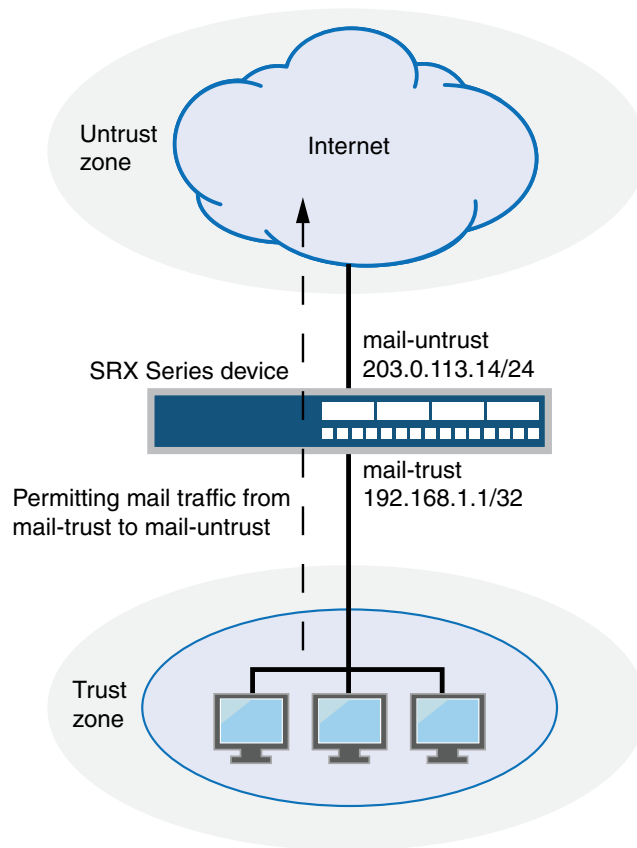
- Create zones. See [“Example: Creating Security Zones” on page 9](#).
- Configure an address book and create addresses for use in the policy. See [“Example: Configuring Address Books and Address Sets” on page 34](#).

- Create an application (or application set) that indicates that the policy applies to traffic of that type. See [“Example: Configuring Applications and Application Sets” on page 130](#).
- Permit traffic to and from trust and untrust zones. See [“Example: Configuring a Security Policy to Permit or Deny All Traffic” on page 52](#).

Overview

In Junos OS, security policies enforce rules for the transit traffic, in terms of what traffic can pass through the device, and the actions that need to take place on the traffic as it passes through the device. From the perspective of security policies, the traffic enters one security zone and exits another security zone. In this example, you configure a specific security policy to allow only e-mail traffic from a host in the trust zone to a server in the untrust zone. No other traffic is allowed. See [Figure 5 on page 57](#).

Figure 5: Permitting Selected Traffic



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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 trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
set security zones security-zone untrust interfaces ge-0/0/1 host-inbound-traffic
system-services all
set security address-book book1 address mail-untrust 203.0.113.14/24
set security address-book book1 attach zone untrust
set security address-book book2 address mail-trust 192.168.1.1/32
set security address-book book2 attach zone trust
set security policies from-zone trust to-zone untrust policy permit-mail match
source-address mail-trust
set security policies from-zone trust to-zone untrust policy permit-mail match
destination-address mail-untrust
set security policies from-zone trust to-zone untrust policy permit-mail match application
junos-mail
set security policies from-zone trust to-zone untrust policy permit-mail 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 CLI User guide.

To configure a security policy to allow selected traffic:

1. Configure the interfaces and security zones.

```
[edit security zones]
user@host# set security-zone trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
user@host# set security-zone untrust interfaces ge-0/0/1 host-inbound-traffic
system-services all
```

2. Create address book entries for both the client and the server. Also, attach security zones to the address books.

```
[edit security address-book book1]
user@host# set address mail-untrust 203.0.113.14/24
user@host# set attach zone untrust
```

```
[edit security address-book book2]
user@host# set address mail-trust 192.168.1.1/32
user@host# set attach zone trust
```

3. Define the policy to permit mail traffic.

```
[edit security policies from-zone trust to-zone untrust]
user@host# set policy permit-mail match source-address mail-trust
user@host# set policy permit-mail match destination-address mail-untrust
user@host# set policy permit-mail match application junos-mail
user@host# set policy permit-mail then permit
```

Results From configuration mode, confirm your configuration by entering the **show security policies** and **show security zones** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

[edit]

```
user@host# show security policies
from-zone trust to-zone untrust {
  policy permit-mail {
    match {
      source-address mail-trust;
      destination-address mail-untrust;
      application junos-mail;
    }
    then {
      permit;
    }
  }
}
```

```
user@host# show security zones
security-zone trust {
  host-inbound-traffic {
    system-services {
      all;
    }
  }
  interfaces {
    ge-0/0/2 {
      host-inbound-traffic {
        system-services {
          all;
        }
      }
    }
  }
}
security-zone untrust {
  interfaces {
    ge-0/0/1 {
      host-inbound-traffic {
        system-services {
          all;
        }
      }
    }
  }
}
```

```
user@host# show security address-book
book1 {
  address mail-untrust 203.0.113.14/24;
  attach {
    zone untrust;
  }
}
book2 {
  address mail-trust 192.168.1.1/32;
  attach {
    zone trust;
  }
}
```

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

Verification

Verifying Policy Configuration

Purpose	Verify information about security policies.
Action	From operational mode, enter the show security policies detail command to display a summary of all security policies configured on the device.
Meaning	<p>The output displays information about policies configured on the system. Verify the following information:</p> <ul style="list-style-type: none">• From and to zones• Source and destination addresses• Match criteria
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43• Example: Configuring a Security Policy to Permit or Deny All Traffic on page 52

Example: Configuring a Security Policy to Permit or Deny Wildcard Address Traffic

This example shows how to configure a security policy to permit or deny wildcard address traffic.

- [Requirements on page 60](#)
- [Overview on page 61](#)
- [Configuration on page 61](#)
- [Verification on page 63](#)

Requirements

Before you begin:

- Understand wildcard addresses. See “[Understanding Wildcard Addresses](#)” on page 48.
- Create zones. See “[Example: Creating Security Zones](#)” on page 9.
- Configure an address book and create addresses for use in the policy. See “[Example: Configuring Address Books and Address Sets](#)” on page 34.
- Create an application (or application set) that indicates that the policy applies to traffic of that type. See “[Example: Configuring Applications and Application Sets](#)” on page 130.
- Permit traffic to and from trust and untrust zones. See “[Example: Configuring a Security Policy to Permit or Deny All Traffic](#)” on page 52.
- Permit e-mail traffic to and from trust and untrust zones. See “[Example: Configuring a Security Policy to Permit or Deny Selected Traffic](#)” on page 56

Overview

In the Junos operating system (Junos OS), security policies enforce rules for the transit traffic, in terms of what traffic can pass through the device, and the actions that need to take place on the traffic as it passes through the device. From the perspective of security policies, the traffic enters one security zone and exits another security zone. In this example, you configure a specific security to allow only wildcard address traffic from a host in the trust zone to the untrust zone. No other traffic is allowed.

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** in configuration mode.

```
set security zones security-zone trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
set security zones security-zone untrust interfaces ge-0/0/1 host-inbound-traffic
system-services all
set security address-book book1 address wildcard-trust wildcard-address
192.168.0.11/255.255.0.255
set security address-book book1 attach zone trust
set security policies from-zone trust to-zone untrust policy permit-wildcard match
source-address wildcard-trust
set security policies from-zone trust to-zone untrust policy permit-wildcard match
destination-address any
set security policies from-zone trust to-zone untrust policy permit-wildcard match
application any
set security policies from-zone trust to-zone untrust policy permit-wildcard 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 CLI User guide.

To configure a security policy to allow selected traffic:

1. Configure the interfaces and security zones.

```
[edit security zones]
user@host# set security-zone trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
user@host# set security-zone untrust interfaces ge-0/0/1 host-inbound-traffic
system-services all
```

2. Create an address book entry for the host and attach the address book to a zone.

```
[edit security address-book book1]
user@host# set address wildcard-trust wildcard-address 192.168.0.11/255.255.0.255
user@host# set attach zone trust
```

3. Define the policy to permit wildcard address traffic.

```
[edit security policies from-zone trust to-zone untrust]
user@host# set policy permit-wildcard match source-address wildcard-trust
user@host# set policy permit-wildcard match destination-address any
```

```
user@host# set policy permit-wildcard match application any
user@host# set policy permit-wildcard then permit
```

Results From configuration mode, confirm your configuration by entering the **show security policies** and **show security zones** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit]
user@host# show security policies
from-zone trust to-zone untrust {
  policy permit-wildcard {
    match {
      source-address wildcard-trust;
      destination-address any;
      application any;
    }
    then {
      permit;
    }
  }
}

user@host# show security zones
security-zone trust {
  host-inbound-traffic {
    system-services {
      all;
    }
  }
  interfaces {
    ge-0/0/2 {
      host-inbound-traffic {
        system-services {
          all;
        }
      }
    }
  }
}

security-zone untrust {
  interfaces {
    ge-0/0/1 {
      host-inbound-traffic {
        system-services {
          all;
        }
      }
    }
  }
}

user@host# show security address-book
book1 {
  address wildcard-trust {
    wildcard-address 192.168.0.11/255.255.0.255;
  }
}
```

```
attach {  
    zone trust;  
}  
}
```

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

Verification

Verifying Policy Configuration

Purpose	Verify information about security policies.
Action	From operational mode, enter the show security policies policy-name permit-wildcard detail command to display details about the permit-wildcard security policy configured on the device.
Meaning	<p>The output displays information about the permit-wildcard policy configured on the system. Verify the following information:</p> <ul style="list-style-type: none">• From and To zones• Source and destination addresses• Match criteria
Related Documentation	<ul style="list-style-type: none">• Security Policies Configuration Overview on page 51• Understanding Security Policy Rules on page 45• Example: Configuring a Security Policy to Permit or Deny All Traffic on page 52• Example: Configuring a Security Policy to Permit or Deny Selected Traffic on page 56

Example: Configuring a Security Policy to Redirect Traffic Logs to an External System Log Server

This example shows how to configure a security policy to send traffic logs generated on the device to an external system log server.

- [Requirements on page 63](#)
- [Overview on page 64](#)
- [Configuration on page 64](#)
- [Verification on page 66](#)

Requirements

This example uses the following hardware and software components:

- A client connected to an SRX5600 device at the interface ge-4/0/5
- A server connected to the SRX5600 device at the interface ge-4/0/1

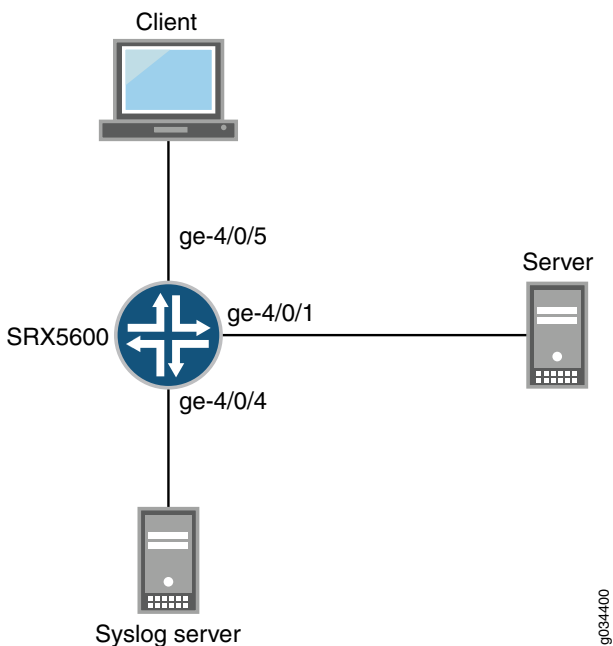
The logs generated on the SRX5600 device are stored in a Linux-based system log server.

- An SRX5600 device connected to the Linux-based server at interface ge-4/0/4

No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, you configure a security policy on the SRX5600 device to send traffic logs, generated by the device during data transmission, to a Linux-based server. Traffic logs record details of every session. The logs are generated during session establishment and termination between the source and the destination device that are connected to the SRX5600 device.



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** in configuration mode.

```

set security log source-address 127.0.0.1
set security log stream trafficlogs severity debug
set security log stream trafficlogs host 203.0.113.2
set security zones security-zone client host-inbound-traffic system-services all
set security zones security-zone client host-inbound-traffic protocols all

```

```

set security zones security-zone client interfaces ge-4/0/5.0
set security zones security-zone server host-inbound-traffic system-services all
set security zones security-zone server interfaces ge-4/0/4.0
set security zones security-zone server interfaces ge-4/0/1.0
set security policies from-zone client to-zone server policy match source-address any
set security policies from-zone client to-zone server policy match destination-address
  any
set security policies from-zone client to-zone server policy match application any
set security policies from-zone client to-zone server policy match then permit
set security policies from-zone client to-zone server policy match then log session-init
set security policies from-zone client to-zone server policy match then log session-close

```

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 a security policy to send traffic logs to an external system log server:

1. Configure security logs to transfer traffic logs generated at the SRX5600 device to an external system log server with the IP address 203.0.113.2. The IP address 127.0.0.1 is the loopback address of the SRX5600 device.

```

[edit security log]
user@host# set source-address 127.0.0.1
user@host# set stream trafficlogs severity debug
user@host# set stream trafficlogs host 203.0.113.2

```

2. Configure a security zone and specify the types of traffic and protocols that are allowed on interface ge-4/0/5.0 of the SRX5600 device.

```

[edit security zones]
user@host# set security-zone client host-inbound-traffic system-services all
user@host# set security-zone client host-inbound-traffic protocols all
user@host# set security-zone client interfaces ge-4/0/5.0

```

3. Configure another security zone and specify the types of traffic that are allowed on the interfaces ge-4/0/4.0 and ge-4/0/1.0 of the SRX5600 device.

```

[edit security zones]
user@host# set security-zone server host-inbound-traffic system-services all
user@host# set security-zone server interfaces ge-4/0/4.0
user@host# set security-zone server interfaces ge-4/0/1.0

```

4. Create a policy and specify the match criteria for that policy. The match criteria specifies that the device can allow traffic from any source, to any destination, and on any application.

```

[edit security policies from-zone client to-zone server]
user@host# set policy match source-address any
user@host# set policy match destination-address any
user@host# set policy match application any
user@host# set policy match then permit any

```

5. Enable the policy to log traffic details at the beginning and at the end of the session.

```

[edit security policies from-zone client to-zone server]
user@host# set policy match then log session-init
user@host# set policy match then log session-close

```

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

```
[edit]
user@host# show security log
format syslog;
source-address 127.0.0.1;
stream trafficlogs {
  severity debug;
  host {
    203.0.113.2;
  }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Verifying Zones on page 66](#)
- [Verifying Policies on page 66](#)

Verifying Zones

Purpose Verify that the security zone is enabled or not.

Action From operational mode, enter the **show security zones** command.

Verifying Policies

Purpose Verify that the policy is working.

Action From operational mode, enter the **show security policies** command on all the devices.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Security Policies Configuration Overview on page 51](#)
- [Example: Configuring a Security Policy to Permit or Deny All Traffic on page 52](#)

CHAPTER 7

Configuring Negated Addresses

- [Understanding Negated Address Support on page 67](#)
- [Example: Configuring Negated Addresses on page 68](#)

Understanding Negated Address Support

Junos OS allows users to add any number of source and destination addresses to a policy. If you need to exclude certain addresses from a policy, you can configure them as negated addresses. When an address is configured as a negated address, it is excluded from a policy. You cannot, however, exclude the following IP addresses from a policy:

- Wildcard
- IPv6
- any
- any-ipv4
- any-ipv6
- 0.0.0.0

When a range of addresses or a single address is negated, it can be divided into multiple addresses. These negated addresses are shown as a prefix or a length that requires more memory for storage on a Packet Forwarding Engine.

Each platform has a limited number of policies with negated addresses. A policy can contain 10 source or destination addresses. The capacity of the policy depends on the maximum number of policies that the platform supports.

Before you configure a negated source address, destination address, or both, perform the following tasks:

1. Create a source, destination, or both address book.
2. Create address names and assign source and destination addresses to the address names.
3. Create address sets to group source, destination, or both address names.
4. Attach source and destination address books to security zones. For example, attach the source address book to the from-zone **trust** and the destination address book to the to-zone **untrust**.
5. Specify the match source, destination, or both address names.
6. Execute source-address-excluded, destination-address excluded, or both commands. A source, destination, or both addresses added in the source, destination, or both address books will be excluded from the policy.



NOTE: The global address book does not need to be attached to any security zone.

**Related
Documentation**

- [Example: Configuring Address Books and Address Sets on page 34](#)
- [Example: Configuring Negated Addresses on page 68](#)

Example: Configuring Negated Addresses

This example shows how to configure negated source and destination addresses. It also shows how to configure address books and address sets.

- [Requirements on page 68](#)
- [Overview on page 69](#)
- [Configuration on page 69](#)
- [Verification on page 71](#)

Requirements

This example uses the following hardware and software components:

- An SRX Series device
- A PC
- Junos OS Release 12.1X45-D10

Before you begin, configure address books and address sets. See [“Example: Configuring Address Books and Address Sets” on page 34](#).

Overview

In this example, you create source and destination address books, SOUR-ADDR and DES-ADDR, and add source and destination addresses to it. You create source and destination address sets, as1 and as2, and group source and destination addresses to them. Then you attach source address book to the security zone trust and the destination address book to the security zone untrust.

You create security zones from-zone trust and to-zone untrust. You specify the policy name to p1 and then you set the name of the match source address to as1 and the match destination address to as2. You specify the commands **source -address-excluded** and **destination -address-excluded** to exclude source and destination addresses configured in the policy p1. Finally, you set the policy p1 to permit traffic from-zone trust to to-zone 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 SOU-ADDR address ad1 255.255.255.255/32
set security address-book SOU-ADDR address ad2 203.0.113.130/25
set security address-book SOU-ADDR address ad3 range-address 192.0.2.6 to 192.0.2.116
set security address-book SOU-ADDR address ad4 192.0.2.128/25
set security address-book SOU-ADDR address-set as1 address ad1
set security address-book SOU-ADDR address-set as1 address ad2
set security address-book SOU-ADDR address-set as1 address ad3
set security address-book SOU-ADDR address-set as1 address ad4
set security address-book SOU-ADDR attach zone trust
set security address-book DES-ADDR address ad8 198.51.100.1/24
set security address-book DES-ADDR address ad9 range-address 192.0.2.117 to 192.0.2.199
set security address-book DES-ADDR address ad10 198.51.100.0/24
set security address-book DES-ADDR address ad11 range-address 192.0.2.199 to
192.0.2.250
set security address-book DES-ADDR address-set as2 address ad8
set security address-book DES-ADDR address-set as2 address ad9
set security address-book DES-ADDR address-set as2 address ad10
set security address-book DES-ADDR address-set as2 address ad11
set security address-book DES-ADDR attach zone untrust
set security policies from-zone trust to-zone untrust policy p1 match source-address as1
set security policies from-zone trust to-zone untrust policy p1 match
source-address-excluded
set security policies from-zone trust to-zone untrust policy p1 match destination-address
as2
set security policies from-zone trust to-zone untrust policy p1 match
destination-address-excluded
set security policies from-zone trust to-zone untrust policy p1 match application any
set security policies from-zone trust to-zone untrust policy p1 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 CLI User guide.

To configure negated addresses:

1. Create a source address book and address names. Add the source addresses to the address book.

```
[edit security address book ]
user@host#set SOU-ADDR address ad1 255.255.255.255/32
user@host#set SOU-ADDR address ad2 203.0.113.130/25
user@host#set SOU-ADDR ad3 range-address 192.0.2.6 to 192.0.2.116
user@host#set SOU-ADDR address ad4 192.0.2.128/25
```

2. Create an address set to group source address names.

```
[edit security address book ]
user@host# set SOU-ADDR address-set as1 address ad1
user@host# set SOU-ADDR address-set as1 address ad2
user@host# set SOU-ADDR address-set as1 address ad3
user@host# set SOU-ADDR address-set as1 address ad4
```

3. Attach the source address book to the security from zone.

```
[edit security address book ]
user@host# set SOU-ADDR attach zone trust
```

4. Create a destination address book and address names. Add the destination addresses to the address book.

```
[edit security address book ]
user@host#set DES-ADDR address ad8 198.51.100.1/24
user@host#set DES-ADDR address ad9 range-address 192.0.2.117 to 192.0.2.199
user@host#set DES-ADDR address ad10 198.51.100.0/24
user@host#set DES-ADDR address ad11 range-address 192.0.2.199 to 192.0.2.250
```

5. Create another address set to group destination address names.

```
[edit security address book ]
user@host# set DES-ADDR address-set as1 address ad8
user@host# set DES-ADDR address-set as1 address ad9
user@host# set DES-ADDR address-set as1 address ad10
user@host# set DES-ADDR address-set as1 address ad11
```

6. Attach the destination address book to the security to zone.

```
[edit security address book ]
user@host# set DES-ADDR attach zone untrust
```

7. Specify the policy name and source address.

```
[edit security policies]
user@host# set from-zone trust to-zone untrust policy p1 match source-address
as1
```

8. Exclude source addresses from the policy.

```
[edit security policies]
user@host# set from-zone trust to-zone untrust policy p1 match
source-address-excluded
```

9. Specify the destination address.

```
[edit security policies]
user@host# set from-zone trust to-zone untrust policy p1 match destination-address
as2
```

10. Exclude destination addresses from the policy.

```
[edit security policies]
user@host# set from-zone trust to-zone untrust policy p1 match
destination-address-excluded
```

11. Configure the security policy application.

```
[edit security policies]
user@host# set from-zone trust to-zone untrust policy p1 match application any
```

12. Permit the traffic from-zone trust to to-zone untrust.

```
[edit security policies]
user@host# set from-zone trust to-zone untrust policy p1 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.

```
[edit]
user@host# show security policies
from-zone trust to-zone untrust {
  policy p1 {
    match {
      source-address as1;
      destination-address as2;
      source-address-excluded;
      destination-address-excluded;
      application any;
    }
    then {
      permit;
    }
  }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Verifying the Policy Configuration on page 71](#)
- [Verifying the Policy Configuration Detail on page 72](#)

Verifying the Policy Configuration

Purpose Verify that the policy configuration is correct.

Action From operational mode, enter the **show security policies policy-name p1** command.

```
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
```

This output summarizes the policy configuration.

Verifying the Policy Configuration Detail

Purpose Verify that the policy and the negated source and destination address configurations are correct.

Action From operational mode, enter the **show security policies policy-name p1 detail** command.

```
user@host>show security policies policy-name p1 detail
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(SOU-ADDR): 255.255.255.255/32
  ad2(SOU-ADDR): 203.0.113.130/25
  ad3(SOU-ADDR): 192.0.2.6 ~ 192.0.2.116
  ad4(SOU-ADDR): 192.0.2.128/25
Destination addresses(excluded):
  ad8(DES-ADDR): 198.51.100.1/24
  ad9(DES-ADDR): 192.0.2.117 ~ 192.0.2.199
  ad10(DES-ADDR): 198.51.100.0/24
  ad11(DES-ADDR): 192.0.2.199 to 192.0.2.250
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
```

This output summarizes the policy configuration and shows the names of negated source and destination addresses excluded from the policy.

- Related Documentation**
- [Understanding Negated Address Support on page 67](#)
 - [Security Policies Overview on page 43](#)
 - [Understanding Security Policy Rules on page 45](#)
 - [Understanding Security Policy Elements on page 49](#)

CHAPTER 8

Configuring Global Security Policy

- [Global Policy Overview on page 73](#)
- [Example: Configuring a Global Policy with No Zone Restrictions on page 75](#)
- [Example: Configuring a Global Policy with Multiple Zones on page 77](#)

Global Policy Overview

In a Junos OS stateful firewall, security policies enforce rules for transit traffic, in terms of what traffic can pass through the firewall, and the actions that need to take place on traffic as it passes through the firewall. Security policies require traffic to enter one security zone and exit another security zone. This combination of a from-zone and to-zone is called a *context*. Each context contains an ordered list of policies. Each policy is processed in the order that it is defined within a context. Traffic is classified by matching the policy's from-zone, to-zone, source address, destination address, and the application that the traffic carries in its protocol header. Each global policy, as with any other security policy, has the following actions: permit, deny, reject, log, count.

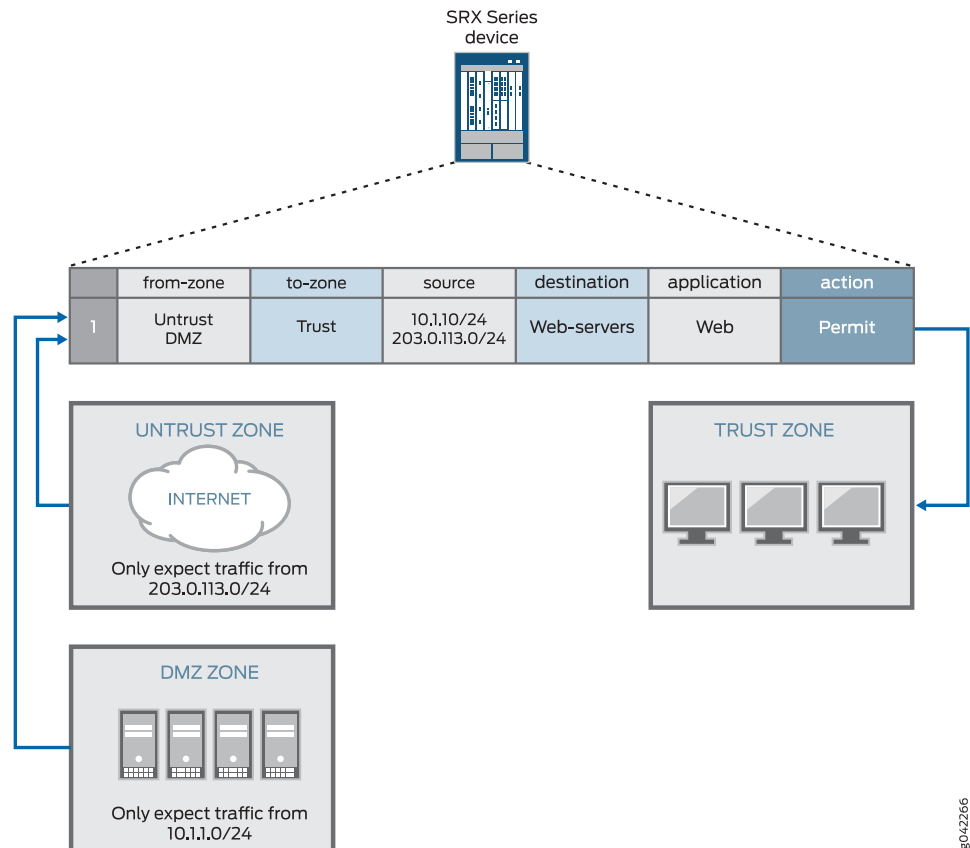
You can configure a security policy from the user interface. Security policies control traffic flow from one zone to another zone by defining the kind(s) of traffic permitted from specific IP sources to specific IP destinations at scheduled times. This works well in most cases, but it is not flexible enough. For example, if you want to perform actions on traffic you have to configure policies for each possible context. To avoid creating multiple policies across every possible context, you can create a global policy that encompasses all zones, or a multizone policy that encompasses several zones.

Using a global policy, you can regulate traffic with addresses and applications, regardless of their security zones, by referencing user-defined addresses or the predefined address “any.” These addresses can span multiple security zones. For example, if you want to provide access to or from multiple zones, you can create a global policy with the address “any,” which encompasses all addresses in all zones. Selecting the “any” address matches any IP address, and when “any” is used as a source/destination address in any global policy configuration, it matches the source/destination address of any packet.

Using a global policy you can also provide access to multiple source zones and multiple destination zones in one policy. However, we recommend that, for security reasons and to avoid spoofing traffic, when you create a multizone policy you use identical matching criteria (source address, destination address, application) and an identical action. In [Figure 6 on page 74](#), for example, if you create a multizone policy that includes DMZ and

Untrust from-zones, spoofing traffic from 203.0.113.0/24 from the DMZ zone could match the policy successfully and reach the protected host in the Trust to-zone.

Figure 6: Multizone Global Policy Security Consideration



NOTE: Global policies without from-zone and to-zone information do not support VPN tunnels because VPN tunnels require specific zone information.

When policy lookup is performed, policies are checked in the following order: intra-zone (trust-to-trust), inter-zone (trust-to-untrust), then global. Similar to regular policies, global policies in a context are ordered, such that the first matched policy is applied to the traffic.



NOTE: If you have a global policy, make sure you have not defined a “catch-all” rule such as, match source any, match destination any, or match application any in the intra-zone or inter-zone policies because the global policies will not be checked. If you do not have a global policy, then it is recommended that you include a “deny all” action in your intra-zone or inter-zone policies. If you do have a global policy, then you should include a “deny all” action in the global policy.

In logical systems, you can define global policies for each logical system. Global policies in one logical system are in a separate context than other security policies, and have a lower priority than regular security policies in a policy lookup. For example, if a policy lookup is performed, regular security policies have priority over global policies. Therefore, in a policy lookup, regular security policies are searched first and if there is no match, global policy lookup is performed.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)
- [Example: Configuring a Global Policy with No Zone Restrictions on page 75](#)

Example: Configuring a Global Policy with No Zone Restrictions

Unlike other security policies in Junos OS, global policies do not reference specific source and destination zones. Global policies reference the predefined address “any” or user-defined addresses that can span multiple security zones. Global policies give you the flexibility of performing actions on traffic without any zone restrictions. For example, you can create a global policy so that every host in every zone can access the company website, for example, www.example.com. Using a global policy is a convenient shortcut when there are many security zones. Traffic is classified by matching its source address, destination address, and the application that the traffic carries in its protocol header.

This example shows how to configure a global policy to deny or permit traffic.

- [Requirements on page 75](#)
- [Overview on page 76](#)
- [Configuration on page 76](#)
- [Verification on page 77](#)

Requirements

Before you begin:

- Review the firewall security policies.

See “Security Policies Overview” on page 43, “Global Policy Overview” on page 73, “Understanding Security Policy Rules” on page 45, and “Understanding Security Policy Elements” on page 49.

- Configure an address book and create addresses for use in the policy.

See “Example: Configuring Address Books and Address Sets” on page 34.

- Create an application (or application set) that indicates that the policy applies to traffic of that type.

See “Example: Configuring Applications and Application Sets” on page 130.

Overview

This configuration example shows how to configure a global policy that accomplishes what multiple security policies (using zones) would have accomplished. Global policy gp1 permits all traffic while policy gp2 denies 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 security address-book global address server1 www.example.com
set security address-book global address server2 www.mail.example.com
set security policies global policy gp1 match source-address server1
set security policies global policy gp1 match destination-address server2
set security policies global policy gp1 match application any
set security policies global policy gp1 then permit
set security policies global policy gp2 match source-address server2
set security policies global policy gp2 match destination-address server1
set security policies global policy gp2 match application junos-ftp
set security policies global policy gp2 then deny
```

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 a global policy to permit or deny all traffic:

1. Create addresses.

```
[edit security]
user@host# set security address-book global address server1 www.example.com
user@host# set security address-book global address server2
www.mail.example.com
```

2. Create the global policy to permit all traffic.

```
[edit security]
user@host# set policy global policy gp1 match source-address server1
user@host# set policy global policy gp1 match destination-address server2
user@host# set policy global policy gp1 match application any
```

```
user@host# set policy global policy gp1 then permit
```

3. Create the global policy to deny all traffic.

```
[edit security]
user@host# set policy global policy gp2 match source-address server2
user@host# set policy global policy gp2 match destination-address server1
user@host# set policy global policy gp2 match application junos-ftp
user@host# set policy global policy gp2 then deny
```

Results From configuration mode, confirm your configuration by entering the **show security policies** and **show security policies <global>** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@host> show security policies
Default policy: permit-all
Global policies:
  Policy: gp1, State: enabled, Index: 4, Scope Policy: 0, Sequence number: 1
    Source addresses: server1
    Destination addresses: server2
    Applications: any
    Action: permit
  Policy: gp2, State: enabled, Index: 5, Scope Policy: 0, Sequence number: 2
    Source addresses: server2
    Destination addresses: server1
    Applications: junos-ftp
    Action: deny
```

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

Verification

Verifying Global Policy Configuration

Purpose Verify that global policies gp1 and gp2 are configured as required.

Action From operational mode, enter the **show security policies <global>** command.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Global Policy Overview on page 73](#)

Example: Configuring a Global Policy with Multiple Zones

Unlike other security policies in Junos OS, global policies allow you to create multizone policies. A global policy is a convenient shortcut when there are many security zones, because it enables you to configure multiple source zones and multiple destination zones in one global policy instead of having to create a separate policy for each

from-zone/to-zone pair, even when other attributes, such as source-address or destination-address, are identical.

- [Requirements on page 78](#)
- [Overview on page 78](#)
- [Configuration on page 78](#)
- [Verification on page 79](#)

Requirements

Before you begin:

- Review the firewall security policies.

See “Security Policies Overview” on page 43, “Global Policy Overview” on page 73, “Understanding Security Policy Rules” on page 45, and “Understanding Security Policy Elements” on page 49.

- Create security zones.

See “Example: Creating Security Zones” on page 9

Overview

This configuration example shows how to configure a global policy that accomplishes what multiple security policies would have accomplished. Global policy Pa permits all traffic from zones 1 and 2 to zones 3 and 4.

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 global policy Pa match source-address any
set security policies global policy Pa match destination-address any
set security policies global policy Pa match application any
set security policies global policy Pa match from-zone zone1
set security policies global policy Pa match from-zone zone2
set security policies global policy Pa match to-zone zone3
set security policies global policy Pa match to-zone zone4
set security policies global policy Pa 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*.

To configure a global policy with multiple zones:

1. Create a global policy to allow any traffic from zones 1 and 2 to zones 3 and 4.

```
[edit security]
set security policies global policy Pa match source-address any
```

```
set security policies global policy Pa match destination-address any
set security policies global policy Pa match application any
set security policies global policy Pa match from-zone zone1
set security policies global policy Pa match from-zone zone2
set security policies global policy Pa match to-zone zone3
set security policies global policy Pa match to-zone zone4
set security policies global policy Pa then permit
```

Results From configuration mode, confirm your configuration by entering the **show security policies global** command. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
[edit]
user@host# show security policies global
policy Pa {
  match {
    source-address any;
    destination-address any;
    application any;
    from-zone [ zone1 zone2 ];
    to-zone [ zone3 zone4 ];
  }
  then {
    permit;
  }
}
```

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

Verification

Verifying Global Policy Configuration

Purpose Verify that the global policy is configured as required.

Action From operational mode, enter the **show security policies global** command.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Global Policy Overview on page 73](#)

CHAPTER 9

Managing Security Policy Activation By Configuring Schedulers

- [Security Policy Schedulers Overview on page 81](#)
- [Example: Configuring Schedulers for a Daily Schedule Excluding One Day on page 82](#)

Security Policy Schedulers Overview

Schedulers are powerful features that allow a policy to be activated for a specified duration. You can define schedulers for a single (nonrecurrent) or recurrent time slot within which a policy is active. You can create schedulers irrespective of a policy, meaning that a scheduler cannot be used by any policies. However, if you want a policy to be active within a scheduled time, then you must first create a scheduler.

When a scheduler times out, the associated policy is deactivated and all sessions associated with the policy are also timed out.

If a policy contains a reference to a scheduler, the schedule determines when the policy is active, that is, when it can be used as a possible match for traffic. Schedulers allow you to restrict access to a resource for a period of time or remove a restriction.

The following guidelines apply to schedulers:

- A scheduler can have multiple policies associated with it; however, a policy cannot be associated with multiple schedulers.
- A policy is active during the time when the scheduler it refers to is also active.
- When a scheduler is off, the policy is unavailable for policy lookup.
- A scheduler can be configured as one of the following:
 - Scheduler can be active for a single time slot, as specified by a start date and time and a stop date and time.
 - Scheduler can be active forever (recurrent), but as specified by the daily schedule. The schedule on a specific day (time slot) takes priority over the daily schedule.
 - Scheduler can be active within a time slot as specified by the weekday schedule.
 - Scheduler can have a combination of two time slots (daily and timeslot).

- Related Documentation**
- [Security Policies Overview on page 43](#)
 - [Example: Configuring Schedulers for a Daily Schedule Excluding One Day on page 82](#)
 - [Verifying Scheduled Policies on page 118](#)

Example: Configuring Schedulers for a Daily Schedule Excluding One Day

This example shows how to configure schedulers for packet match checks every day except Sunday.

- [Requirements on page 82](#)
- [Overview on page 82](#)
- [Configuration on page 82](#)
- [Verification on page 84](#)

Requirements

Before you begin:

- Understand security policies schedulers. See [“Security Policies Overview” on page 43](#).
- Configure security zones before applying this configuration.

Overview

Schedulers are powerful features that allow a policy to be activated for a specified duration. You can define schedulers for a single (nonrecurrent) or recurrent time slot within which a policy is active. If you want a policy to be active within a scheduled time, then you must first create a scheduler.

To configure a scheduler, you enter a meaningful name and a start and stop time for the scheduler. You can also attach comments.

In this example, you:

- Specify the scheduler, `sch1`, that allows a policy, which refers to it, to be used for packet match checks every day except Sunday.
- Create a policy, `abc`, and specify the match conditions and action to be taken on traffic that matches the specified conditions. and bind the schedulers to the policy to allow access during the specified days.

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.

```
set schedulers scheduler sch1 daily all-day
set schedulers scheduler sch1 sunday exclude
```

```
set security policies from-zone green to-zone red policy abc match source-address any
set security policies from-zone green to-zone red policy abc match destination-address
any
set security policies from-zone green to-zone red policy abc match application any
set security policies from-zone green to-zone red policy abc then permit
set security policies from-zone green to-zone red policy abc scheduler-name sch1
set security policies default-policy permit-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 CLI User Guide.

To configure a scheduler:

1. Set a scheduler.

```
[edit schedulers ]
user@host# set scheduler sch1 daily all-day
user@host# set scheduler sch1 sunday exclude
```

2. Specify the match conditions for the policy.

```
[edit security policies from-zone green to-zone red policy abc]
user@host# set match source-address any destination-address any application
any
```

3. Specify the action.

```
[edit security policies from-zone green to-zone red policy abc]
user@host# set then permit
```

4. Associate the scheduler to the policy.

```
[edit security policies from-zone green to-zone red policy abc ]
user@host# set scheduler-name sch1
```

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

```
[edit]
[user@host]show schedulers
scheduler sch1 {
  daily all-day;
  sunday exclude;
}
[edit]
[user@host]show security policies
from-zone green to-zone red {
  policy abc {
    match {
      source-address any;
      destination-address any;
      application any;
    }
    then {
      permit;
    }
  }
}
```

```
    }
    scheduler-name sch1;
  }
}
default-policy {
  permit-all;
}
```

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

Verification

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

- [Verifying Schedulers are Active on page 84](#)
- [Verifying Policies on page 84](#)

Verifying Schedulers are Active

Purpose Verify if schedulers are enabled or not.

Action From operational mode, enter the **show schedulers** command.

Verifying Policies

Purpose Verify if the policies are working.

Action From operational mode, enter the **show security policies** command.

Related Documentation • [Verifying Scheduled Policies on page 118](#)

CHAPTER 10

Configuring User Role Firewall Security Policies

- [Understanding User Role Firewalls on page 85](#)
- [User Role Retrieval and the Policy Lookup Process on page 86](#)
- [Understanding the User Identification Table on page 88](#)
- [Obtaining Username and Role Information Through Firewall Authentication on page 94](#)
- [Configuring a User Role Firewall For Captive Portal Redirection on page 95](#)
- [Example: Configuring a User Role Firewall on an SRX Series Device on page 96](#)
- [Configuring Resource Policies Using UAC on page 103](#)

Understanding User Role Firewalls

Network security enforcement, monitoring, and reporting based solely on IP information soon will not be sufficient for today's dynamic and mobile workforce. By integrating user firewall policies, administrators can permit or restrict network access of employees, contractors, partners, and other users based on the roles they are assigned. User role firewalls enable greater threat mitigation, provide more informative forensic resources, improve record archiving for regulatory compliance, and enhance routine access provisioning.

User role firewalls trigger two actions:

- Retrieve user and role information associated with the traffic
- Determine the action to take based on six match criteria within the context of the zone pair

The source-identity field distinguishes a user role firewall from other types of firewalls. If the source identity is specified in any policy for a particular zone pair, it is a user role firewall. The user and role information must be retrieved before policy lookup occurs. If the source identity is not specified in any policy, user and role lookup is not required.

To retrieve user and role information, authentication tables are searched for an entry with an IP address corresponding to the traffic. If an entry is found, the user is classified as an authenticated user. If not found, the user is classified as an unauthenticated user.

The username and roles associated with an authenticated user are retrieved for policy matching. Both the authentication classification and the retrieved user and role information are used to match the source-identity field.

Characteristics of the traffic are matched to the policy specifications. Within the zone context, the first policy that matches the user or role and the five standard match criteria determines the action to be applied to the traffic.

The following sections describe the interaction of user and role retrieval and the policy lookup process, methods for acquiring user and role assignments, techniques for configuring user role firewall policies, and an example of configuring user role firewall policies.

**Related
Documentation**

- [User Role Retrieval and the Policy Lookup Process on page 86](#)
- [Understanding the User Identification Table on page 88](#)
- [Configuring a User Role Firewall For Captive Portal Redirection on page 95](#)
- [Configuring Resource Policies Using UAC on page 103](#)
- [Example: Configuring a User Role Firewall on an SRX Series Device on page 96](#)

User Role Retrieval and the Policy Lookup Process

For policy lookup, firewall policies are grouped by zone pair (the from zone and to zone). Within the context of the zone pair, IP-based firewall policies are matched to traffic based on five criteria—source IP, source port, destination IP, destination port, and protocol.

User role firewall policies include a sixth match criteria—source identity. The source-identity field specifies the users and roles to which the policy applies. When the source-identity field is specified in any policy within the zone pair, user and role information must be retrieved before policy lookup can proceed. (If all policies in the zone pair are set to **any** or have no entry in the source-identity field, user and role information is not required and the five standard match criteria are used for policy lookup.)

The user identification table (UIT) provides user and role information for an active user who has already been authenticated. Each entry in the table maps an IP address to an authenticated user and any roles associated with that user.

When traffic requires user and role data, each registered UIT is searched for an entry with the same IP address. If a user has not been authenticated, there is no entry for that IP address in the table. If no UIT entry exists, the user is considered an unauthenticated user.

Policy lookup resumes after the user and role information has been retrieved. The characteristics of the traffic are matched against the match criteria in the policies. The source-identity field of a policy can specify one or more users or roles, and the following keywords:

authenticated-user—Users that have been authenticated.

unauthenticated-user—Users that have not been authenticated.

any—All users regardless of authentication. If the source-identity field is not configured or is set to any in all of the policies for the zone pair, only five criteria are matched.

unknown-user—Users unable to be authenticated due to an authentication server disconnection, such as a power outage.

For example, consider user-c who is assigned to the mgmt role. When traffic from the trust zone to the untrust zone is received from user-c at IP address 198.51.100.3, policy lookup is initiated. [Table 7 on page 87](#) represents three policies in a user role firewall for the trust to untrust zone pair.

Table 7: Trust Zone to Untrust Zone Policy Sequence

src-zone	src-zone	dest-zone	src-IP	dest-IP	source-identity	Application	Action	Services
P1	trust	untrust	192.0.2.0	203.0.113.0	any	http	deny	–
P2	trust	untrust	any	any	mgmt	any	permit	–
P3	trust	untrust	198.51.100.3	any	employee	http	deny	–

All policies for the zone pair are checked first for a source-identity option. If any of the policies specifies a user, a role, or a keyword, user and role retrieval must occur before policy lookup continues. [Table 7 on page 87](#) shows that policy P2 specifies mgmt as the source identity, making this a user role firewall. User and roles must be retrieved before policy lookup can continue.



NOTE: User and role retrieval would not be performed if the keyword any or if no source identity was specified in all of the policies in the zone context. In such cases, only the five remaining values are matched to the policy criteria.

The UIT represented in [Table 8 on page 87](#) is checked for the IP address. Because the address is found, the username user-c, all roles listed for user-c (in this case, mgmt and employee), and the keyword authenticated-user become data used to match the traffic to the **source-identity** field of a policy.

Table 8: UIT Authentication Details

Source IP Address	Username	Roles
192.0.2.4	user-a	employee
198.51.100.3	user-c	mgmt, employee
203.0.113.2	user-s	contractor

Policy lookup resumes and compares the match criteria in each policy in [Table 7 on page 87](#) to the incoming traffic. Assuming all other criteria match, the first policy that specifies user-c, mgmt, employee, authenticated-user, or any in the

source-identity field could be a match for this traffic. Policy P1 matches one of the retrieved roles for user-c, but the source IP address does not match; therefore policy lookup continues. For policy P2, all criteria match the traffic; therefore the policy action is followed and the traffic is permitted. Note that the traffic also matches policy P3, but user firewall policies are terminal—policy lookup ends when the first policy match is found. Because policy P2 matches all criteria, policy lookup ends and policy P3 is not checked.

Policies can also be based on the classification assigned to a user from the user and role retrieval results. Consider a different set of policies for the same zone pair represented by [Table 9 on page 88](#). If traffic is received from user-q at IP 198.51.100.5, user and role retrieval is required because the source-identity field is specified in at least one of the policies.

Table 9: Trust Zone to Untrust Zone Policy Sequence

policy-name	src-zone	dest-zone	src-IP	dest-IP	source-identity	application	action	Services
P1	trust	untrust	any	any	un-authenticated-user	http	deny	—
P2	trust	untrust	any	any	mgmt	any	permit	—
P3	trust	untrust	198.51.100.3	any	employee	http	deny	—

When the UIT entries in [Table 8 on page 87](#) are checked, no entry is found for IP address 198.51.100.5. Therefore, the user is considered an unauthenticated user. When policy lookup resumes, the traffic matches policy P1 and the traffic is denied.

Related Documentation

- [Understanding User Role Firewalls on page 85](#)
- [Understanding the User Identification Table on page 88](#)
- [Configuring a User Role Firewall For Captive Portal Redirection on page 95](#)
- [Example: Configuring a User Role Firewall on an SRX Series Device on page 96](#)
- [Configuring Resource Policies Using UAC on page 103](#)

Understanding the User Identification Table

On the SRX Series device, the user identification table (UIT) contains the IP address, username, and role information for each authenticated user. Entries are ordered by IP address. When username and role information is required by a security policy, all UITs are checked. Finding the IP address in an entry in one of the UITs means that the user at that address has already been successfully authenticated.

Each authentication source maintains its own UIT independently and provides query functions for accessing data. Three types of UITs are supported—the local authentication table, the Unified Access Control (UAC) authentication table, and the firewall authentication table.

Local authentication table—A static UIT created on the SRX Series device either manually or programmatically using CLI commands. All users included in the local authentication table are considered authenticated users. When a matching IP address is found, user and role information is retrieved from the table entry and associated with the traffic. User and role information can be created on the device manually or ported from a third-party authentication server, but the data in the local authentication table is not updated in real time.

UAC authentication table—A dynamic UIT pushed from the Junos Pulse Access Control Service to the SRX Series device. The UAC authentication table of a Junos Pulse Access Control Service contains an entry for each authenticated user. The data in this table is updated and pushed to the SRX Series device whenever its authentication table is updated. Depending on the device configuration, authentication could occur on the Junos Pulse Access Control Service itself or on a third-party authentication server. If the Access Control Service is relaying data from a third-party server, the data is restructured by the Access Control Service to match the file format of its authentication table and pushed to the SRX Series device.

Firewall authentication table—A dynamic UIT created on the SRX when **user-firewall** is specified as the firewall authentication type in a security policy. This UIT provides an alternative user role source to UAC when firewall authentication is already in use on your SRX Series device. In this way, users defined for pass-through authentication can also be used as a source for usernames and roles when the **user-firewall** option is specified as the firewall authentication type in a policy.

The **user-firewall** authentication type initiates firewall authentication to verify the user by using either local authentication information or external authentication servers supporting RADIUS, LDAP, or SecureID authentication methods. When this type is specified for firewall authentication, the username and associated groups (roles) from the authentication source are mapped to the IP address and added to the firewall authentication UIT.

- [Local Authentication Table on page 89](#)
- [UAC Authentication Table on page 91](#)
- [Firewall Authentication Table on page 92](#)
- [Policy Provisioning With Users and Roles on page 93](#)

Local Authentication Table

The local authentication table is managed with CLI commands that insert or delete entries. A local authentication table can be used as a backup solution when a dynamic UIT is not available, or to assign user and role information to devices that cannot authenticate to the network, such as printers or file servers. The local authentication table can be used for testing or to demonstrate how a user role firewall works without firewall authentication or the Access Control Service configured.

The IP addresses, user names, and roles from a third-party authentication source can be downloaded and added to the local authentication table programmatically using CLI commands. If an authentication source defines users and groups, the groups can be configured as roles and associated with the user as usual.

To be compliant with the UAC authentication table, user names are limited to 65 characters and role names are limited to 64 characters. The local authentication table has a maximum of 10,240 authentication entries on SRX1500 devices and above, 5120 authentication entries on SRX650 devices and below, depending on the Junos OS release in your installation. The local authentication table has 5120 authentication entries on the vSRX. Each authentication entry can be associated with up to 200 roles. The maximum capacity is based on an average of 10 roles assigned to each user. This is the same capacity specified for a UAC authentication table.

Use the following command to add an entry to a local authentication table. Note that each entry is keyed by IP address.

```
user@host> request security user-identification local-authentication-table add user
user-name ip-address ip-address role [role-name role-name ]
```

The role option in a single CLI command accepts up to 40 roles. To associate more than 40 roles with a single user, you need to enter multiple commands. Keep the following characteristics in mind when adding or modifying authentication user and role entries.

- Role names cannot be the same as usernames.
- Using the **add** option with an existing IP address and username aggregates the role entries. The table can support up to 200 roles per user.
- Using the **add** option with an existing IP address and a new username overwrites the existing username for that IP address.
- Role aggregation does not affect existing sessions.
- To change the role list of an existing entry, you need to delete the existing entry and add an entry with the new role list.
- To change the IP address of an existing entry, you need to delete the existing entry and add an entry with the new IP address.

An entry can be deleted by IP address or by username.

```
user@host> request security user-identification local-authentication-table delete
(ip-address | user-name)
```

The local authentication table can be cleared with the following command:

```
user@host> clear security user-identification local-authentication-table
```

To display the content of the local authentication table, use the following **show...** command:

```
user@host> show security user-identification local-authentication-table all (brief |
extensive)
```

The **brief** option (the default) displays information in a tabular format sequenced by IP address. User names and role lists are truncated to fit the format.

```
user@host> show security user-identification local-authentication-table all
```

```
Total entries: 2
Source IP      Username      Roles
```

198.51.100.1	user1	role1
203.0.113.2	user2	role2, role3

The **extensive** option displays the full content for each field. Other options limit the display to a single username, IP address, or role.

```
user@host> show security user-identification local-authentication-table all extensive
```

```
Total entries: 3
Ip-address: 198.51.100.2
Username: user1
Roles: role1
```

```
Ip-address: 203.0.113.2
Username: user1
Roles: role2
```

```
Ip-address: 192.0.2.3
Username: user3
Roles: role1, role2
```

UAC Authentication Table

An SRX Series device can act as an enforcer for a Junos Pulse Access Control Service. In this implementation, the SRX Series device acts as a Layer 3 enforcement point and controls access to resources with IP-based resource policies that have been pushed down from the Access Control Service.

When implemented as a user role firewall, the SRX Series device can access the UAC network in a similar way for user role retrieval. In this instance, user and role information for all authenticated users is pushed from the Access Control Service.

The SRX Series device configuration is similar to that of an enforcer. To establish communication, both devices require configuration and password settings to recognize the other. From the SRX Series device, connect the Access Control Service as an infranet controller.

```
[edit]
user@host# set services unified-access-control infranet-controller ic-name address
ip-address
user@host# set services unified-access-control infranet-controller ic-name interface
interface-name
user@host# set services unified-access-control infranet-controller ic-name password
password
```

From the Access Control Service, define the SRX Series device as a New Enforcer. Use the same password specified on the SRX Series device.

Users and passwords are defined on the Access Control Service as in a standard authentication configuration. One or more roles can also be associated with users. When a user is authenticated, an entry containing the IP address, username, and associated roles is added to the UAC authentication table on the Access Control Service.

The UAC authentication table is pushed from the Access Control Service to the SRX Series device when the connection between the two devices is initialized. Whenever an

entry is added, removed, or updated on the Access Control Service, the updated UAC authentication table is pushed to the SRX Series device.

Resource access policies are not necessary on the Access Control Service for a user role firewall implementation. The access behavior is provided in the policy configurations on the SRX Series device. If resource access policies are defined on the Access Control Service, they are pushed to the SRX Series device, but they are not used unless a specific firewall policy implements UAC policies in the policy's action field.

The following **show services** command displays the content of the UAC authentication table on the SRX Series device, confirming that the table has been pushed from the Access Control Service successfully:

```
user@host> show services unified-access-control authentication-table extended
```

Id	Source IP	Username	Age	Role name
3	192.0.2.1	april	60	Users
6	192.0.2.2	june	60	Employees
Total: 2				

The SRX Series device monitors connections and detects if communication to the Access Control Service has been lost. Based on the UAC configuration, the SRX Series device waits for a response for a configured interval before issuing another request. If a response is received, the Access Control Service is considered functional. If no response is received after a specified timeout period, communication is considered lost and the timeout action is applied. The following UAC command syntax configures the interval, timeout, and timeout action:

```
user@host# set services unified-access-control interval seconds
user@host# set services unified-access-control timeout seconds
user@host# set services unified-access-control timeout-action (close | no-change | open)
```

During a disconnection, if user and role lookup is attempted for the disconnected device, it returns a failure code regardless of the timeout action. If access to all authentication sources is lost, the keyword unknown-user is associated with the IP address. When policy lookup resumes, a policy with unknown-user as the source identity would match the traffic. By implementing a specific policy for unknown-user, you can create a method for handling the loss of authentication sources.

Firewall Authentication Table

Firewall authentication requires users to authenticate to the SRX firewall before permitting access between zones and devices. When traffic is received, the user is prompted for a username and password, and verified against a specified profile of valid users. Depending on the device configuration, firewall authentication verifies that telnet, HTTP, HTTPS (for high-end SRX Series devices), and FTP traffic has been authenticated locally or by a RADIUS, LDAP, or SecureID authentication server.

If firewall authentication is in use on a device, the authentication process can also provide the username and role information needed for user role firewall match criteria. In this case, the information is collected and maintained in a UIT called the firewall authentication table. One or more access policies in the **edit access** hierarchy define authentication methods to be used for firewall authentication.

The firewall authentication table must be enabled as the authentication source for user role information retrieval. The **priority** option specifies the sequence in which all UITs will be checked.

```
user@host# set security user-identification authentication-source firewall-authentication
priority priority
```

In a firewall policy for a given zone pair, the **firewall-authentication** service specified for the **permit** action initiates authentication of matching traffic. The **user-firewall** authentication type generates the UIT entry for the authenticated user. The name specified in the **access-profile** option identifies the profile to be used to authenticate valid users.

```
[edit security policies from-zone zone to-zone zone policy policy-name]
user@host# set match source-identity unauthenticated-user
user@host# set then permit firewall-authentication user-firewall access-profile
profile-name
```

The UIT table entry contains the IP address of the traffic mapped to the authenticated user and the user's associated groups. When the user is no longer active, the entry is removed from the table. Because entries are continuously added and removed as the traffic and authenticated users change, the firewall authentication table is considered dynamic.

When policies within the same zone pair specify the **source-identity** field as part of its match criteria, all enabled UITs are searched for an entry corresponding to the IP address of the traffic. If found, the associated username and groups are retrieved for source-identity matching. (User authentication group names are considered role names for source-identity matching.)

Policy Provisioning With Users and Roles

All users and roles, whether defined on the SRX Series device or on the Access Control Service, are maintained in a user role file on the SRX Series device. To display all users and roles available for provisioning, use the following **show security...** commands.



NOTE: Usernames and roles in the firewall authentication table are not included in the following displays.

- To display all of the roles that are available for provisioning, use the **show security user-identification role-provision all** command. Note that the roles from all UITs are listed together.
- To display all of the users that are available for provisioning, use the **show security user-identification user-provision all** command.
- To display all of the users and roles that are available for provisioning, use the **show security user-identification source-identity-provision all** command.

When a policy configuration is committed, the user role file is checked to determine if all users and roles specified in the policy are available for provisioning. If a user or role is not found, a warning identifies the missing user or role so that you can define it later.



NOTE: The policy is committed even if a user or role is not yet defined.

**Related
Documentation**

- [Understanding User Role Firewalls on page 85](#)
- [User Role Retrieval and the Policy Lookup Process on page 86](#)
- [Configuring a User Role Firewall For Captive Portal Redirection on page 95](#)
- [Example: Configuring a User Role Firewall on an SRX Series Device on page 96](#)
- [Configuring Resource Policies Using UAC on page 103](#)
- [Acquiring User Role Information from an Active Directory Authentication Server](#)

Obtaining Username and Role Information Through Firewall Authentication

User role firewall policies can be integrated with firewall authentication both to authenticate users and to retrieve username and role information. The information is mapped to the IP address of the traffic, stored in the firewall authentication table, and used for user role firewall policy enforcement.

The following CLI statements configure firewall authentication for user role firewall enforcement.

1. If not already established, define the access profile to be used for firewall authentication. You can skip this step if an existing access profile provides the client data needed for your implementation.

The access profile is configured in the **[edit access profile]** hierarchy as with other firewall authentication types. It defines clients as firewall users and the passwords that provide them access. Use the following command to define a profile and add client names and passwords for firewall authentication.

```
set access profile profile-name client client-name firewall-user password pwd
```

2. If HTTPS traffic is expected, define the access profile to be used for SSL termination services. You can skip this step if an existing SSL termination profile provides the services needed for your implementation.

The SSL termination profile is configured in the **[edit services ssl]** hierarchy.

```
set services ssl termination profile ssl-profile-name server-certificate certificate-type
```

3. Enable the firewall authentication table as an authentication source.

```
set security user-identification authentication-source firewall-authentication priority priority
```

The priority value determines the sequence in which authentication sources are checked. The default value is 150 for the firewall authentication table. (It is 100 for the local authentication table and 200 for the Unified Access Control (UAC) authentication table.) By default, the local authentication table is checked first, the firewall authentication table is next, and the UAC authentication table is third if it is

enabled. You can change this sequence by changing the priority value of one or more of the tables.

4. Configure policies that permit traffic for user firewall authentication.

```
edit security policies from-zone zone to-zone zone policy policy-name
set match source-identity unauthenticated-user
set then permit firewall-authentication user-firewall access-profile profile-name
ssl-termination-profile profile-name
```

When unauthenticated traffic is permitted for firewall authentication, the user is authenticated based on the access profile configured in this statement. The **ssl-termination-profile** option is needed only for HTTPS traffic.

By specifying the authentication type **user-firewall**, the firewall authentication table is propagated with the IP address, the username, and any group names associated with the authenticated user. (Group names from firewall authentication are interpreted as roles by the user role firewall.) Any further traffic from this IP address will match the IP address in the firewall authentication table, and not require authentication. The associated username and roles are retrieved from the table for use as potential match criteria in subsequent security policies.

Related Documentation

- [Understanding the User Identification Table on page 88](#)

Configuring a User Role Firewall For Captive Portal Redirection

To automatically redirect unauthenticated users to the Access Control Service, use the UAC captive portal feature. The following syntax defines the profile for the captive portal:

```
set services unified-access-control captive-portal profile-name redirect-traffic
[unauthenticated | all]
set services unified-access-control captive-portal profile-name redirect-url host-url
```

The Kerberos protocol, used for authentication encryption, identifies the Access Control Service only by its service principal name (SPN). The protocol does not accept an IP address. Therefore, the format for the redirect URL must be

service://hostname/options

In this implementation, the service is HTTP and the hostname is the FQDN of the Access Control Service. Options specified after the hostname pass additional information to the Access Control Service directing the user back to the original destination, to the SRX Series device, or to the policy that originated the redirection. You can configure the options using the following keyword and variable pairs:

?target=%dest-url%—Specifies the protected resource which the user is trying to access.

&enforcer=%enforcer-id%—Specifies the ID assigned to the SRX Series device when it is configured as an enforcer by the Access Control Service.

&policy=%policy-id%—Specifies the encrypted policy ID for the security policy that redirected the traffic.

The following statements define the profile of the captive portal named auth-redirect. The captive portal redirects unauthenticated users to the URL of the Access Control Service for authentication. After successful authentication, the traffic will be directed back to the SRX Series device.

```
[edit]
user@host# set services unified-access-control captive-portal auth-redirect redirect-traffic
unauthenticated
user@host# set services unified-access-control captive-portal auth-redirect redirect-url
"http://ic6000.example.com/?target=%dest-url%&policy=%policy-id%"
```

A defined captive-portal profile is displayed as part of the UAC configuration.

```
...
services unified-access-control captive-portal auth-redirect {
    redirect-traffic unauthenticated;
    redirect-url
"http://ic6000.example.com/?target=%dest-url%&policy=%policy-id%";
}
```

After the profile is defined, a policy can apply the captive portal as an application service when certain criteria are matched. The following example defines policy P1 to apply the auth-redirect captive portal profile to any HTTP traffic from the trust to untrust zones whenever the role is unauthenticated-user:

```
[edit]
user@host# set security policies from-zone trust to-zone untrust policy P1 match
application http
user@host# set security policies from-zone trust to-zone untrust policy P1 match
source-identity unauthenticated-user
user@host# set security policies from-zone trust to-zone untrust policy P1 then permit
application-services uac-policy captive-portal auth-redirect
```

**Related
Documentation**

- [Understanding User Role Firewalls on page 85](#)
- [User Role Retrieval and the Policy Lookup Process on page 86](#)
- [Understanding the User Identification Table on page 88](#)
- [Configuring Resource Policies Using UAC on page 103](#)
- [Example: Configuring a User Role Firewall on an SRX Series Device on page 96](#)

Example: Configuring a User Role Firewall on an SRX Series Device

The following example configures a user role firewall on an SRX Series device. The firewall controls access from the trust zone to the untrust zone based on active, authenticated users or their associated roles. User role firewall policies establish the following restrictions:

- Only authenticated users are permitted from the trust zone to the untrust zone.
- Unauthenticated users are redirected to an Access Control Service for authentication.

- Traffic from IP 192.0.2.0 to IP 203.0.113.0 within the zone context is restricted. Only the traffic from users with the dev-abc, http-juniper-accessible, or ftp-accessible role is permitted. Permitted traffic is further evaluated by AppFW rules.
- Permitted traffic identified as junos:FACEBOOK-ACCESS, junos:GOOGLE-TALK, or junos:MEEBO application traffic is denied.
- Permitted traffic for any other application is permitted.
- All other traffic from the trust zone to the untrust zone is permitted.
- [Requirements on page 97](#)
- [Overview on page 97](#)
- [Configuration on page 98](#)

Requirements

Before you begin, ensure that the SRX Series device with Junos OS Release 12.1 or later is configured and initialized.

In this example, user and role information associated with the IP address of the traffic is provided by an Access Control Service. For instructions on configuring the Access Control Server, see *Acquiring User Role Information from an Active Directory Authentication Server*.

Overview

[Table 10 on page 97](#) outlines a firewall that meets the requirements for this example. The user role firewall consists of four policies.

Table 10: User Role Firewall Policies

policy-name	src-zone	dest-zone	src-IP	dest-IP	source-identity	application	action	Services
user-role-fw1	trust	untrust	any	any	un-authenticated-user	http	permit	UAC captive portal
user-role-fw2	trust	untrust	192.0.2.0	203.0.113.0	dev-abc http-juniper-accessible ftp-accessible	http	permit	AppFW ruleset RS1
user-role-fw3	trust	untrust	192.0.2.0	203.0.113.0	any	http	deny	
user-role-fw4	trust	untrust	any	any	any	http	permit	

Because the **source-identity** field is specified for at least one of the policies in this firewall, user and role information must be retrieved before policy lookup is conducted. The source IP of the traffic is compared to the items in the UIT. If the source IP address is found, the keyword **authenticated**, the username, and any roles associated with this user are stored for later use in policy lookup. If a matching entry for the IP address is not found in the UIT, the keyword **unauthenticated-user** is stored for policy lookup.

After retrieving the username, roles, and keywords, policy lookup begins. Characteristics of the incoming traffic are compared to each policy's match criteria. If a match is found, the action specified in that policy is taken.

A policy match is a terminal event, and no policies after the match are checked. Policy sequence influences the action to be taken for matching traffic. In this example, policies are applied in the following sequence:

user-role-fw1—Applies the UAC captive portal service to matching HTTP traffic with the unauthenticated-user keyword, and redirects it to the Access Control Service for authentication. A UAC profile must also be configured to identify the captive portal specifications.

user-role-fw2—Applies an AppFW rule set to any HTTP traffic from address 192.0.2.0 to address 203.0.113.0 that has a matching username or role. An application firewall must also be configured to define the rule set.

user-role-fw3—Denies all remaining HTTP traffic from address 192.0.2.0 to address 203.0.113.0 for this zone pair.

user-role-fw4—Permits all remaining HTTP traffic for this zone pair.

Configuration

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.

Configuring Redirection For Unauthenticated Users

Step-by-Step Procedure

When an IP address is not listed in the UIT, the unauthenticated-user keyword is used in policy lookup. Instead of denying access to this traffic, a policy can redirect the traffic to a UAC captive portal for authentication.



NOTE: It is important to position a redirection policy for unauthenticated-user before a policy for “any” user so that UAC authentication is not shadowed by a policy intended for authenticated users.

To configure redirection from the SRX Series device to the Access Control Service:

1. From configuration mode, configure the UAC profile for the captive portal acs-device.

```
[edit]
user@host# set services unified-access-control captive-portal acs-device
redirect-traffic unauthenticated-user
```

2. Configure the redirection URL for the Access Control Service or a default URL for the captive portal.

```
[edit]
user@host# set services unified-access-control captive-portal acs-device
redirect-url "https://%ic-url%/?target=%dest-url%&enforcer=%enforcer-id%"
```

This policy specifies the default target and enforcer variables to be used by the Access Control Service to direct the user back after authentication. This ensures that changes to system specifications will not affect configuration results.



NOTE: When variables, such as `?target=`, are included in the command line, you must enclose the URL and variables in quotation marks.

3. Configure a user role firewall policy that redirects HTTP traffic from zone trust to zone untrust if the source-identity is unauthenticated-user. The captive portal profile name is specified as the action to be taken for traffic matching this policy.

```
[edit]
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw1
match source-address any
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw1
match destination-address any
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw1
match application http
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw1
match source-identity unauthenticated-user
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw1
then permit application-services uac-policy captive-portal acs-device
```

4. If you are done configuring the policies, commit the changes.

```
[edit]
user@host# commit
```

Results From configuration mode, confirm your configuration by entering the **show services** 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]
user@host# show services
...
unified-access-control {
  captive-portal acs-device {
    redirect-traffic unauthenticated;
    redirect-url "https://%ic-ip%/?target=%dest-url%&enforcer=%enforcer-id%"
  }
}
...

user@host# show security policies
...
from-zone trust to-zone untrust {
  policy user-role-fw1 {
    match {
      source-address any;
      destination-address any;
      application http;
      source-identity unauthenticated-user
    }
    then {
      permit {
```

```

        application-services {
            uac-policy {
                captive-portal acs-device;
            }
        }
    }
}
}
...

```

Creating a User Role Policy With an Application Firewall

Step-by-Step Procedure

This policy restricts traffic from IP 192.0.2.0 to IP 203.0.113.0 based on its user and roles, and also its application. The configuration defines an application rule set and applies it to matching user role traffic.

1. Configure the AppFW rule set rs1. The following rule set denies junos:FACEBOOK-ACCESS, junos:GOOGLE-TALK, or junos:MEEBO application traffic. It applies the default setting, permit, to the remaining traffic.

```

[edit]
user@host# set security application-firewall rule-sets rs1
[edit security application-firewall rule-sets rs1]
user@host# set rule r1 match dynamic-application [junos:FACEBOOK-ACCESS
junos:GOOGLE-TALK junos:MEEBO]
user@host# set rule r1 then deny
user@host# set default-rule permit

```

2. Configure a policy to apply the rs1 application firewall rule set to traffic from IP 192.0.2.0 to IP 203.0.113.0 with the dev-abc, http-mgmt-accessible, or ftp-accessible user role.

```

[edit]
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw2
match source-address 192.0.2.0
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw2
match destination-address 203.0.113.0
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw2
match application http
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw2
match source-identity [dev-abc http-mgmt-accessible ftp-accessible]
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw2
then permit application-services application-firewall rule-set rs1

```

3. If you are done configuring the policy, commit the changes.

```

[edit]
user@host# commit

```

Results Verify that the AppFW rule set is configured properly. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```

[edit]
user@host# show security application-firewall

...
rule-sets rs1 {

```

```

rule r1 {
  match {
    dynamic-application [junos:FACEBOOK-ACCESS junos:GOOGLE-TALK junos:MEEB0]
  }
  then {
    deny;
  }
}
default-rule {
  permit;
}
}

```

Creating Remaining Security Policies Based on User and Role

Step-by-Step Procedure

The following procedure configures policies for the remaining traffic.

1. Configure a policy to deny traffic with the same source and destination address but with different user and role criteria than specified in the user-role-fw2 policy.

```

[edit]
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw3
match source-address 192.0.2.0
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw3
match destination-address 203.0.113.0
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw3
match application http
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw3
match source-identity any
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw3
then deny

```

2. Configure a security policy to permit all other HTTP traffic from zone trust to zone untrust.

```

[edit]
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw4
match source-address any
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw4
match destination-address any
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw4
match application http
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw4
match source-identity any
user@host# set security policies from-zone trust to-zone untrust policy user-role-fw4
then permit

```

Results Verify the content and sequence of the user role firewall policies. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```

[edit]
user@host# show security policies

...
from-zone trust to-zone untrust {
  policy user-role-fw1 {
    match {

```

```
        source-address any;
        destination-address any;
        application http;
        source-identity unauthenticated-user
    }
    then {
        permit {
            application-services {
                uac-policy {
                    captive-portal acs-device;
                }
            }
        }
    }
}
}
}
}
from-zone trust to-zone untrust {
    policy user-role-fw2 {
        match {
            source-address 192.0.2.0;
            destination-address 203.0.113.0;
            application http;
            source-identity [dev-abc http-juniper-accessible ftp-accessible]
        }
        then {
            permit {
                application-services {
                    application-firewall {
                        rule-set rs1
                    }
                }
            }
        }
    }
}
}
from-zone untrust to-zone trust {
    policy user-role-fw3 {
        match {
            source-address 192.0.2.0;
            destination-address 203.0.113.0;
            application http;
            source-identity any
        }
        then {
            deny
        }
    }
}
}
from-zone trust to-zone untrust {
    policy user-role-fw4 {
        match {
            source-address any;
            destination-address any;
            application http;
            source-identity any
        }
        then {
            permit
        }
    }
}
}
```

- Related Documentation**
- [Understanding User Role Firewalls on page 85](#)
 - [User Role Retrieval and the Policy Lookup Process on page 86](#)
 - [Understanding the User Identification Table on page 88](#)

Configuring Resource Policies Using UAC

When using the user role firewall feature, resource policies are not necessary on the Access Control Service. If, however, resource policies exist, they are pushed to the SRX Series device at connection. You can create policies that use these resource policies by applying the UAC application service in the policy configuration. [Table 11 on page 103](#) shows three firewall policies that use the UAC resource policies exclusively:

Table 11: User Role Firewall Usage

policy-name	src-zone	dest-zone	src-IP	dest-IP	source-identity	application	action	Services
P1	zone1	zone2	any	192.0.2.1	any	http	permit	UTM
P2	zone1	zone2	any	net2	any	http	permit	IDP
P3	zone1	zone2	any	any	any	any	permit	UAC

The policies for traffic from zone1 to zone2 do not initiate user and role retrieval because any is specified in the source-identity field of every policy. In this example, traffic to the IP address 192.0.2.1 is permitted, but must meet processing requirements for the specified application service, in this case, UTM. Traffic to net2 is permitted and processed by the IDP processing requirements. Any remaining traffic is permitted and processed by the UAC processing requirements.

The configuration for this firewall policy would be as follows:

```
[edit]
user@host# show security policies

from-zone zone1 to-zone zone2 {
  policy P1 {
    match {
      source-address any;
      destination-address 192.0.2.1;
      source-identity any;
      application http;
    }
    then {
      permit {
        application-services {
          idp;
        }
      }
    }
  }
}
from-zone zone1 to-zone zone2 {
```

```

policy P2 {
  match {
    source-address any;
    destination-address net2;
    source-identity any;
    application http;
  }
  then {
    permit {
      application-services {
        utm;
      }
    }
  }
}
}
}
from-zone zone1 to-zone zone2 {
  policy P3 {
    match {
      source-address any;
      destination-address any;
      source-identity any;
      application any;
    }
    then {
      permit {
        application-services {
          uac-policy;
        }
      }
    }
  }
}
}
...

```

In this sample configuration, the action fields in P1 and P2 apply any requirements that have been configured for IDP and UTM respectively. By specifying the `uac-policy` option, the resource policies pushed to the SRX Series device determine whether the destination is accessible.

A user role firewall can implement both user role policies and the resource policies pushed from the Access Control Service. [Table 12 on page 104](#) shows the policies for three zone pairs.

Table 12: User Role Firewall Usage

policy-name	src-zone	dest-zone	src-IP	dest-IP	source-identity	application	action	Services
P1	zone1	zone2	any	any	unauthenticated-user	any	permit	UAC captive portal
P2	zone1	zone2	any	192.0.2.1	role2	http	permit	IDP
P3	zone1	zone2	any	net2	authenticated-user	http	permit	UTM
P4	zone1	zone2	any	any	any	any	permit	

Table 12: User Role Firewall Usage (*continued*)

policy-name	src-zone	dest-zone	src-IP	dest-IP	source-identity	application	action	Services
P5	zone1	zone3	any	any	any	any	permit	UAC
P6	zone2	zone3	any	any	any	any	permit	UAC

Traffic from zone1 to zone2 is subject to one of four user role policies. The first of these policies uses the UAC captive portal to redirect unauthenticated users to the Access Control Service for authentication.

The access of traffic from zone1 to zone3 and from zone2 to zone3 is controlled by the resource policies pushed from the Access Control Service.

**Related
Documentation**

- [Understanding User Role Firewalls on page 85](#)
- [User Role Retrieval and the Policy Lookup Process on page 86](#)
- [Understanding the User Identification Table on page 88](#)
- [Configuring a User Role Firewall For Captive Portal Redirection on page 95](#)

Setting Security Policy Reorder

- [Understanding Security Policy Ordering on page 107](#)
- [Example: Reordering the Policies on page 109](#)

Understanding Security Policy Ordering

Junos OS offers a tool for verifying that the order of policies in the policy list is valid.

It is possible for one policy to eclipse, or *shadow*, another policy. Consider the following examples:

Example 1

```
[edit]
user@host# set security zones security-zone trust interfaces ge-0/0/2 host-inbound-traffic
system-services all
user@host# set security zones security-zone untrust interfaces ge-0/0/1
host-inbound-traffic system-services all
user@host# set security policies from-zone trust to-zone untrust policy permit-all match
source-address any
user@host# set security policies from-zone trust to-zone untrust match
destination-address any
user@host# set security policies from-zone trust to-zone untrust match application any
user@host# set security policies from-zone trust to-zone untrust set then permit
user@host# set security policies from-zone untrust to-zone trust policy deny-all match
source-address any
user@host# set security policies from-zone untrust to-zone trust policy deny-all match
destination-address any
user@host# set security policies from-zone untrust to-zone trust policy deny-all match
application any
user@host# set security policies from-zone untrust to-zone trust policy deny-all then
deny
```

Example 2

```
[edit]
user@host# set security zones security-zone trust interfaces ge-0/0/2.0
host-inbound-traffic system-services all
user@host# set security zones security-zone untrust interfaces ge-0/0/1.0
host-inbound-traffic system-services all
user@host# set security address-book book1 address mail-untrust 192.0.2.1/24
user@host# set security address-book book1 attach zone untrust
```

```

user@host# set security address-book book2 address mail-trust 192.168.1.1/24
user@host# set security address-book book2 attach zone trust
user@host# set security policies from-zone trust to-zone untrust policy permit-mail match
    source-address mail-trust
user@host# set security policies from-zone trust to-zone untrust policy permit-mail match
    destination-address mail-untrust
user@host# set security policies from-zone trust to-zone untrust policy permit-mail match
    application junos-mail
user@host# set security policies from-zone trust to-zone untrust policy permit-mail then
    permit

```

In examples 1 and 2, where policy **permit-mail** is configured after policy **permit-all** from zone **trust** to zone **untrust**. All traffic coming from zone **untrust** matches the first policy **permit-all** and is allowed by default. No traffic matches policy **permit-mail**.

Because Junos OS performs a policy lookup starting from the top of the list, when it finds a match for traffic received, it does not look any lower in the policy list. To correct the previous example, you can simply reverse the order of the policies, putting the more specific one first:

```

[edit]
user@host# insert security policies from-zone trust to-zone untrust policy permit-mail
    before policy permit-all

```

In cases where there are dozens or hundreds of policies, the eclipsing of one policy by another might not be so easy to detect. To check if policies are being shadowed, enter any of the following commands:

```

[edit]
user@host# run show security shadow-policies logical-system lsys-name from-zone
    from-zone-name to-zone to-zone-name

```

```

[edit]
user@host# run show security shadow-policies logical-system lsys-name global

```

This command reports the shadowing and shadowed policies. It is then the administrator's responsibility to correct the situation.



NOTE: The concept of policy *shadowing* refers to the situation where a policy higher in the policy list always takes effect before a subsequent policy. Because the policy lookup always uses the first policy it finds that matches the five-part tuple of the source and destination zone, source and destination address, and application type, if another policy applies to the same tuple (or a subset of the tuple), the policy lookup uses the first policy in the list and never reaches the second one.

Related Documentation

- [Security Policies Configuration Overview on page 51](#)
- [Example: Configuring a Security Policy to Permit or Deny All Traffic on page 52](#)
- [Example: Configuring a Security Policy to Permit or Deny Selected Traffic on page 56](#)

Example: Reordering the Policies

This example shows how to move policies around after they have been created.

- [Requirements on page 109](#)
- [Overview on page 109](#)
- [Configuration on page 109](#)
- [Verification on page 109](#)

Requirements

Before you begin:

- Create zones. See [“Example: Creating Security Zones” on page 9](#).
- Configure the address book and create addresses for use in the policy. See [“Example: Configuring Address Books and Address Sets” on page 34](#).

Overview

To reorder policies to correct shadowing, you can simply reverse the order of the policies, putting the more specific one first.

Configuration

Step-by-Step Procedure

To reorder existing policies:

1. Reorder two existing policies by entering the following command:

```
[edit]
user@host# insert security policies from-zone trust to-zone untrust policy
permit-mail before policy permit-all
```
2. If you are done configuring the device, commit the configuration.

```
[edit]
user@host# commit
```

Verification

To verify the configuration is working properly, enter the **show security policies** command.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Ordering on page 107](#)

Monitoring and Troubleshooting Security Policies

- [Matching Security Policies on page 111](#)
- [Tracking Policy Hit Counts on page 113](#)
- [Best Practices for Defining Policies on High-End SRX Series Devices on page 113](#)
- [Checking Memory Status on page 116](#)
- [Synchronizing a Security Policy on SRX Series Devices on page 117](#)
- [Verifying Scheduled Policies on page 118](#)
- [Verifying Shadow Policies on page 119](#)
- [Monitoring Policy Statistics on page 120](#)
- [Troubleshooting Security Policies on page 121](#)

Matching Security Policies

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, 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.

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: 203.0.113.1/25
  a3: 10.10.10.1/32
Destination addresses:
  d2: 203.0.113.129/25
  d3: 192.0.2.1/24
Application: junos-ftp
IP protocol: tcp, ALG: ftp, Inactivity timeout: 1800
Source port range: [0-0]
Destination port range: [21-21]
```

Example 2: Using the result-count Option

By default, the output list contains the policy that will be applied to traffic with the specified characteristics. To list more than one policy that match the criteria, use the **result-count** option. The first policy listed is always the policy that will be applied to matching traffic. If the **result-count** value is from 2 to 16, the output includes all policies that match the criteria up to the specified **result-count**. All policies listed after the first are “shadowed” by the first policy and are never applied to matching traffic.

Use this option to test the positioning of a new policy or to troubleshoot a policy that is not applied as expected for particular traffic.

In the following example, the traffic criteria matches two policies. The first policy listed, **p1**, contains the action applied to the traffic. Policy **p15** is shadowed by the first policy, and its action, therefore, will not be applied to matching traffic.

```
user@host> show security match-policies 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: 192.0.2.5/24
Application: any
IP protocol: 1, ALG: 0, Inactivity timeout: 0
Source port range: [1000-1030]
Destination port range: [80-80]
```

Related Documentation

- [Security Policies Overview on page 43](#)

- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)

Tracking Policy Hit Counts

Use the **show security policies hit-count** command to display the utility rate of security policies according to the number of hits they receive. You can use this feature to determine which policies are being used on the device, and how frequently they are used. Depending on the command options that you choose, the number of hits can be listed without an order or sorted in either ascending or descending order, and they can be restricted to the number of hits that fall above or below a specific count or within a range. Data is shown for all zones associated with the policies or named zones.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Troubleshooting Security Policies on page 121](#)
- [Monitoring Policy Statistics on page 120](#)
- [Matching Security Policies on page 111](#)

Best Practices for Defining Policies on High-End SRX Series Devices

A secure network is vital to a business. To secure a network, a network administrator must create a security policy that outlines all of the network resources within that business and the required security level for those resources. The security policy applies the security rules to the transit traffic within a context (from-zone to to-zone) and each policy is uniquely identified by its name. The traffic is classified by matching the source and destination zones, the source and destination addresses, and the application that the traffic carries in its protocol headers with the policy database in the data plane.

[Table 13 on page 113](#) provides the policy limitations for high-end SRX Series devices. Platform support depends on the Junos OS release in your installation.

Table 13: Policy Limitations for High-End SRX Series Devices

Policy Limitations	SRX1500	SRX4100	SRX4200	SRX5400 SRX5600 SRX5800
Address objects	1024	1024	1024	1024
Application objects	3072	3072	3072	3072
Security policies	40,000	40,000	60,000	80,000
Policy contexts (zone pairs)	4096	4096	4096	8192
Policies per context	10,000	10,000	10,000	10,000

Table 13: Policy Limitations for High-End SRX Series Devices (*continued*)

Policy Limitations	SRX1500	SRX4100	SRX4200	SRX5400 SRX5600 SRX5800
Policies with counting enabled	1024	1024	1024	1024



NOTE: Starting with Junos OS Release 12.3X48-D15, the maximum number of address objects per policy for SRX5400, SRX5600, and SRX5800 devices increases from 1024 to 4096, and the maximum number of policies per context increases from 10240 to 80,000.

Therefore, as you increase the number of addresses and applications in each rule, the amount of memory that is used by the policy definition increases, and sometimes the system runs out of memory with fewer than 80,000 policies.

To get the actual memory utilization of a policy on the Packet Forwarding Engine (PFE) and the Routing Engine (RE), you need to take various components of the memory tree into consideration. The memory tree includes the following two components:

- Policy context—Used to organize all policies in this context. Policy context includes variables such as source and destination zones.
- Policy entity—Used to hold the policy data. Policy entity calculates memory using parameters such as policy name, IP addresses, address count, applications, firewall authentication, WebAuth, IPsec, count, application services, and Junos Services Framework (JSF).

Additionally, the data structures used to store policies, rule sets, and other components use different memory on the Packet Forwarding Engine and on the Routing Engine. For example, address names for each address in the policy are stored on the Routing Engine, but no memory is allocated at the Packet Forwarding Engine level. Similarly, port ranges are expanded to prefix and mask pairs and are stored on the Packet Forwarding Engine, but no such memory is allocated on the Routing Engine.

Accordingly, depending on the policy configuration, the policy contributors to the Routing Engine are different from those to the Packet Forwarding Engine, and memory is allocated dynamically.

Memory is also consumed by the “deferred delete” state. In the deferred delete state, when an SRX Series device applies a policy change, there is transitory peak usage whereby both the old and new policies are present. So for a brief period, both old and new policies exist on the Packet Forwarding Engine, taking up twice the memory requirements.

Therefore, there is no definitive way to infer clearly how much memory is used by either component (Packet Forwarding Engine or Routing Engine) at any given point in time, because memory requirements are dependent on specific configurations of policies, and memory is allocated dynamically.

The following best practices for policy implementation enable you to better use system memory and to optimize policy configuration:

- Use single prefixes for source and destination addresses. For example, instead of using /32 addresses and adding each address separately, use a large subnet that covers most of the IP addresses you require.
- Use application “any” whenever possible. Each time you define an individual application in the policy, you can use an additional 52 bytes.
- Use fewer IPv6 addresses because IPv6 addresses consume more memory.
- Use fewer zone pairs in policy configurations. Each source or destination zone uses about 16,048 bytes of memory.
- The following parameters can change how memory is consumed by the bytes as specified:
 - Firewall authentication—About 16 bytes or more (unfixed)
 - Web authentication—About 16 bytes or more (unfixed)
 - IPsec—12 bytes
 - Application services—28 bytes
 - Count—64 bytes
- Check memory utilization before and after compiling policies.



NOTE: The memory requirement for each device is different. Some devices support 512,000 sessions by default, and the bootup memory is usually at 72 to 73 percent. Other devices can have up to 1 million sessions and the bootup memory can be up to 83 to 84 percent. In the worst-case scenario, to support about 80,000 policies in the SPU, the SPU should boot with a flowd kernel memory consumption of up to 82 percent, and with at least 170 megabytes of memory available.

Release History Table

Release	Description
12.3X48-D15	Starting with Junos OS Release 12.3X48-D15, the maximum number of address objects per policy for SRX5400, SRX5600, and SRX5800 devices increases from 1024 to 4096, and the maximum number of policies per context increases from 10240 to 80,000.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Global Address Books on page 29](#)
- [Global Policy Overview on page 73](#)
- [Example: Configuring a Global Policy with No Zone Restrictions on page 75](#)

- [Checking Memory Status on page 116](#)

Checking Memory Status

Memory for flow entities such as policies, zones, or addresses on SRX1400, SRX1500, SRX4100, SRX4200, SRX3400, SRX3600, SRX5400, SRX5600, and SRX5800 devices (depending on the Junos OS release in your installation) is dynamically allocated. However, certain practices can help monitor the current memory usage on the device and optimize parameters to better size system configuration, especially during policy implementation.

You can isolate memory issues by comparing memory values before and after policy configurations.

To check memory usage:

- Use the **show chassis routing-engine** command to check overall Routing Engine (RE) memory usage. The following output from this command shows memory utilization at 39 percent:

```
user@host# show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state           Master
  Election priority       Master (default)
  DRAM                    1024 MB
  Memory utilization      39 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                2 percent
    Interrupt             0 percent
    Idle                  97 percent
  Model                   RE-PPC-1200-A
  Start time              2011-07-09 19:19:49 PDT
  Uptime                  37 days, 15 hours, 44 minutes, 13 seconds
  Last reboot reason      0x3:power cycle/failure watchdog
  Load averages:         1 minute   5 minute   15 minute
                        0.22       0.16       0.07
```

- Use the **show system processes extensive** command to acquire information on the processes running on the Routing Engine.

Use the **find nsd** option in the **show system processes extensive** command to see direct usage on the Network Security Daemon (NSD) with its total memory in use as 10 megabytes and CPU utilization of 0 percent.

```
user@host# show system processes extensive | find nsd
1182 root      1  96    0 10976K  5676K select  2:08  0.00% nsd
1191 root      4   4    0  8724K  3764K select  1:57  0.00% slbd
1169 root      1  96    0  8096K  3520K select  1:51  0.00% jsrpd
1200 root      1   4    0      0K    16K peer_s  1:10  0.00% peer proxy
1144 root      1  96    0  9616K  3528K select  1:08  0.00% lacpd
1138 root      1  96    0  6488K  2932K select  1:02  0.00% ppmdd
1130 root      1  96    0  7204K  2208K select  1:02  0.00% craftdd
1163 root      1  96    0 16928K  5188K select  0:58  0.00% cosd
1196 root      1   4    0      0K    16K peer_s  0:54  0.00% peer proxy
```

```

    47 root      1 -16    0      0K    16K sdf1us  0:54  0.00% softdepflush
  1151 root     1  96    0 15516K 9580K select  0:53  0.00% appidd
    900 root     1  96    0  5984K 2876K select  0:41  0.00% eventd

```

- Check the configuration file size. Save your configuration file with a unique name before exiting the CLI. Then, enter the **ls -l filename** command from the shell prompt in the UNIX-level shell to check the file size as shown in the following sample output:

```

user@host> start shell
% ls -l config
-rw-r--r--  1 remote  staff  12681 Feb 15 00:43 config

```

Related Documentation

- [Best Practices for Defining Policies on High-End SRX Series Devices on page 113](#)
- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Elements on page 49](#)
- [Global Policy Overview on page 73](#)
- [Example: Configuring a Global Policy with No Zone Restrictions on page 75](#)

Synchronizing a Security Policy on SRX Series Devices

Security policies are stored in both the Routing Engine (RE), and the Packet Forwarding Engine (PFE). When you modify the policies on the Routing Engine side, the policies are synchronized to the Packet Forwarding Engine side when you commit the configuration.

The policies in the Routing Engine and Packet Forwarding Engine must always be in sync for the configuration to commit successfully. Under certain circumstances, policies in the Routing Engine and the Packet Forwarding Engine might be out of sync resulting in generation of system core files upon commit completion.

When the policy configuration is modified and policies are out of sync, the following error message is displayed when you attempt to commit a configuration:

```
Policy is out of sync between RE and PFE <SPU-name(s)>. Please resync before commit.
```

```
error: configuration check-out failed
```

To synchronize policies between the Routing Engine and the Packet Forwarding Engine, you must:

- Reboot the device (device in standalone mode)
- Reboot both devices (devices in a chassis cluster mode)

Related Documentation

- [Security Policies Overview on page 43](#)
- [Verifying a Security Policy Commit on page 122](#)
- [Debugging Policy Lookup on page 122](#)
- [Monitoring Policy Statistics on page 120](#)

Verifying Scheduled Policies

Purpose Display information about address books and zones.

Action Use the **show schedulers** CLI command to display information about schedulers configured on the system. If a specific scheduler is identified, detailed information is displayed for that scheduler only.

```
user@host# show schedulers
scheduler sche1 {
    /* This is sched1 */
    start-date 2006-11-02.12:12 stop-date 2007-11-02.12:11;
}
scheduler sche2 {
    daily {
        all-day;
    }
    sunday {
        start-time 16:00 stop-time 17:00;
    }
    friday {
        exclude;
    }
}
scheduler sche3 {
    start-date 2006-11-02.12:12 stop-date 2007-11-02.12:11;
    daily {
        start-time 10:00 stop-time 17:00
    }
    sunday {
        start-time 12:00 stop-time 14:00;
        start-time 16:00 stop-time 17:00;
    }
    monday {
        all-day;
    }
    friday {
        exclude;
    }
}
```

Meaning The output displays information about schedulers configured on the system. Verify the following information:

- Daily (recurrent) and one-time only (nonrecurrent) schedulers are configured correctly.
- Schedulers are active if policies are associated.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Example: Configuring Schedulers for a Daily Schedule Excluding One Day on page 82](#)

Verifying Shadow Policies

- [Verifying All Shadow Policies on page 119](#)
- [Verifying a Policy Shadows One or More Policies on page 119](#)
- [Verifying a Policy Is Shadowed by One or More Policies on page 119](#)

Verifying All Shadow Policies

Purpose Verify all the policies that shadows one or more policies.

Action From the operational mode, enter the following commands:

- For logical systems, enter the **show security shadow-policies logical-system *lsys-name* from-zone *from-zone-name* to-zone *to-zone-name*** command.
- For global policies, enter the **show security shadow-policies logical-system *lsys-name* global** command.

```
root@host> show security shadow-policies from-zone zone-a to-zone zone-b
Policies                Shadowed policies
P1                      P3
P1                      P4
P2                      P5
```

Meaning The output displays the list of all policies that shadows other policies. In this example, P1 policy shadows P3 and P4 policies and P2 policy shadows P5 policy.

Verifying a Policy Shadows One or More Policies

Purpose Verify if a given policy shadows one or more policies positioned after it.

Action From the operational mode, enter the following commands:

- For logical systems, enter the **show security shadow-policies logical-system *lsys-name* from-zone *from-zone-name* to-zone *to-zone-name* policy *policy-name*** command.
- For global policies, enter the **show security shadow-policies logical-system *lsys-name* global policy *policy-name*** command.

```
root@host> show security shadow-policies from-zone zone-a to-zone zone-b policy P1
Policies                Shadowed policies
P1                      P3
P1                      P4
```

Meaning The output displays all the policies that are shadowed by the given policy. In this example, P1 policy shadows P3 and P4 policies.

Verifying a Policy Is Shadowed by One or More Policies

Purpose Verify if a given policy is shadowed by one or more positioned before it.

Action From the operational mode, enter the following commands:

- For logical systems, enter the **show security shadow-policies logical-system *lsys-name* from-zone *from-zone-name* to-zone *to-zone-name* policy *policy-name* reverse** command.
- For global policies, enter the **show security shadow-policies logical-system *lsys-name* global policy *policy-name* reverse** command.

```
root@host> show security shadow-policies from-zone zone-a to-zone zone-b policy P4 reverse
Policies                               Shadowed policies
P1                                     P4
```

Meaning The output displays the given policy shadowed by one or more policies. In this example, P4 policy is shadowed by P1 policy.

- Related Documentation**
- [Understanding Security Policy Ordering on page 107](#)
 - [Example: Reordering the Policies on page 109](#)

Monitoring Policy Statistics

Purpose Monitor and record traffic that Junos OS permits or denies based on previously configured policies.

Action To monitor traffic, enable the count and log options.

Count—Configurable in an individual policy. If count is enabled, statistics are collected for sessions that enter the device for a given policy, and for the number of packets and bytes that pass through the device in both directions for a given policy. For counts (only for packets and bytes), you can specify that alarms be generated whenever the traffic exceeds specified thresholds. See [count \(Security Policies\)](#).

Log—Logging capability can be enabled with security policies during session initialization (**session-init**) or session close (**session-close**) stage. See [log \(Security Policies\)](#).

- To view logs from denied connections, enable log on **session-init**.
- To log sessions after their conclusion/tear-down, enable log on **session-close**.



NOTE: Session log is enabled at real time in the flow code which impacts the user performance. If both **session-close** and **session-init** are enabled, performance is further degraded as compared to enabling **session-init** only.

For details about information collected for session logs, see *Information Provided in Session Log Entries for SRX Series Services Gateways*.

- Related Documentation**
- [Security Policies Overview](#)
 - [Troubleshooting Security Policies on page 121](#)

- [Checking a Security Policy Commit Failure on page 121](#)
- [Verifying a Security Policy Commit on page 122](#)
- [Debugging Policy Lookup on page 122](#)

Troubleshooting Security Policies

- [Synchronizing Policies Between Routing Engine and Packet Forwarding Engine on page 121](#)
- [Checking a Security Policy Commit Failure on page 121](#)
- [Verifying a Security Policy Commit on page 122](#)
- [Debugging Policy Lookup on page 122](#)

Synchronizing Policies Between Routing Engine and Packet Forwarding Engine

Problem **Description:** Security policies are stored in both the Routing Engine and the Packet Forwarding Engine. After you modify a policy, you commit the configuration on the Routing Engine, and it is synchronized to the Packet Forwarding Engine.

Environment: The policies in the Routing Engine and Packet Forwarding Engine must be in sync for the configuration to be committed. However, under certain circumstances, policies in the Routing Engine and the Packet Forwarding Engine might be out of sync, which causes the commit to fail.

Symptoms: The following error message appears if you attempt to commit a configuration when the policies in the Routing Engine and Packet Forwarding Engine are out of sync:
Policy is out of sync between RE and PFE <SPU-name(s)> Please resync before commit.

Solution Synchronize the policies as follows:

- Reboot the device (standalone)
- Reboot the devices (chassis cluster)

Checking a Security Policy Commit Failure

Problem **Description:** Most policy configuration failures occur during a commit or runtime. Commit failures are reported directly on the CLI when you execute the CLI command **commit-check** in configuration mode. These errors are configuration errors, and you cannot commit the configuration without fixing these errors.

Solution To fix these errors, do the following:

1. Review your configuration data.
2. Open the file `/var/log/nsd_chk_only`. This file is overwritten each time you perform a commit check and contains detailed failure information.

Verifying a Security Policy Commit

Problem **Description:** Upon performing a policy configuration commit, if you notice that the system behavior is incorrect, use the following steps to troubleshoot this problem:

Solution 1. Operational **show** Commands—Execute the operational commands for security policies and verify that the information shown in the output is consistent with what you expected. If not, the configuration needs to be changed appropriately.

2. Traceoptions—Set the **traceoptions** command in your policy configuration. The flags under this hierarchy can be selected as per user analysis of the **show** command output. If you cannot determine what flag to use, the flag option **all** can be used to capture all trace logs.

```
user@host# set security policies traceoptions <flag all>
```

You can also configure an optional filename to capture the logs.

```
user@host# set security policies traceoptions <filename>
```

If you specified a filename in the trace options, you can look in the `/var/log/<filename>` for the log file to ascertain if any errors were reported in the file. (If you did not specify a filename, the default filename is `eventd`.) The error messages indicate the place of failure and the appropriate reason.

After configuring the trace options, you must recommit the configuration change that caused the incorrect system behavior.

Debugging Policy Lookup

Problem **Description:** When you have the correct configuration, but some traffic was incorrectly dropped or permitted, you can enable the **lookup** flag in the security policies traceoptions. The **lookup** flag logs the lookup related traces in the trace file.

Solution `user@host# set security policies traceoptions <flag lookup>`

Related Documentation

- [Synchronizing Policies Between Routing Engine and Packet Forwarding Engine on page 121](#)
- [Security Policies Overview on page 43](#)
- [Checking a Security Policy Commit Failure on page 121](#)
- [Verifying a Security Policy Commit on page 122](#)
- [Debugging Policy Lookup on page 122](#)
- [Monitoring Policy Statistics on page 120](#)

Handling Security Policy Violations

- [Understanding Searching and Sorting Audit Log on page 123](#)
- [Understanding Packet Flow Alarms and Auditing on page 124](#)
- [Example: Generating a Security Alarm in Response to Policy Violations on page 125](#)

Understanding Searching and Sorting Audit Log

An audit administrator analyzes the audit trail, reviews the audit record, and deletes the audit trail for maintenance purposes. The search and sort capability provides an efficient mechanism to the audit administrator for viewing pertinent audit information. This helps the audit administrator to identify potential security violations and take action against possible security breaches. The audit log can be viewed by all the administrators (such as Audit, Cryptographic, Security, and IDS administrators) . An IDS audit log can be viewed only by IDS audit administrator.

The security administrator can configure audit events and set thresholds that could indicate a potential security violation. The device monitors the occurrences of these events and notifies the administrator after an event has occurred or a set threshold has been met.

The audit administrator can search or group the audit log data based on the following:

- Destination subject identity
- Source subject identity
- Range of date, time, user identities, subject service identifiers, or Transport Layer protocol
- Rule identity
- User identity
- Network interface
- Success of auditable security events
- Failure of auditable security events



NOTE:

- The device sends an alarm to the console or the security alarm system when the in-memory audit event log exceeds the limit configured by the security administrator. The device then overwrites the oldest log messages with the new audit event log messages.
 - During system reboot the device does a commit of the existing configuration including login classes. Therefore, there will be audit log entries for all user-defined classes indicating that they have been modified.
-

Related Documentation

- [Understanding Packet Flow Alarms and Auditing on page 124](#)
- [Example: Generating a Security Alarm in Response to Policy Violations on page 125](#)

Understanding Packet Flow Alarms and Auditing

Alarms are triggered when packets are dropped because of a policy violation. A policy violation occurs when a packet matches a reject or deny policy. A policy violation alarm is generated when the system monitors any of the following audited events:

- Number of policy violations by a source network identifier within a specified period
- Number of policy violations to a destination network identifier within a specified period
- Number of policy violations to an application within a specified period
- Policy rule or group of rule violations within a specified period

There are four types of alarms corresponding to these four events. The alarms are based on source IP, destination IP, application, and policy.

When a packet encounters a reject or deny policy, the policy violation counters for all enabled types of alarm are increased. When any counter reaches the specified threshold within a specified period, an alarm is generated. After a specified period, the policy violation counter is reset and reused to start another counting cycle.

To view the alarm information, run the **show security alarms** command. The violation count and the alarm do not persist across system reboots. After a reboot, the violation count resets to zero and the alarm is cleared from the alarm queue.

After taking appropriate actions, you can clear the alarm. The alarm remains in the queue until you clear it (or until you reboot the device). To clear the alarm, run the **clear security alarms** command. After you clear the alarm, a subsequent series of flow policy violations can cause a new alarm to be raised.

Related Documentation

- [Example: Setting an Audible Alert as Notification of a Security Alarm](#)
- [Example: Generating a Security Alarm in Response to Policy Violations on page 125](#)

Example: Generating a Security Alarm in Response to Policy Violations

This example shows how to configure the device to generate a system alarm when a policy violation occurs. By default, no alarm is raised when a policy violation occurs.

- [Requirements on page 125](#)
- [Overview on page 125](#)
- [Configuration on page 125](#)
- [Verification on page 126](#)

Requirements

No special configuration beyond device initialization is required before configuring this feature.

Overview

In this example, you configure an alarm to be raised when:

- The application size is 10240 units.
- The source IP violation exceeds 1000 within 20 seconds.
- The destination IP violations exceeds 1000 within 10 seconds.
- The policy match violation exceeds 100, with a size of 100 units.

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 alarms potential-violation policy application size 10240
set security alarms potential-violation policy source-ip threshold 1000 duration 20
set security alarms potential-violation policy destination-ip threshold 1000 duration 10
set security alarms potential-violation policy policy-match threshold 100 size 100
```

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 policy violation alarms:

1. Enable security alarms.

```
[edit]
user@host# edit security alarms
```
2. Specify that an alarm should be raised when an application violation occurs.

```
[edit security alarms potential-violation policy]
user@host# set application size 10240
```

3. Specify that an alarm should be raised when a source IP violation occurs.
`[edit security alarms potential-violation policy]
user@host# set source-ip threshold 1000 duration 20`
4. Specify that an alarm should be raised when a destination IP violation occurs.
`[edit security alarms potential-violation policy]
user@host# set destination-ip threshold 1000 duration 10`
5. Specify that an alarm should be raised when a policy match violation occurs.
`[edit security alarms potential-violation policy]
user@host# set policy-match threshold 100 size 100`

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

```
policy {  
  source-ip {  
    threshold 1000;  
    duration 20;  
  }  
  destination-ip {  
    threshold 1000;  
    duration 10;  
  }  
  application {  
    size 10240;  
  }  
  policy-match {  
    threshold 100;  
    size 100;  
  }  
}
```

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

Verification

To confirm that the configuration is working properly, from operational mode, enter the **show security alarms** command.

- Related Documentation**
- [Understanding Packet Flow Alarms and Auditing on page 124](#)

PART 5

Configuring Security Policy Applications

- [Configuring Applications and Application Sets on page 129](#)
- [Configuring Custom Policy Applications on page 133](#)
- [Setting Policy Application Timeout on page 139](#)
- [Understanding Predefined Policy Applications on page 143](#)

Configuring Applications and Application Sets

- [Security Policy Applications Overview on page 129](#)
- [Policy Application Sets Overview on page 130](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Security Policy Applications Overview

Applications are types of traffic for which protocol standards exist. Each application has a transport protocol and destination port number(s) associated with it, such as TCP/port 21 for FTP and TCP/port 23 for Telnet. When you create a policy, you must specify an application for it.

You can select one of the predefined applications from the application book, or a custom application or application set that you created. You can see which application you can use in a policy by using the **show applications** CLI command.



NOTE: Each predefined application has a source port range of 1–65535, which includes the entire set of valid port numbers. This prevents potential attackers from gaining access by using a source port outside of the range. If you need to use a different source port range for any predefined application, create a custom application. For information, see [“Understanding Custom Policy Applications” on page 133](#).

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)
- [Policy Application Sets Overview on page 130](#)

Policy Application Sets Overview

When you create a policy, you must specify an application, or service, for it to indicate that the policy applies to traffic of that type. Sometimes the same applications or a subset of them can be present in multiple policies, making it difficult to manage. Junos OS allows you to create groups of applications called application sets. Application sets simplify the process by allowing you to manage a small number of application sets, rather than a large number of individual application entries.

The application (or application set) is referred to by security policies as match criteria for packets initiating sessions. If the packet matches the application type specified by the policy and all other criteria match, then the policy action is applied to the packet.

You can specify the name of an application set in a policy. In this case, if all of the other criteria match, any one of the applications in the application set serves as valid matching criteria; **any** is the default application name that indicates all possible applications.

Applications are created in the `.../applications/application/application-name` directory. You do not need to configure an application for any of the services that are predefined by the system.

In addition to predefined services, you can configure a custom service. After you create a custom service, you can refer to it in a policy.

Related Documentation

- [Security Policy Applications Overview on page 129](#)
- [Custom Application Mappings on page 133](#)
- [Understanding Policy Application Timeout Configuration and Lookup on page 139](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Example: Configuring Applications and Application Sets

This example shows how to configure applications and application sets.

- [Requirements on page 130](#)
- [Overview on page 130](#)
- [Configuration on page 131](#)
- [Verification on page 131](#)

Requirements

Before you begin, configure the required applications. See [“Policy Application Sets Overview” on page 130](#).

Overview

Rather than creating or adding multiple individual application names to a policy, you can create an application set and refer to the name of the set in a policy. For example, for a

group of employees, you can create an application set that contains all the approved applications.

In this example, you create an application set that are used to log in to the servers in the ABC (intranet) zone, to access the database, and to transfer files.

- Define the applications in the configured application set.
- Managers in zone A and managers in zone B use these services. Therefore, give the application set a generic name, such as MgrAppSet.
- Create an application set for the applications that are used for e-mail and Web-based applications that are delivered by the two servers in the external zone.

Configuration

Step-by-Step Procedure

To configure an application and application set:

1. Create an application set for managers.

```
[edit applications]
user@host# set application-set MgrAppSet application junos-ssh
user@host# set application-set MgrAppSet application junos-telnet
```
2. Create another application set for e-mail and Web-based applications.

```
[edit applications]
user@host# set application-set WebMailApps application junos-smtp
user@host# set application-set WebMailApps application junos-pop3
```
3. If you are done configuring the device, commit the configuration.

```
[edit]
user@host# commit
```

Verification

To verify the configuration is working properly, enter the **show applications** command.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Security Policy Applications Overview on page 129](#)

Configuring Custom Policy Applications

- [Understanding Custom Policy Applications on page 133](#)
- [Custom Application Mappings on page 133](#)
- [Example: Adding and Modifying Custom Policy Applications on page 134](#)
- [Example: Configuring Custom Policy Application Term Options on page 136](#)

Understanding Custom Policy Applications

If you do not want to use predefined applications in your policy, you can easily create custom applications.

You can assign each custom application the following attributes:

- Name
- Transport protocol
- Source and destination port numbers for applications using TCP or UDP
- Type and code values for applications using ICMP
- Timeout value

Related Documentation

- [Security Policy Applications Overview on page 129](#)
- [Custom Application Mappings on page 133](#)
- [Understanding Policy Application Timeout Configuration and Lookup on page 139](#)
- [Understanding Policy Application Timeouts Contingencies on page 140](#)
- [Example: Adding and Modifying Custom Policy Applications on page 134](#)

Custom Application Mappings

The application option specifies the Layer 7 application that maps to the Layer 4 application that you reference in a policy. A predefined application already has a mapping to a Layer 7 application. However, for custom applications, you must link the application to an application explicitly, especially if you want the policy to apply an Application Layer Gateway (ALG) or deep inspection to the custom application.



NOTE: Junos OS supports ALGs for numerous applications, including DNS, FTP, H.323, HTTP, RSH, SIP, Telnet, and TFTP.

Applying an ALG to a custom application involves the following two steps:

- Define a custom application with a name, timeout value, transport protocol, and source and destination ports.
- When configuring a policy, reference that application and the application type for the ALG that you want to apply.

**Related
Documentation**

- [Security Policy Applications Overview on page 129](#)
- [Understanding Custom Policy Applications on page 133](#)
- [Understanding Policy Application Timeout Configuration and Lookup on page 139](#)
- [Understanding Policy Application Timeouts Contingencies on page 140](#)
- [Example: Adding and Modifying Custom Policy Applications on page 134](#)

Example: Adding and Modifying Custom Policy Applications

This example shows how to add and modify custom policy applications.

- [Requirements on page 134](#)
- [Overview on page 134](#)
- [Configuration on page 135](#)
- [Verification on page 135](#)

Requirements

Before you begin, create addresses and security zones. See [“Example: Creating Security Zones” on page 9](#).

Overview

In this example, you create a custom application using the following information:

- A name for the application: **cust-telnet**.
- A range of source port numbers: 1 through **65535**.
- A destination port number: 23000.
- The protocol used by the application: TCP.

Configuration

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

To add and modify a custom policy application:

1. Configure TCP and specify the source port and destination port.

```
[edit applications application cust-telnet]
user@host# set protocol tcp source-port 1-65535 destination-port 23000
```
2. Specify the length of time that the application is inactive.

```
[edit applications application cust-telnet]
user@host# set inactivity-timeout 1800
```
3. Modify a custom policy application.

```
[edit applications application cust-telnet]
user@host# delete protocol tcp
user@host# set application-protocol ftp
```
4. If you are done configuring the device, commit the configuration.

```
[edit]
user@host# commit
```

Verification

To verify the configuration is working properly, enter the **show applications application** command.



NOTE: The timeout value is in seconds. If you do not set it, the timeout value of a custom application is 1800 seconds. If you do not want an application to time out, type never.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Security Policy Applications Overview on page 129](#)
- [Understanding Custom Policy Applications on page 133](#)
- [Example: Defining a Custom ICMP Application on page 157](#)

Example: Configuring Custom Policy Application Term Options

This example shows how to configure applications properties and term options for application protocols.

- [Requirements on page 136](#)
- [Overview on page 136](#)
- [Configuration on page 136](#)
- [Verification on page 138](#)

Requirements

This example uses the following hardware and software components:

- An SRX Series device
- A PC

Before you begin:

- Configure the required applications. See [“Example: Adding and Modifying Custom Policy Applications” on page 134](#).

Overview

In this example, you create an application name, app-name, and a term called custom-options to define your custom policy application term options.

You configure Domain Name Service (DNS) as the Application Layer Gateway (ALG) type and UDP as the networking protocol type. You set the source port to 24000 and the destination port to 23000. Then you set the Internet Control Message Protocol (ICMP) packet type value to 5 and the ICMP code value to 0. You set the remote procedure call (RPC) program number value to 50 and the Universal Unique Identifier (UUID) value to 1be617c0-31a5-11cf-a7d8-00805f48a135. Finally, you set the inactivity-timeout value to 60.

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.

```
user@host# set applications application app-name term custom-options
user@host# set applications application app-name term custom-options alg dns
user@host# set applications application app-name term custom-options protocol udp
user@host# set applications application app-name term custom-options source-port
24000
user@host# set applications application app-name term custom-options destination-port
23000
user@host# set applications application app-name term custom-options icmp-type 5
```

```

user@host#set applications application app-name term custom-options icmp-code 0
user@host#set applications application app-name term custom-options
    rpc-program-number 50
user@host#set applications application app-name term custom-options uuid
    1be617c0-31a5-11cf-a7d8-00805f48a135
user@host#set applications application app-name term custom-options inactivity-timeout
    60

```

Step-by-Step Procedure

To configure custom policy application term options:

1. Configure the term name.

```

[edit applications]
user@host# set application app-name term custom-options

```
2. Configure the ALG type.

```

[edit applications]
user@host# set application app-name term custom-options alg dns

```
3. Configure the networking protocol type.

```

[edit applications]
user@host# set application app-name term custom-options protocol udp

```
4. Configure the source port number.

```

[edit applications]
user@host#set application app-name term custom-options source-port 24000

```
5. Configure the TCP or UDP destination port number.

```

[edit applications]
user@host# set application app-name term custom-options destination-port 23000

```
6. Specify the application type value.

```

[edit applications]
user@host# set application app-name term custom-options icmp-type 5

```
7. Specify the application code value.

```

[edit applications]
user@host# set application app-name term custom-options icmp-code 0

```
8. Specify the RPC program number.

```

[edit applications]
user@host# set application app-name term custom-options rpc-program-number
    50

```
9. Specify the UUID value.

```

[edit applications]
user@host# set application app-name term custom-options uuid
    1be617c0-31a5-11cf-a7d8-00805f48a135

```
10. Specify the inactivity timeout value.

```

[edit applications]
user@host# set application app-name term custom-options inactivity-timeout 60

```

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

```
[edit]
user@host# show applications
application app-name {
  term custom-options alg dns protocol udp source-port 24000 icmp-type 5 icmp-code
    0 rpc-program-number 50 uuid 1be617c0-31a5-11cf-a7d8-00805f48a135
  inactivity-timeout 60;
}
```

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

Verification

Verifying the Configuration

Purpose Verify that the configuration is correct.

Action From operational mode, enter the **show applications** command.

```
user@host> show applications
application app-name {
  term custom-options alg dns protocol udp source-port 24000 icmp-type 5 icmp-code
    0 rpc-program-number 50 uuid 1be617c0-31a5-11cf-a7d8-00805f48a135
  inactivity-timeout 60;
}
```

Related Documentation

- [Security Policy Applications Overview on page 129](#)
- [Understanding Custom Policy Applications on page 133](#)

Setting Policy Application Timeout

- [Understanding Policy Application Timeout Configuration and Lookup on page 139](#)
- [Understanding Policy Application Timeouts Contingencies on page 140](#)
- [Example: Setting a Policy Application Timeout on page 141](#)

Understanding Policy Application Timeout Configuration and Lookup

The application timeout value you set for an application determines the session timeout. You can set the timeout threshold for a predefined or custom application; you can use the application default timeout, specify a custom timeout, or use no timeout at all.

Application timeout values are stored in the root TCP and UDP port-based timeout table and in the protocol-based default timeout table. When you set an application timeout value, Junos OS updates these tables with the new value. There are also default timeout values in the applications entry database, which are taken from predefined applications. You can set a timeout, but you cannot alter a default value.

Each custom application can be configured with its own custom application timeout. If multiple custom applications are configured with custom timeouts, then each application will have its own custom application timeout.

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 root TCP and UDP port-based timeout table is searched for a timeout value.
2. The protocol-based default timeout table is searched for a timeout value. See [Table 14 on page 139](#).

Table 14: Protocol-Based Default Timeout

Protocol	Default Timeout (seconds)
TCP	1800
UDP	60
ICMP	60

Table 14: Protocol-Based Default Timeout (*continued*)

Protocol	Default Timeout (seconds)
OSPF	60
Other	1800

**Related
Documentation**

- [Security Policy Applications Overview on page 129](#)
- [Understanding Custom Policy Applications on page 133](#)
- [Understanding Policy Application Timeouts Contingencies on page 140](#)
- [Custom Application Mappings on page 133](#)
- [Example: Adding and Modifying Custom Policy Applications on page 134](#)

Understanding Policy Application Timeouts Contingencies

When setting timeouts, be aware of the following contingencies:

- If an application contains several application rule entries, all rule entries share the same timeout. You need to define the application timeout only once. For example, if you create an application with two rules, the following commands will set the timeout to 20 seconds for both rules:

```
user@host# set applications application test protocol tcp destination-port 1035-1035
inactivity-timeout 20
user@host# set applications application test term test protocol udp
user@host# set applications application test term test source-port 1-65535
user@host# set applications application test term test destination-port 1111-1111
```

- If multiple custom applications are configured with custom timeouts, then each application will have its own custom application timeout. For example:

```
user@host# set applications application ftp-1 protocol tcp source-port 0-65535 destination-port
2121-2121 inactivity-timeout 10
user@host# set applications application telnet-1 protocol tcp source-port 0-65535
destination-port 2300-2348 inactivity-timeout 20
```

With this configuration, Junos OS applies a 10-second timeout for destination port 2121 and a 20-second timeout for destination port 2300 in an application group.

**Related
Documentation**

- [Understanding Custom Policy Applications on page 133](#)
- [Custom Application Mappings on page 133](#)
- [Understanding Policy Application Timeout Configuration and Lookup on page 139](#)
- [Example: Adding and Modifying Custom Policy Applications on page 134](#)

Example: Setting a Policy Application Timeout

This example shows how to set a policy application timeout value.

- [Requirements on page 141](#)
- [Overview on page 141](#)
- [Configuration on page 141](#)
- [Verification on page 141](#)

Requirements

Before you begin, understand policy application timeouts. See [“Understanding Policy Application Timeout Configuration and Lookup” on page 139](#).

Overview

Application timeout values are stored in the application entry database and in the corresponding vsys TCP and UDP port-based timeout tables. In this example, you set the device for a policy application timeout to 75 minutes for the FTP predefined application.

When you set an application timeout value, Junos OS updates these tables with the new value.

Configuration

Step-by-Step Procedure

To set a policy application timeout:

1. Set the inactivity timeout value.


```
[edit applications application ftp]
user@host# set inactivity-timeout 75
```
2. Commit the configuration if you are done configuring the device.


```
[edit]
user@host# commit
```

Verification

To verify the configuration is working properly, enter the **show applications** command.

Related Documentation

- [Security Policy Applications Overview on page 129](#)

CHAPTER 17

Understanding Predefined Policy Applications

- [Understanding Internet-Related Predefined Policy Applications on page 143](#)
- [Understanding Microsoft Predefined Policy Applications on page 145](#)
- [Understanding Dynamic Routing Protocols Predefined Policy Applications on page 146](#)
- [Understanding Streaming Video Predefined Policy Applications on page 147](#)
- [Understanding Sun RPC Predefined Policy Applications on page 147](#)
- [Understanding Security and Tunnel Predefined Policy Applications on page 148](#)
- [Understanding IP-Related Predefined Policy Applications on page 149](#)
- [Understanding Instant Messaging Predefined Policy Applications on page 150](#)
- [Understanding Management Predefined Policy Applications on page 150](#)
- [Understanding Mail Predefined Policy Applications on page 152](#)
- [Understanding UNIX Predefined Policy Applications on page 152](#)
- [Understanding Miscellaneous Predefined Policy Applications on page 153](#)
- [Understanding the ICMP Predefined Policy Application on page 153](#)
- [Example: Defining a Custom ICMP Application on page 157](#)
- [Default Behavior of ICMP Unreachable Errors on page 159](#)

Understanding Internet-Related Predefined Policy Applications

When you create a policy, you can specify predefined Internet-related applications for the policy.

[Table 15 on page 143](#) lists Internet-related predefined applications. Depending on your network requirements, you can choose to permit or deny any or all of these applications. Each entry lists the application name, default receiving port, and application description.

Table 15: Predefined Applications

Application Name	Port(s)	Application Description
AOL	5190-5193	America Online Internet service provider (ISP) provides Internet, chat, and instant messaging applications.

Table 15: Predefined Applications (*continued*)

Application Name	Port(s)	Application Description
DHCP relay	67 (default)	Dynamic Host Configuration Protocol.
DHCP	68 client 67 server	Dynamic Host Configuration Protocol allocates network addresses and delivers configuration parameters from server to hosts.
DNS	53	Domain Name System translates domain names into IP addresses.
FTP	20 data	File Transfer Protocol (FTP) allows the sending and receiving of files between machines. You can choose to deny or permit ANY or to selectively permit or deny.
	21 control	We recommend denying FTP applications from untrusted sources (Internet).
Gopher	70	Gopher organizes and displays Internet servers' contents as a hierarchically structured list of files. We recommend denying Gopher access to avoid exposing your network structure.
HTTP	80	HyperText Transfer Protocol is the underlying protocol used by the World Wide Web (WWW). Denying HTTP application disables your users from viewing the Internet. Permitting HTTP application allows your trusted hosts to view the Internet.
HTTP-EXT	—	Hypertext Transfer Protocol with extended nonstandard ports
HTTPS	443	Hypertext Transfer Protocol with Secure Sockets Layer (SSL) is a protocol for transmitting private documents through the Internet. Denying HTTPS disables your users from shopping on the Internet and from accessing certain online resources that require secure password exchange. Permitting HTTPS allows your trusted hosts to participate in password exchange, shop online, and visit various protected online resources that require user login.
Internet Locator Service	—	Internet Locator Service includes LDAP, User Locator Service, and LDAP over TLS/SSL.
IRC	6665-6669	Internet Relay Chat (IRC) allows people connected to the Internet to join live discussions.
LDAP	389	Lightweight Directory Access Protocol is a set of protocols used to access information directories.
PC-Anywhere	—	PC-Anywhere is a remote control and file transfer software.
TFTP	69	Trivial File transfer Protocol (TFTP) is a protocol for simple file transfer.

Table 15: Predefined Applications (*continued*)

Application Name	Port(s)	Application Description
WAIS	—	Wide Area Information Server is a program that finds documents on the Internet.

**Related
Documentation**

- [Security Policy Applications Overview on page 129](#)
- [Understanding Dynamic Routing Protocols Predefined Policy Applications on page 146](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Microsoft Predefined Policy Applications

When you create a policy, you can specify predefined Microsoft applications for the policy.

[Table 16 on page 145](#) lists predefined Microsoft applications, parameters associated with each application, and a brief description of each application. Parameters include universal unique identifiers (UUIDs) and TCP/UDP source and destination ports. A UUID is a 128-bit unique number generated from a hardware address, a timestamp, and seed values.

Table 16: Predefined Microsoft Applications

Application	Parameter/UUID	Description
Junos MS-RPC-EPM	135 e1af8308-5d1f-11c9-91a4-08002b14a0fa	Microsoft remote procedure call (RPC) Endpoint Mapper (EPM) Protocol.
Junos MS-RPC	—	Any Microsoft remote procedure call (RPC) applications.
Junos MS-RPC-MSEXCHANGE	3 members	Microsoft Exchange application group includes: <ul style="list-style-type: none"> • Junos-MS-RPC-MSEXCHANGE-DATABASE • Junos-MS-RPC-MSEXCHANGE-DIRECTORY • Junos-MS-RPC-MSEXCHANGE-INFO-STORE
Junos-MS-RPC-MSEXCHANGE-DATABASE	1a190310-bb9c-11cd-90f8-00aa00466520	Microsoft Exchange Database application.
Junos-MS-RPC-MSEXCHANGE-DIRECTORY	f5cc5a18-4264-101a-8c59-08002b2f8426 f5cc5a7c-4264-101a-8c59-08002b2f8426 f5cc59b4-4264-101a-8c59-08002b2f8426	Microsoft Exchange Directory application.

Table 16: Predefined Microsoft Applications (*continued*)

Application	Parameter/UUID	Description
Junos-MS-RPC-MSEXCHANGE-INFO-STORE	0e4a0156-dd5d-11d2-8c2f-00c04fb6bcde 1453c42c-0fa6-11d2-a910-00c04f990f3b 10f24e8e-0fa6-11d2-a910-00c04f990f3b 1544f5e0-613c-11d1-93df-00c04fd7bd09	Microsoft Exchange Information Store application.
Junos-MS-RPC-TCP	—	Microsoft Transmission Control Protocol (TCP) application.
Junos-MS-RPC-UDP	—	Microsoft User Datagram Protocol (UDP) application.
Junos-MS-SQL	—	Microsoft Structured Query Language (SQL).
Junos-MSN	—	Microsoft Network Messenger application.

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Dynamic Routing Protocols Predefined Policy Applications

When you create a policy, you can specify predefined dynamic routing protocol applications for the policy.

Depending on your network requirements, you can choose to permit or deny messages generated from these dynamic routing protocols and packets of these dynamic routing protocols. [Table 17 on page 146](#) lists each supported dynamic routing protocol by name, port, and description.

Table 17: Dynamic Routing Protocols

Dynamic Routing Protocol	Port	Description
RIP	520	RIP is a common distance-vector routing protocol.
OSPF	89	OSPF is a common link-state routing protocol.
BGP	179	BGP is an exterior/interdomain routing protocol.

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Streaming Video Predefined Policy Applications

When you create a policy, you can specify predefined streaming video applications for the policy.

[Table 18 on page 147](#) lists each supported streaming video application by name and includes the default port and description. Depending on your network requirements, you can choose to permit or deny any or all of these applications.

Table 18: Supported Streaming Video Applications

Application	Port	Description
H.323	TCP source 1-65535; TCP destination 1720, 1503, 389, 522, 1731 UDP source 1-65535; UDP source 1719	H.323 is a standard approved by the International Telecommunication Union (ITU) that defines how audiovisual conference data is transmitted across networks.
NetMeeting	TCP source 1-65535; TCP destination 1720, 1503, 389, 522 UDP source 1719	Microsoft NetMeeting uses TCP to provide teleconferencing (video and audio) applications over the Internet.
Real media	TCP source 1-65535; TCP destination 7070	Real Media is streaming video and audio technology.
RTSP	554	Real-Time Streaming Protocol (RTSP) is for streaming media applications
SIP	5056	Session Initiation Protocol (SIP) is an Application-Layer control protocol for creating, modifying, and terminating sessions.
VDO Live	TCP source 1-65535; TCP destination 7000-7010	VDOLive is a scalable, video streaming technology.

Related Documentation

- [Security Policy Applications Overview on page 129](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Sun RPC Predefined Policy Applications

When you create a policy, you can specify predefined Sun RPC applications for the policy.

[Table 19 on page 147](#) lists each Sun remote procedure call Application Layer Gateway (RPC ALG) application name, parameters, and full name.

Table 19: RPC ALG Applications

Application	Program Numbers	Full Name
SUN-RPC-PORTMAPPER	111100000	Sun RPC Portmapper protocol

Table 19: RPC ALG Applications (*continued*)

Application	Program Numbers	Full Name
SUN-RPC-ANY	ANY	Any Sun RPC applications
SUN-RPC-PROGRAM-MOUNTD	100005	Sun RPC Mount Daemon
SUN-RPC-PROGRAM-NFS	100003 100227	Sun RPC Network File System
SUN-RPC-PROGRAM-NLOCKMGR	100021	Sun RPC Network Lock Manager
SUN-RPC-PROGRAM-RQUOTAD	100011	Sun RPC Remote Quota Daemon
SUN-RPC-PROGRAM-RSTATD	100001	Sun RPC Remote Status Daemon
SUN-RPC-PROGRAM-RUSERD	100002	Sun RPC Remote User Daemon
SUN-RPC-PROGRAM-SADMIND	100232	Sun RPC System Administration Daemon
SUN-RPC-PROGRAM-SPRAYD	100012	Sun RPC Spray Daemon
SUN-RPC-PROGRAM-STATUS	100024	Sun RPC Status
SUN-RPC-PROGRAM-WALLD	100008	Sun RPC Wall Daemon
SUN-RPC-PROGRAM-YPBIND	100007	SUN RPC Yellow Page Bind application

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Security and Tunnel Predefined Policy Applications

When you create a policy, you can specify predefined security and tunnel applications for the policy.

[Table 20 on page 149](#) lists each supported application and gives the default port(s) and a description of each entry.

Table 20: Supported Applications

Application	Port	Description
IKE	UDP source 1-65535; UDP destination 500	Internet Key Exchange is the protocol that sets up a security association in the IPsec protocol suite. Internet Key protocol (IKE) is a protocol to obtain authenticated keying material for use with ISAKMP.
IKE-NAT	4500	IKE-Network Address Translation (NAT) performs Layer 3 NAT for S2C IKE traffic.
L2TP	1701	L2TP combines PPTP with Layer 2 Forwarding (L2F) for remote access.
PPTP	1723	Point-to-Point Tunneling Protocol allows corporations to extend their own private network through private <i>tunnels</i> over the public Internet.

Related Documentation

- [Example: Configuring Applications and Application Sets on page 130](#)

Understanding IP-Related Predefined Policy Applications

When you create a policy, you can specify predefined IP-related applications for the policy.

[Table 21 on page 149](#) lists the predefined IP-related applications. Each entry includes the default port and a description of the application.

TCP-ANY means any application that is using TCP, so there is no default port for it. The same is true for UDP-ANY.

Table 21: Predefined IP-Related Applications

Application	Port	Description
Any	—	Any application
TCP-ANY	0-65,535	Any protocol using the TCP
UDP-ANY	0-65,535	Any protocol using the UDP

Related Documentation

- [Security Policy Applications Overview on page 129](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Instant Messaging Predefined Policy Applications

When you create a policy, you can specify predefined instant messaging applications for the policy.

[Table 22 on page 150](#) lists predefined Internet-messaging applications. Each entry includes the name of the application, the default or assigned port, and a description of the application.

Table 22: Predefined Internet-Messaging Applications

Application	Port	Description
Gnutella	6346 (default)	Gnutella is a public domain file sharing protocol that operates over a distributed network. You can assign any port, but the default is 6346.
MSN	1863	Microsoft Network Messenger is a utility that allows you to send instant messages and talk online.
NNTP	119	Network News Transport Protocol is a protocol used to post, distribute, and retrieve USENET messages.
SMB	445	Server Message Block (SMB) over IP is a protocol that allows you to read and write files to a server on a network.
YMSG	5010	Yahoo! Messenger is a utility that allows you to check when others are online, send instant messages, and talk online.

**Related
Documentation**

- [Security Policy Applications Overview on page 129](#)
- [Understanding Management Predefined Policy Applications on page 150](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Management Predefined Policy Applications

When you create a policy, you can specify predefined management applications for the policy.

[Table 23 on page 150](#) lists the predefined management applications. Each entry includes the name of the application, the default or assigned port, and a description of the application.

Table 23: Predefined Management Applications

Application	Port	Description
NBNAME	137	NetBIOS Name application displays all NetBIOS name packets sent on UDP port 137.

Table 23: Predefined Management Applications (*continued*)

Application	Port	Description
NDBDS	138	NetBIOS Datagram application, published by IBM, provides connectionless (datagram) applications to PCs connected with a broadcast medium to locate resources, initiate sessions, and terminate sessions. It is unreliable and the packets are not sequenced.
NFS	—	Network File System uses UDP to allow network users to access shared files stored on computers of different types. SUN RPC is a building block of NFS.
NS Global	—	NS-Global is the central management protocol for Juniper Networks Firewall/VPN devices.
NS Global PRO	—	NS Global-PRO is the scalable monitoring system for the Juniper Networks Firewall/VPN device family.
NSM	—	Network and Security Manager
NTP	123	Network Time Protocol provides a way for computers to synchronize to a time reference.
RLOGIN	513	RLOGIN starts a terminal session on a remote host.
RSH	514	RSH executes a shell command on a remote host.
SNMP	161	Simple Network Management Protocol is a set of protocols for managing complex networks.
SQL*Net V1	66	SQL*Net Version 1 is a database language that allows for the creation, access, modification, and protection of data.
SQL*Net V2	66	SQL*Net Version 2 is a database language that allows for the creation, access, modification, and protection of data.
MSSQL	1433 (default instance)	Microsoft SQL is a proprietary database server tool that allows for the creation, access, modification, and protection of data.
SSH	22	SSH is a program to log in to another computer over a network through strong authentication and secure communications on an unsecure channel.
SYSLOG	514	Syslog is a UNIX program that sends messages to the system logger.
Talk	517-518	Talk is a visual communication program that copies lines from your terminal to that of another user.
Telnet	23	Telnet is a UNIX program that provides a standard method of interfacing terminal devices and terminal-oriented processes to each other.
WinFrame	—	WinFrame is a technology that allows users on non-Windows machines to run Windows applications.

Table 23: Predefined Management Applications (*continued*)

Application	Port	Description
X-Windows	—	X-Windows is the windowing and graphics system that Motif and OpenLook are based on.

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Mail Predefined Policy Applications

When you create a policy, you can specify predefined mail applications for the policy.

[Table 24 on page 152](#) lists the predefined mail applications. Each includes the name of the application, the default or assigned port number, and a description of the application.

Table 24: Predefined Mail Applications

Application	Port	Description
IMAP	143	Internet Message Access Protocol is used for retrieving messages.
Mail (SMTP)	25	Simple Mail Transfer Protocol is used to send messages between servers.
POP3	110	Post Office Protocol is used for retrieving e-mail.

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding UNIX Predefined Policy Applications

When you create a policy, you can specify predefined UNIX applications for the policy.

[Table 25 on page 152](#) lists the predefined UNIX applications. Each entry includes the name of the application, the default or assigned port, and a description of the application.

Table 25: Predefined UNIX Applications

Application	Port	Description
FINGER	79	Finger is a UNIX program that provides information about the users.
UUCP	117	UNIX-to-UNIX Copy Protocol (UUCP) is a UNIX utility that enables file transfers between two computers over a direct serial or modem connection.

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding Miscellaneous Predefined Policy Applications

When you create a policy, you can specify miscellaneous predefined applications for the policy.

[Table 26 on page 153](#) lists predefined miscellaneous applications. Each entry includes the application name, default or assigned port, and a description of the application.

Table 26: Predefined Miscellaneous Applications

Application	Port	Description
CHARGEN	19	Character Generator Protocol is a UDP- or TCP-based debugging and measurement tool.
DISCARD	9	Discard protocol is an Application Layer protocol that describes a process for discarding TCP or UDP data sent to port 9.
IDENT	113	Identification protocol is a TCP/IP Application Layer protocol used for TCP client authentication.
LPR	515 listen; 721-731 source range (inclusive)	Line Printer Daemon protocol is a TCP-based protocol used for printing applications.
RADIUS	1812	Remote Authentication Dial-In User Service application is a server program used for authentication and accounting purposes.
RADIUS Accounting	1813	A RADIUS Accounting server receives statistical data about users logging in to or out of a LAN.
SQLMON	1434 (SQL Monitor Port)	SQL monitor (Microsoft)
VNC	5800	Virtual Network Computing facilitates viewing and interacting with another computer or mobile Juniper Networks device connected to the Internet.
WHOIS	43	Network Directory Application Protocol is a way to look up domain names.
SCCP	2000	Cisco Station Call Control Protocol (SCCP) uses the signaling connection control port to provide high availability and flow control.

- Related Documentation**
- [Security Policy Applications Overview on page 129](#)
 - [Example: Configuring Applications and Application Sets on page 130](#)

Understanding the ICMP Predefined Policy Application

When you create a policy, you can specify the ICMP predefined application for the policy.

Internet Control Message Protocol (ICMP) is a part of IP and provides a way to query a network (ICMP query messages) and to receive feedback from the network for error patterns (ICMP error messages). ICMP does not, however, guarantee error message delivery or report all lost datagrams; and it is not a reliable protocol. ICMP codes and type codes describe ICMP query messages and ICMP error messages.

You can choose to permit or deny any or specific types of ICMP messages to improve network security. Some types of ICMP messages can be exploited to gain information about your network that might compromise security. For example, ICMP, TCP, or UDP packets can be constructed to return ICMP error messages that contain information about a network, such as its topology, and access list filtering characteristics.

[Table 27 on page 154](#) lists ICMP message names, the corresponding code, type, and description.

Table 27: ICMP Messages

ICMP Message Name	Type	Code	Description
ICMP-ANY	all	all	<p>ICMP-ANY affects any protocol using ICMP.</p> <p>Denying ICMP-ANY impairs any attempt to ping or monitor a network using ICMP.</p> <p>Permitting ICMP-ANY allows all ICMP messages.</p>
ICMP-ADDRESS-MASK <ul style="list-style-type: none"> Request Reply 	17 18	0 0	<p>ICMP address mask query is used for systems that need the local subnet mask from a bootstrap server.</p> <p>Denying ICMP address mask request messages can adversely affect diskless systems.</p> <p>Permitting ICMP address mask request messages might allow others to fingerprint the operating system of a host in your network.</p>
ICMP-DEST-UNREACH	3	0	<p>ICMP destination unreachable error message indicates that the destination host is configured to reject the packets.</p> <p>Codes 0, 1, 4, or 5 can be from a gateway. Codes 2 or 3 can be from a host (RFC 792).</p> <p>Denying ICMP destination unreachable error messages can remove the assumption that a host is up and running behind an SRX Series device.</p> <p>Permitting ICMP destination unreachable error messages can allow some assumptions, such as security filtering, to be made about the network.</p>
ICMP Fragment Needed	3	4	<p>ICMP fragmentation error message indicates that fragmentation is needed but the don't fragment flag is set.</p> <p>We recommend denying these messages from the Internet to an internal network.</p>

Table 27: ICMP Messages (*continued*)

ICMP Message Name	Type	Code	Description
ICMP FragmentReassembly	11	1	<p>ICMP fragment reassembly time exceeded error indicates that a host reassembling a fragmented message ran out of time and dropped the packet. This message is sometimes sent.</p> <p>We recommend denying these messages from the Internet (external) to the trusted (internal) network.</p>
ICMP-HOST-UNREACH	3	1	<p>ICMP host unreachable error messages indicate that routing table entries do not list or list as infinity a particular host. Sometimes this error is sent by gateways that cannot fragment when a packet requiring fragmentation is received.</p> <p>We recommend denying these messages from the Internet to a trusted network.</p> <p>Permitting these messages allows others to be able to determine your internal hosts IP addresses by a process of elimination or make assumptions about gateways and fragmentation.</p>
ICMP-INFO	15	0	ICMP-INFO query messages allow diskless host systems to query the network and self-configure.
<ul style="list-style-type: none"> Request Reply 	16	0	<p>Denying ICMP address mask request messages can adversely affect diskless systems.</p> <p>Permitting ICMP address mask request messages might allow others to broadcast information queries to a network segment to determine computer type.</p>
ICMP-PARAMETER-PROBLEM	12	0	<p>ICMP parameter problem error messages notify you when incorrect header parameters are present and have caused a packet to be discarded</p> <p>We recommend denying these messages from the Internet to a trusted network.</p> <p>Permitting ICMP parameter problem error messages allows others to make assumptions about your network.</p>
ICMP-PORT-UNREACH	3	3	<p>ICMP port unreachable error messages indicate that gateways processing datagrams requesting certain ports are unavailable or unsupported in the network.</p> <p>We recommend denying these messages from the Internet to a trusted network.</p> <p>Permitting ICMP port unreachable error messages can allow others to determine which ports you use for certain protocols.</p>

Table 27: ICMP Messages (*continued*)

ICMP Message Name	Type	Code	Description
ICMP-PROTOCOL-UNREACH	3	2	<p>ICMP protocol unreachable error messages indicate that gateways processing datagrams requesting certain protocols are unavailable or unsupported in the network.</p> <p>We recommend denying these messages from the Internet to a trusted network.</p> <p>Permitting ICMP protocol unreachable error messages can allow others to determine what protocols your network is running.</p>
ICMP-REDIRECT	5	0	<p>ICMP redirect network error messages are sent by an SRX Series device.</p> <p>We recommend denying these messages from the Internet to a trusted network.</p>
ICMP-REDIRECT-HOST	5	1	<p>ICMP redirect messages indicate datagrams destined for the specified host to be sent along another path.</p>
ICMP-REDIRECT-TOS-HOST	5	3	<p>ICMP redirect type of service (TOS) and host error is a type of message.</p>
ICMP-REDIRECT-TOS-NET	5	2	<p>ICMP redirect TOS and network error is a type of message.</p>
ICMP-SOURCE-QUENCH	4	0	<p>ICMP source quench error message indicates that a device does not have the buffer space available to accept, queue, and send the packets on to the next hop.</p> <p>Denying these messages will not help or impair internal network performance.</p> <p>Permitting these messages can allow others to know that a device is congested, making it a viable attack target.</p>
ICMP-SOURCE-ROUTE-FAIL	3	5	<p>ICMP source route failed error message</p> <p>We recommend denying these messages from the Internet (external).</p>
ICMP-TIME-EXCEEDED	11	0	<p>ICMP time-to-live (TTL) exceeded error message indicates that a packet's TTL setting reached zero before the packet reached its destination. This ensures that older packets are discarded before resent ones are processed.</p> <p>We recommend denying these messages from a trusted network out to the Internet.</p>

Table 27: ICMP Messages (*continued*)

ICMP Message Name	Type	Code	Description
ICMP-TIMESTAMP	13	0	ICMP-TIMESTAMP query messages provide the mechanism to synchronize time and coordinate time distribution in a large, diverse network.
<ul style="list-style-type: none"> Request Reply 	14	0	
Ping (ICMP ECHO)	8	0	<p>Ping is a utility to determine whether a specific host is accessible by its IP address.</p> <p>Denying ping functionality removes your ability to check to see if a host is active.</p> <p>Permitting ping can allow others to execute a denial-of-service (DoS) or Smurf attack.</p>
ICMP-ECHO-FRAGMENT-ASSEMBLY-EXPIRE	11	1	<p>ICMP fragment echo reassembly time expired error message indicates that the reassembly time was exceeded.</p> <p>We recommend denying these messages.</p>
Traceroute	30	0	Traceroute is a utility to indicate the path to access a specific host.
<ul style="list-style-type: none"> Forward Discard 	30	1	We recommend denying this utility from the Internet (external) to your trusted network (internal).

Related Documentation

- [Security Policy Applications Overview on page 129](#)
- [Default Behavior of ICMP Unreachable Errors on page 159](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

Example: Defining a Custom ICMP Application

This example shows how to define a custom ICMP application.

- [Requirements on page 158](#)
- [Overview on page 158](#)
- [Configuration on page 159](#)
- [Verification on page 159](#)

Requirements

Before you begin:

- Understand custom policy application. See [“Understanding Custom Policy Applications” on page 133](#).
- Understand the ICMP predefined policy application. See [“Understanding the ICMP Predefined Policy Application” on page 153](#).

Overview

Junos OS supports ICMP—as well as several ICMP messages—as predefined or custom applications. When configuring a custom ICMP application, you define a type and code.

- There are different message types within ICMP. For example:
 - type 0 = Echo Request message
 - type 3 = Destination Unreachable message
- An ICMP message type can also have a message code. The code provides more specific information about the message, as shown in [Table 28 on page 158](#).

Table 28: Message Descriptions

Message Type	Message Code
5 = Redirect	0 = Redirect datagram for the network (or subnet)
	1 = Redirect datagram for the host
	2 = Redirect datagram for the type of application and network
	3 = Redirect datagram for the type of application and host
11 = Time Exceeded Codes	0 = Time to live exceeded in transit
	1 = Fragment reassembly time exceeded

Junos OS supports any type or code within the range of **0** through **55**.

In this example, you define a custom application named `host-unreachable` using ICMP as the transport protocol. The type is 3 (for destination unreachable) and the code is 1 (for host unreachable). You set the timeout value at 4 minutes.



NOTE: For more information about ICMP types and codes, refer to RFC 792, *Internet Control Message Protocol*.

Configuration

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 define a custom ICMP application:

1. Set the application type and code.

```
[edit applications application host-unreachable]  
user@host# set icmp-type 5 icmp-code 0
```
2. Set the inactivity timeout value.

```
[edit applications application host-unreachable]  
user@host# set inactivity-timeout 4
```
3. If you are done configuring the device, commit the configuration.

```
[edit]  
user@host# commit
```

Verification

To verify the configuration is working properly, enter the **show applications** command.

Related Documentation

- [Security Policies Overview on page 43](#)

Default Behavior of ICMP Unreachable Errors

For different levels of security, the default behavior for ICMP unreachable errors is handled as follows:

- Sessions are closed for ICMP type-3, code-0, code-1, code-2, and code-3 messages only when the following conditions are met:
 - The ICMP unreachable message is received in the server-to-client direction.
 - No normal packet is received in the server-to-client direction.

Otherwise, sessions do not close.

- Sessions do not close for ICMP type-3, code-4 messages.

Related Documentation

- [Understanding the ICMP Predefined Policy Application on page 153](#)
- [Example: Configuring Applications and Application Sets on page 130](#)

PART 6

Configuration Statements and Operational Commands

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- Operational Commands on page 295

CHAPTER 18

Configuration Statements

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Applications Configuration Statement Hierarchy

Use the statements in the **applications** configuration hierarchy to configure applications properties and group applications objects.

```
applications {  
  application application-name {  
    application-protocol (dns | ftp | gprs-gtp-c | gprs-gtp-u | gprs-gtp-v0 | gprs-sctp | http  
      | ignore | ike-esp-nat | mgcp-ca | mgcp-ua | ms-rpc | q931 | ras | realaudio | rsh | rtsp  
      | sccp | sip | sqlnet-v2 | sun-rpc | talk | tftp);  
    description text;  
    destination-port port-identifier;  
    do-not-translate-A-query-to-AAAA-query;  
    do-not-translate-AAAA-query-to-A-query;  
    ether-type hex-value;  
    icmp-code value;  
    icmp-type value;  
    icmp6-code value;  
    icmp6-type value;  
    inactivity-timeout (seconds | never);  
    protocol number;  
    rpc-program-number number;  
    source-port port-number;
```

```

term term-name {
    alg application;
    destination-port port-identifier;
    icmp-code value;
    icmp-type value;
    icmp6-code value;
    icmp6-type value;
    inactivity-timeout (seconds | never);
    protocol number;
    rpc-program-number number;
    source-port port-number;
    uuid hex-value;
}
uuid hex-value;
}
application-set application-set-name {
    application application-name;
    application-set application-set-name;
    description text;
}
}

```

Related Documentation • [application \(Applications\) on page 181](#)

[\[edit security address-book\] Hierarchy Level](#)

```

security {
    address-book (book-name | global) {
        address address-name {
            ip-prefix {
                description text;
            }
            description text;
            dns-name domain-name {
                ipv4-only;
                ipv6-only;
            }
            range-address lower-limit to upper-limit;
            wildcard-address ipv4-address/wildcard-mask;
        }
        address-set address-set-name {
            address address-name;
            address-set address-set-name;
            description text;
        }
        attach {
            zone zone-name;
        }
        description text;
    }
}

```

Related Documentation • [Understanding Address Books on page 27](#)

[\[edit security policies\] Hierarchy Level](#)

```
security {
  policies {
    default-policy (deny-all | permit-all);
    from-zone zone-name to-zone zone-name {
      policy policy-name {
        description description;
        match {
          application {
            [application];
            any;
          }
          destination-address {
            [address];
            any;
            any-ipv4;
            any-ipv6;
          }
          destination-address-excluded;
          source-address {
            [address];
            any;
            any-ipv4;
            any-ipv6;
          }
          source-address-excluded;
          source-identity {
            [role-name];
            any;
            authenticated-user;
            unauthenticated-user;
            unknown-user;
          }
        }
      }
    }
    scheduler-name scheduler-name;
    then {
      count {
        alarm {
          per-minute-threshold number;
          per-second-threshold number;
        }
      }
      deny;
      log {
        session-close;
        session-init;
      }
      permit {
        application-services {
          application-firewall {
            rule-set rule-set-name;
          }
        }
        application-traffic-control {
```

```

        rule-set rule-set-name;
    }
    gprs-gtp-profile profile-name;
    gprs-sctp-profile profile-name;
    idp;
    redirect-wx | reverse-redirect-wx;
    ssl-proxy {
        profile-name profile-name;
    }
    uac-policy {
        captive-portal captive-portal;
    }
    utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        ssl-termination-profile profile-name;
        web-redirect;
        web-redirect-to-https;
    }
    user-firewall {
        access-profile profile-name;
        domain domain-name
        ssl-termination-profile profile-name;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    sequence-check-required;
    syn-check-required;
}
tunnel {
    ipsec-group-vpn group-vpn;
    ipsec-vpn vpn-name;
    pair-policy pair-policy;
}
}
reject;
}
}
global {
    policy policy-name {
        description description;
        match {
            application {
                [application];
            }
        }
    }
}

```

```

    any;
  }
  destination-address {
    [address];
    any;
    any-ipv4;
    any-ipv6;
  }
  from-zone {
    [zone-name];
    any;
  }
  source-address {
    [address];
    any;
    any-ipv4;
    any-ipv6;
  }
  source-identity {
    [role-name];
    any;
    authenticated-user;
    unauthenticated-user;
    unknown-user;
  }
  to-zone {
    [zone-name];
    any;
  }
}
scheduler-name scheduler-name;
then {
  count {
    alarm {
      per-minute-threshold number;
      per-second-threshold number;
    }
  }
  deny;
  log {
    session-close;
    session-init;
  }
  permit {
    application-services {
      application-firewall {
        rule-set rule-set-name;
      }
      application-traffic-control {
        rule-set rule-set-name;
      }
      gprs-gtp-profile profile-name;
      gprs-sctp-profile profile-name;
      idp;
      redirect-wx | reverse-redirect-wx;
      ssl-proxy {

```

```

        profile-name profile-name;
    }
    uac-policy {
        captive-portal captive-portal;
    }
    utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        ssl-termination-profile profile-name;
        web-redirect;
        web-redirect-to-https;
    }
    user-firewall {
        access-profile profile-name;
        domain domain-name;
        ssl-termination-profile profile-name;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    initial-tcp-mss mss-value;
    reverse-tcp-mss mss-value;
    sequence-check-required;
    syn-check-required;
}
}
reject;
}
}
policy-rematch;
policy-stats {
    system-wide (disable | enable);
}
traceoptions {
    file {
        filename;
        files number;
        match regular-expression;
        (no-world-readable | world-readable);
        size maximum-file-size;
    }
    flag flag;
    no-remote-trace;
}
}

```

```
}
```

**Related
Documentation**

- [Security Configuration Statement Hierarchy](#)
- [Understanding Security Building Blocks for Security Devices on page 3](#)
- [Unified Threat Management Overview](#)

[edit security user-identification] Hierarchy Level

```
security {  
  user-identification {  
    authentication-source {  
      active-directory-authentication-table priority priority;  
      aruba-clearpass priority priority;  
      firewall-authentication priority priority;  
      local-authentication-table priority priority;  
      unified-access-control priority priority;  
    }  
    traceoptions {  
      file {  
        filename;  
        files number;  
        match regular-expression;  
        (no-world-readable | world-readable);  
        size maximum-file-size;  
      }  
      flag flag;  
      no-remote-trace;  
    }  
  }  
}
```

**Related
Documentation**

- [authentication-source \(Security\) on page 191](#)
- [Security Configuration Statement Hierarchy](#)

[edit security zones] Hierarchy Level

```
security {  
  zones {  
    functional-zone {  
      management {  
        description text;  
        host-inbound-traffic {  
          protocols protocol-name {  
            except;  
          }  
          system-services service-name {  
            except;  
          }  
        }  
      }  
      interfaces interface-name {  
        host-inbound-traffic {
```

```

        protocols protocol-name {
            except;
        }
        system-services service-name {
            except;
        }
    }
}
screen screen-name;
}
}
security-zone zone-name {
    address-book {
        address address-name {
            ip-prefix {
                description text;
            }
            description text;
            dns-name domain-name {
                ipv4-only;
                ipv6-only;
            }
            range-address lower-limit to upper-limit;
            wildcard-address ipv4-address/wildcard-mask;
        }
        address-set address-set-name {
            address address-name;
            address-set address-set-name;
            description text;
        }
    }
    application-tracking;
    description text;
    host-inbound-traffic {
        protocols protocol-name {
            except;
        }
        system-services service-name {
            except;
        }
    }
}
interfaces interface-name {
    host-inbound-traffic {
        protocols protocol-name {
            except;
        }
        system-services service-name {
            except;
        }
    }
}
screen screen-name;
tcp-rst;
}
}
}
}

```

- Related Documentation**
- *Security Configuration Statement Hierarchy*
 - *Understanding Logical Systems for SRX Series Services Gateways*
 - [Security Zones and Interfaces Overview on page 7](#)

address (Security Address Book)

Syntax

```
address address-name {
    ip-prefix {
        description text;
    }
    description text;
    dns-name domain-name {
        ipv4-only;
        ipv6-only;
    }
    range-address lower-limit to upper-limit;
    wildcard-address ipv4-address/wildcard-mask;
}
```

Hierarchy Level [edit security address-book *book-name*]

Release Information Statement introduced in Junos OS Release 8.5. Support for IPv6 addresses added in Junos OS Release 10.2. Support for IPv6 addresses in active/active chassis cluster configurations (in addition to the existing support of active/passive chassis cluster configurations) added in Junos OS Release 10.4. Support for wildcard addresses added in Junos OS Release 11.1. Support for address range added in Junos OS Release 12.1. The **description** option added in Junos OS Release 12.1.

Description Add an entry containing an IP address or DNS hostname, or wildcard address to the address book. An address book contains entries for addressable entities in security zones, policies, and NAT rules. Address book entries can include any combination of IPv4 addresses, IPv6 addresses, and DNS names.

- Options**
- **address *address-name***—Name of an address entry.
 - **description *text***—Descriptive text about an address entry.
 - **dns-address *domain-name***—DNS address name.
 - ***ip-prefix***—IP address with prefix.
 - **range-address *lower-limit* to *upper-limit***—Address range for an address book.
 - **wildcard-address *ipv4-address/wildcard-mask***—IPv4 wildcard address in the form of A.B.C.D/wildcard-mask.



NOTE: IPv6 wildcard address configuration is not supported in this release.

Required Privilege Level

security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

Related Documentation

address-book

Syntax `address-book (book-name | global) {
 address address-name {
 ip-prefix {
 description text;
 }
 description text;
 dns-name domain-name {
 ipv4-only;
 ipv6-only;
 }
 range-address lower-limit to upper-limit;
 wildcard-address ipv4-address/wildcard-mask;
 }
 address-set address-set-name {
 address address-name;
 address-set address-set-name;
 description text;
 }
 attach {
 zone zone-name;
 }
 description text;
 }`

Hierarchy Level [edit security]

Release Information Statement introduced in Junos OS Release 8.5. Support for wildcard addresses added in Junos OS Release 11.1. Statement moved under the security hierarchy in Junos OS Release 11.2. Support for address range added in Junos OS Release 12.1. The **description** option added in Junos OS Release 12.1.

Description Define entries in the address book. Address book entries can 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 them when configuring different features, such as security policies and NAT.



NOTE: IPv6 wildcard address configuration is not supported in this release.

- Options**
- **address-book *book-name***—Name of the address book.
 - **global**—An address book that is available by default. You can add any combination of IPv4 addresses, IPv6 addresses, wildcard addresses, DNS names, or address range to the global address book. You do not need to attach the global address book to a security zone; entries in the global address book are available to all security zones that are not attached to address books.

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 Address Books on page 27](#)
- [Understanding Address Sets on page 29](#)

address-set

Syntax `address-set address-set-name {
 address address-name;
 address-set address-set-name;
 description text;
}`

Hierarchy Level [edit security address-book *book-name*]

Release Information Statement introduced in Junos OS Release 8.5. Support for nested address sets introduced in Junos OS Release 11.2. The **description** option added in Junos OS Release 12.1.

Description Specify a collection of addresses, as defined in the **address (Address Book)** statement. Using address sets, you can organize addresses in logical groups and use them to easily configure other features, such as policies and NAT rules. Using this statement, you can also include a description for an address set.

You can also define address sets within address sets.

Options *address-set-name*—Name of the address set.

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

alarms (Security)

```

Syntax  alarms {
        audible {
            continuous;
        }
        potential-violation {
            authentication failures;
            cryptographic-self-test;
            decryption-failures {
                threshold value;
            }
            encryption-failures {
                threshold value;
            }
            idp;
            ike-phase1-failures {
                threshold value;
            }
            ike-phase2-failures {
                threshold value;
            }
            key-generation-self-test;
            non-cryptographic-self-test;
            policy {
                application {
                    duration interval;
                    size count;
                    threshold value;
                }
                destination-ip {
                    duration interval;
                    size count;
                    threshold value;
                }
                policy match {
                    duration interval;
                    size count;
                    threshold value;
                }
                source-ip {
                    duration interval;
                    size count;
                    threshold value;
                }
            }
            replay-attacks {
                threshold value;
            }
            security-log-percent-full percentage;
        }
    }

```

Hierarchy Level [edit security]

Release Information	Statement introduced in Junos OS Release 11.2.
Description	Configures security alarms.
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	<ul style="list-style-type: none"> • Security Policies Overview on page 43

alarm-threshold

Syntax	alarm-threshold <i>number</i> ;
Hierarchy Level	[edit security screen ids-option <i>screen-name</i> tcp syn-flood]
Release Information	Statement modified in Junos OS Release 9.2.
Description	Define the number of half-complete proxy connections per second at which the device makes entries in the event alarm log.
Options	<i>number</i> —Threshold value. Range: 1 through 500,000 per second Default: 1024 per second



NOTE: For SRX Series devices the applicable range is 1 through 1,000,000 per second.

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

alarm-without-drop

Syntax	alarm-without-drop;
Hierarchy Level	[edit security screen ids-option <i>screen-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Direct the device to generate an alarm when detecting an attack but not block the attack. Use this statement to allow an attack to enter a segment of your network that you have previously prepared to receive it (for example, a honeynet, which is a decoy network with extensive monitoring capabilities).
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

application (Applications)

Syntax `application application-name {`
 `application-protocol (dns | ftp | gprs-gtp-c | gprs-gtp-u | gprs-gtp-v0 | gprs-sctp | http |`
 `ignore | ike-esp-nat | mgcp-ca | mgcp-ua | ms-rpc | q931 | ras | realaudio | rsh | rtsp | sccp`
 `| sip | sqlnet-v2 | sun-rpc | talk | tftp);`
 `description text;`
 `destination-port port-identifier;`
 `do-not-translate-A-query-to-AAAA-query;`
 `do-not-translate-AAAA-query-to-A-query;`
 `ether-type hex-value;`
 `icmp-code value;`
 `icmp-type value;`
 `icmp6-code value;`
 `icmp6-type value;`
 `inactivity-timeout (seconds | never);`
 `protocol number;`
 `rpc-program-number number;`
 `source-port port-number;`
 `term term-name {`
 `alg application;`
 `destination-port port-identifier;`
 `icmp-code value;`
 `icmp-type value;`
 `icmp6-code value;`
 `icmp6-type value;`
 `inactivity-timeout (seconds | never);`
 `protocol number;`
 `rpc-program-number number;`
 `source-port port-number;`
 `uuid hex-value;`
 `}`
 `uuid hex-value;`
 `}`

Hierarchy Level [edit applications]

Release Information Statement introduced in Junos OS Release 8.5.

Description Configure application properties at the [applications] hierarchy level.

- Options**
- **application-protocol *protocol-name***—Specify the name of the application protocol.
 - **description *text***—Describe the application.
 - **destination-port *port-identifier***—Specify a TCP or UDP destination port number.
 - **do-not-translate-A-query-to-AAAA-query**—Set the statement to control the translation of A query to AAAA query.
 - **do-not-translate-AAAA-query-to-A-query**—Set the statement to control the translation of AAAA query to A query.
 - **ether-type *value***—Specify the Ethernet packet type value.

- **icmp-code *value***—Specify the Internet Control Message Protocol (ICMP) code value.
Range: 0 through 255.
- **icmp-type *value***—Specify the ICMP packet type value.
Range: 0 through 255.
- **icmp6-code *value***—Specify the ICMP6 code value.
Range: 0 through 255.
- **icmp6-type *value***—Specify the ICMP6 packet type value.
Range: 0 through 255.
- **inactivity-timeout (*seconds* | *never*)**—Specify the amount of time the application is inactive before it times out in seconds.
Range: 4 through 129,600 seconds.
Default: For TCP, 1800 seconds; for UDP, 60 seconds.
- **protocol *value***—Specify the networking protocol name or number.
- **rpc-program-number *value***—Specify the remote procedure call (RPC) or Distributed Computing Equipment (DCE) value.
- **source-port *port-number***—Specify a TCP or UDP source port number.

- **term *term-name***—Specify the individual application protocol.
 - **alg *application***—Specify the name of the application protocol.
 - **destination-port *port-identifier***—Specify a TCP or UDP destination port number.
 - **icmp-code *value***—Specify the ICMP code value.
Range: 0 through 255.
 - **icmp-type *value***—Specify the ICMP packet type value.
Range: 0 through 255.
 - **icmp6-code *value***—Specify the ICMP6 code value.
Range: 0 through 255.
 - **icmp6-type *value***—Specify the ICMP6 packet type value.
Range: 0 through 255.
 - **inactivity-timeout (*seconds* | *never*)**—Specify the amount of time the application is inactive before it times out in seconds.
Range: 4 through 129,600 seconds.
Default: For TCP, 1800 seconds; for UDP, 60 seconds.
 - **protocol *number***—Specify the networking protocol name or number.
 - **rpc-program-number *number***—Specify the RPC or DCE value.
 - **source-port *port-number***—Specify a TCP or UDP source port number.
 - **uuid *hex-value***—Specify the universal unique identifier (UUID) for objects.
- **uuid *hex-value***—Specify the UUID for objects.

Required Privilege Level security—To view this statement in the configuration.
 security-control—To add this statement to the configuration.


Related Documentation

- *alg (Applications)*
- [application-protocol \(Applications\) on page 186](#)
- [destination-port \(Applications\) on page 201](#)

application (Security Alarms)

Syntax	<pre>application { duration <i>interval</i>; size <i>count</i>; threshold <i>value</i>; }</pre>
Hierarchy Level	[edit security alarms potential-violation policy]
Release Information	Statement introduced in Junos OS Release 11.2.
Description	Configure alarms for a number of policy violations to an application within a specified time period.
Options	<ul style="list-style-type: none">• duration <i>interval</i>—Indicate the duration of counters. Range: 1 through 3600 seconds. Default: 1 second.• size <i>count</i>—Indicate the number of applications for which policy violation checks can be done concurrently. Range: 1 through 10240. Default: 1024.• threshold <i>value</i>—Indicate the maximum number of application matches required to raise an alarm. Range: 1 through 4294967295. Default: 1000.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

application (Security Policies)

Syntax	<pre> application { [application]; any; } </pre>
Hierarchy Level	<p>[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> match]</p> <p>[edit security policies global policy <i>policy-name</i> match]</p>
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the IP or remote procedure call (RPC) application or set of applications to be used as match criteria.
Options	<p><i>application-name-or-set</i>—Name of the predefined or custom application or application set used as match criteria.</p> <p><i>any</i>—Any predefined or custom applications or application sets.</p>
<div>  <p>NOTE: A custom application that does not use a well-known destination port for the application will not be included in the <i>any</i> option, and must be named explicitly.</p> </div>	
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

application-protocol (Applications)

Syntax	<code>application-protocol (dns ftp http https ignore ike-esp-nat mgcp-ca mgcp-ua ms-rpc pptp q931 ras realaudio rsh rtsp sccp sip smtp sqlnet-v2 ssh sun-rpc talk telnet tftp);</code>
Hierarchy Level	<code>[edit applications application <i>application-name</i>]</code>
Release Information	Statement modified in Junos OS Release 8.5. The ike-esp-nat option introduced in Junos OS Release 10.2.
Description	<p>Identify the application protocol name. The following protocols are supported:</p> <ul style="list-style-type: none">• dns —Domain Name Service• ftp —File Transfer Protocol• http —Hypertext Transfer Protocol• https —Hypertext Transfer Protocol• ignore —Ignore application type• ike-esp-nat —IKE ESP NAT application protocol• mgcp-ca —Media Gateway Control Protocol with Call Agent• mgcp-ua —MGCP with User Agent• ms-rpc —Microsoft RPC• pptp —Point-to-Point Tunneling Protocol• q931 —ISDN connection control protocol (Q.931)• ras —Remote Access Service• realaudio —RealAudio• rsh —UNIX remote shell services• rtsp —Real-Time Streaming Protocol• sccp —Skinny Client Control Protocol• sip —Session Initiation Protocol• smtp —Simple Mail Transfer Protocol• sqlnet-v2 —Oracle SQLNET v2• ssh —Secure Shell Protocol• sun-rpc —Sun Microsystems RPC• talk —TALK program• telnet —Telnet Protocol• tftp —Trivial File Transfer Protocol

Required Privilege Level system—To view this statement in the configuration.
 system-control—To add this statement to the configuration.

Related Documentation • [Policy Application Sets Overview on page 130](#)

application-services (Security Policies)

Syntax

```

application-services {
  application-firewall {
    rule-set rule-set-name;
  }
  application-traffic-control {
    rule-set rule-set-name;
  }
  gprs-gtp-profile profile-name;
  gprs-sctp-profile profile-name;
  idp;
  redirect-wx | reverse-redirect-wx;
  ssl-proxy {
    profile-name profile-name;
  }
  uac-policy {
    captive-portal captive-portal;
  }
  utm-policy policy-name;
}

```

Hierarchy Level [edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name* then permit]

Release Information Statement modified in Junos OS Release 11.1.

Description Enable application services within a security policy.

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 • [Application Firewall Overview](#)

application-tracking (Security Zones)

Syntax	application-tracking;
Hierarchy Level	[edit security zones security-zone <i>zone-name</i>]
Release Information	Statement introduced in Junos OS Release 10.2.
Description	Enable application tracking support for the zone.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Example: Configuring AppTrack</i>

application-traffic-control (Application Services)

Syntax	application-traffic-control { rule-set <i>rule-set-name</i> ; }
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit application-services]
Release Information	Statement introduced in Junos OS Release 11.4.
Description	Enables AppQoS, application-aware quality of service, as specified in the rules of the specified rule set.
Options	<ul style="list-style-type: none">• rule-set <i>rule-set-name</i>—Name of the rule set that contains application-aware traffic control specification rules.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Example: Configuring AppQoS</i>• Security Policies Overview on page 43

attach

Syntax	<code>attach { zone <i>zone-name</i>; }</code>
Hierarchy Level	<code>[edit security address-book <i>book-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 11.2.
Description	Attach a security zone to an address book. You do not need to attach a security zone to the global address book. The global address book is available by default.
Options	zone <i>zone-name</i> —Name of a security zone to be attached to the address book.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Understanding Address Books on page 27 • Understanding Address Sets on page 29

audible (Security Alarms)

Syntax	<code>audible { continuous; }</code>
Hierarchy Level	<code>[edit security alarms]</code>
Release Information	Statement modified in Junos OS Release 11.2.
Description	Configure alarm to beep when a new security alarm is enabled.
Options	continuous —Specify alarm to keep beeping until all security alarms are cleared.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

authentication (Security Alarms)

Syntax	authentication <i>failures</i> ;
Hierarchy Level	[edit security alarms potential-violation]
Release Information	Statement introduced in Junos OS Release 11.2.
Description	<p>Raise a security alarm when the device or switch detects a specified number of authentication failures (bad password attempts) before an alarm is raised.</p> <p>This value must be equal to or less than the tries-before-disconnect setting at the [edit system login retry-options] hierarchy level; otherwise, the login session ends before the user reaches the alarmable threshold.</p>
Default	Multiple authentication failures do not cause an alarm to be raised.
Options	<p><i>failures</i>—Number of authentication failures that causes an alarm to be raised.</p> <p>Range: 1 through 10.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

authentication-source (Security)

Syntax	<pre>authentication-source { active-directory-authentication-table priority <i>priority</i>; aruba-clearpass (disable priority <i>priority</i>); firewall-authentication priority <i>priority</i>; local-authentication-table priority <i>priority</i>; unified-access-control priority <i>priority</i>; network-access-controller }</pre>
Hierarchy Level	[edit security user-identification]
Release Information	Statement introduced in Junos OS Release 12.1. Statement updated in Junos OS Release 12.1-X45-D10. Support for the active-directory-authentication-table priority command statement added in Junos OS Release 12.1X47-D10. Statement updated in Junos Release 15.1X49-D60. Support for the aruba-clearpass command statement added in Junos OS Release 15.1X49-D60.
Description	Identifies one or more tables to be used as the source for user role information. Tables are searched in sequence based on lowest to highest priority.



NOTE: For aruba-clearpass, if an entry for the user is not found in the **aruba-clearpass** authentication table, the other authentication tables are searched in the specified order.

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • local-authentication-table on page 222 • firewall-authentication (User Identification) on page 209 • unified-access-control (Security) on page 285 • Understanding User Role Firewalls on page 85 • Understanding the User Identification Table on page 88 • Understanding Enforcement of ClearPass User and Group Authentication on the SRX Series Devices • Example: Enforcing SRX Series Security Policies Using Aruba ClearPass as the Authentication Source

captive-portal (Services UAC Policy)

Syntax	<code>captive-portal <i>captive-portal-policy-name</i>;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit application-services uac-policy]
Release Information	Statement introduced in Junos OS Release 10.2.
Description	Create the captive portal policy in the UAC security policy. You use the captive portal policy to configure the captive portal feature on the Junos OS Enforcer. By configuring the captive portal feature, you can redirect traffic destined for protected resources to the IC Series device or to the URL you configure on the Junos OS Enforcer.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

count (Security Policies)

Syntax	<code>count;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then]
Release Information	Statement introduced in Junos OS Release 8.5. Statement updated in Junos OS Release 12.1X47-D10.
Description	Enable a count, in bytes or kilobytes, of all network traffic the policy allows to pass through the device in both directions: the originating traffic from the client to the server (from the from-zone to the to-zone), and the return traffic from the server to the originating client.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• show security policies on page 323• Security Policies Overview on page 43

default-policy

Syntax	default-policy (deny-all permit-all);
Hierarchy Level	[edit security policies]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure the default security policy that defines the actions the device takes on a packet that does not match any user-defined policy.
Options	<p>deny-all—Deny all traffic. Packets are dropped. This is the default.</p> <p>permit-all—Permit all traffic that does not match a policy.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

deny (Security Policies)

Syntax	deny;
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Block the service at the firewall. The device drops the packets.
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

description (Applications)

Syntax	<code>description text;</code>
Hierarchy Level	[edit applications application <i>application-name</i>], [edit applications application-set <i>application-set-name</i>]
Release Information	Statement introduced in Junos OS Release 12.1.
Description	Specify descriptive text for an application or an application set.



NOTE: The descriptive text should not include characters, such as "<", ">", "&", or "\n".

Options	text —Descriptive text about an application or an application set. Range: 1 through 300 characters
----------------	---



NOTE: The upper limit of the description text range is related to character encoding, and is therefore dynamic. However, if you configure the descriptive text length beyond 300 characters, the configuration might fail to take effect.

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Policy Application Sets Overview on page 130

description (Security Address Book)

Syntax	<code>description text;</code>
Hierarchy Level	<code>[edit security address-book <i>book-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 12.1.
Description	Specify descriptive text for an address book.



NOTE: The descriptive text should not include characters, such as "<", ">", "&", or "\n".

Options	text —Descriptive text about an address book. Range: 1 through 300 characters
----------------	--



NOTE: The upper limit of the description text range is related to character encoding, and is therefore dynamic. However, if you configure the descriptive text length beyond 300 characters, the configuration might fail to take effect.

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Understanding Address Books on page 27 • Understanding Address Sets on page 29

description (Security Policies)

Syntax	<code>description <i>description</i>;</code>
Hierarchy Level	<code>[edit security group-vpn member ike policy <i>policy-name</i>]</code> <code>[edit security group-vpn member ike proposal <i>proposal-name</i>]</code> <code>[edit security group-vpn server ike policy <i>policy-name</i>]</code> <code>[edit security group-vpn server ipsec proposal <i>proposal-name</i>]</code> <code>[edit security group-vpn server ike proposal <i>proposal-name</i>]</code> <code>[edit security ike policy <i>policy-name</i>],</code> <code>[edit security ike proposal <i>proposal-name</i>],</code> <code>[edit security ipsec policy <i>policy-name</i>],</code> <code>[edit security ipsec proposal <i>proposal-name</i>]</code> <code>[edit security polices from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i>]</code>
Release Information	Statement modified in Junos OS Release 8.5. Support for group-vpn hierarchies added in Junos OS Release 10.2. Support for the security policies hierarchy added in Junos OS Release 12.1.
Description	Specify descriptive text for an IKE policy, an IPsec policy, an IKE proposal, an IPsec proposal, or a security policy.
Options	<i>description</i> —Descriptive text about an IKE policy, an IPsec policy, an IKE proposal, an IPsec proposal, or a security policy.
Required Privilege Level	security —To view this statement in the configuration. security-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>IPsec VPN Overview</i>

description (Security Zone)

Syntax	<code>description text;</code>
Hierarchy Level	[edit security zones functional-zone management] [edit security zones security-zone <i>zone-name</i>]
Release Information	Statement introduced in Junos OS Release 12.1.
Description	Specify descriptive text for a security zone.



NOTE: The descriptive text should not include characters, such as "<", ">", "&", or "\n".

Options	text —Descriptive text about a security zone. Range: 1 through 300 characters
----------------	--



NOTE: The upper limit of the description text range is related to character encoding, and is therefore dynamic. However, if you configure the descriptive text length beyond 300 characters, the configuration might fail to take effect.

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
---------------------------------	---

Related Documentation

destination-address (Security Policies)

Syntax	<pre>destination-address { [address]; any; any-ipv4; any-ipv6; }</pre>
Hierarchy Level	<p>[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> match]</p> <p>[edit security policies global policy <i>policy-name</i> match]</p>
Release Information	Statement introduced in Junos OS Release 8.5. Support for IPv6 addresses added in Junos OS Release 10.2. Support for IPv6 addresses in active/active chassis cluster configurations (in addition to the existing support of active/passive chassis cluster configurations) added in Junos OS Release 10.4. Support for wildcard addresses added in Junos OS Release 11.1.
Description	Define the matching criteria. You can specify one or more IP addresses, address sets, or wildcard addresses. You can specify wildcards any , any-ipv4 , or any-ipv6 .
Options	address —IP address (any , any-ipv4 , any-ipv6), IP address set, or address book entry, or wildcard address (represented as A.B.C.D/wildcard-mask). You can configure multiple addresses or address prefixes separated by spaces and enclosed in square brackets.
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

destination-address (Security Policies Flag)

Syntax	destination-address { drop-translated; drop-untranslated; }
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	<p>Specify whether the traffic permitted by the security policy is limited to packets where the destination IP address has been translated by means of a destination NAT rule or to packets where the destination IP address has not been translated.</p> <p>On Juniper Networks security devices, destination NAT rules are processed before security policy lookup. Therefore, it is possible for a security policy to permit traffic from a source S to a destination D (where no destination NAT is performed) and also to permit traffic from the source S to the destination d (where d has been translated to D).</p>
Options	<ul style="list-style-type: none"> • drop-translated—Drop packets with translated destination IP addresses. Traffic permitted by the security policy is limited to packets where the destination IP address has not been translated. • drop-untranslated—Drop packets without translated destination IP addresses. Traffic permitted by the security policy is limited to packets where the destination IP address has been translated by means of a destination NAT rule.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

destination-address-excluded

Syntax	destination-address-excluded;
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> match]
Release Information	Statement introduced in Junos OS Release 12.1X45-D10.
Description	Exclude the destination address(es) from the policy.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

destination-ip (Security Alarms)

Syntax	<pre>destination-ip { duration <i>interval</i>; size <i>count</i>; threshold <i>value</i>; }</pre>
Hierarchy Level	[edit security alarms potential-violation policy]
Release Information	Statement introduced in Junos OS Release 11.2.
Description	Configure alarms for a number of policy violations to a destination network identifier within a specified time period.
Options	<ul style="list-style-type: none">• duration <i>interval</i>—Indicate the duration of counters. Range: 1 through 3600 seconds. Default: 1 second.• size <i>count</i>—Indicate the number of destination IP addresses for which policy violation checks can be done concurrently. Range: 1 through 10240. Default: 1024.• threshold <i>value</i>—Indicate the maximum number of destination IP address matches required to raise an alarm. Range: 1 through 4294967295. Default: 1000.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

destination-port (Applications)

Syntax	<code>destination-port <i>port-identifier</i>;</code>
Hierarchy Level	[edit applications application <i>application-name</i>], [edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	Specify a TCP or UDP destination port number.
Options	<i>port-identifier</i> —Range of ports. You can use a numeric value or one of the text synonyms listed in Table 29 on page 202 .

Table 29: Port Supported by Services Interfaces

Port Name	Corresponding Port Number
afs	1483
bgp	179
biff	512
bootpc	68
bootps	67
cmd	514
cvspserver	2401
dhcp	67
domain	53
eklogin	2105
ekshell	2106
excc	512
finger	79
ftp	21
ftp-data	20
http	80
https	443
ident	113
imap	143
kerberos-sec	88
klogin	543
kpasswd	761
krb-prop	754
krbupdate	760

Table 29: Port Supported by Services Interfaces (*continued*)

Port Name	Corresponding Port Number
kshell	544
ldap	389
ldp	646
login	513
mobileip-agent	434
mobilip-mn	435
msdp	639
netbios-dgm	138
netbios-ns	137
netbios-ssn	139
nfsd	2049
nntp	119
ntalk	518
ntp	123
pop3	110
pptp	1723
printer	515
radacct	1813
radius	1812
rip	520
rkinit	2108
smtp	25
snmp	161
snmp-trap	162

Table 29: Port Supported by Services Interfaces (*continued*)

Port Name	Corresponding Port Number
snpp	444
socks	1080
ssh	22
sunrpc	111
syslog	514
tacacs	49
tacacs-ds	65
talk	517
telnet	23
tftp	69
timed	525
who	513
xmcp	177

Required Privilege Level system—To view this statement in the configuration.
 system-control—To add this statement to the configuration.

Related Documentation • [Policy Application Sets Overview on page 130](#)

dns-proxy

Syntax

```
dns-proxy {
  cache hostname inet ip-address;
  default-domain domain-name {
    forwarders ip-address;
  }
  interface interface-name;
  propagate-setting (enable | disable);
  view view-name {
    domain domain-name {
      forward-only;
      forwarders ip-address;
    }
    match-clients subnet-address;
  }
}
```

Hierarchy Level [edit system services dns dns-proxy]

Release Information Statement introduced in Junos OS Release 12.1X44-D10.

Description Configure the device as a DNS proxy server by enabling DNS proxy on a logical interface.

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

- *DNS Proxy Overview*
- *Configuring the Device as a DNS Proxy*

dynamic-dns

Syntax	<pre>dynamic-dns { client <i>hostname</i> { agent <i>agent-name</i>; interface <i>interface-name</i>; password <i>server-password</i>; server <i>server-name</i>; username <i>user-name</i>; } }</pre>
Hierarchy Level	[edit system services]
Release Information	Statement introduced in Junos OS Release 12.1X44-D10.
Description	Configure the device as a dynamic DNS server that maintains the list of the changed addresses and their associated domain names registered with it. The device updates these DDNS servers with this information periodically or whenever there is a change in IP addresses.
Options	<ul style="list-style-type: none">• client—Specifies the hostname of the registered client.• agent—Specifies the name of the dynamic DNS agent.• interface—Specifies the interface whose IP address is mapped to the registered domain name.• password—Specifies the password.• server—Specifies the name of the dynamic DNS server that allows dynamic DNS clients to update the IP address changes associated with the registered hostname.• username—Specifies the dynamic DNS username.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>DNS Overview</i>

exclude (Schedulers)

Syntax	exclude;
Hierarchy Level	[edit schedulers scheduler <i>scheduler-name</i> daily], [edit schedulers scheduler <i>scheduler-name</i> friday], [edit schedulers scheduler <i>scheduler-name</i> monday], [edit schedulers scheduler <i>scheduler-name</i> saturday], [edit schedulers scheduler <i>scheduler-name</i> sunday], [edit schedulers scheduler <i>scheduler-name</i> tuesday], [edit schedulers scheduler <i>scheduler-name</i> thursday], [edit schedulers scheduler <i>scheduler-name</i> wednesday]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Exclude a specified day from the schedule. Use the exclude statement to exclude a day from a daily schedule created with the daily statement. You cannot use the exclude statement for a particular day unless it is in conjunction with the daily statement in a schedule.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policy Schedulers Overview on page 81

firewall-authentication (Security Policies)

Syntax	<pre> firewall-authentication { pass-through { access-profile <i>profile-name</i>; client-match <i>user-or-group-name</i>; ssl-termination-profile <i>profile-name</i>; web-redirect; web-redirect-to-https; } user-firewall { access-profile <i>profile-name</i>; domain <i>domain-name</i> ssl-termination-profile <i>profile-name</i>; } web-authentication { client-match <i>user-or-group-name</i>; } } </pre>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit]
Release Information	<p>Statement introduced in Junos OS Release 8.5.</p> <p>Support added for the user-firewall option in Junos OS Release 12.1X45-D10.</p> <p>Support for the ssl-termination-profile and web-redirect-to-https options added on high-end SRX Series Services Gateways starting from Junos OS Release 12.1X44-D10 and on vSRX, SRX300, SRX320, SRX340, SRX345, SRX550M, and SRX1500 Services Gateways starting from Junos OS Release 15.1X49-D40.</p>
Description	Configure firewall authentication methods.
Options	The remaining statements are explained separately. See CLI Explorer .
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Understanding User Role Firewalls on page 85

firewall-authentication (User Identification)

Syntax	firewall-authentication priority <i>priority</i> ;
Hierarchy Level	[edit security user-identification authentication-source]
Release Information	Statement introduced in Junos OS Release 12.1X45-D10. Support for disable option dropped in Junos OS Release 12.1X47-D10.
Description	Enables the firewall authentication table as an authentication source. The priority of this table among other authentication tables establishes the search sequence used to identify user and role values.
Options	<p>priority—A unique value between 0 and 65535 that determines the sequence for searching multiple tables to retrieve a user role. Each table is given a unique priority value. The lower the value, the higher the priority. A table with priority 120 is searched before a table with priority 200.</p> <p>Default: 150</p> <p>Setting the priority value of the firewall authentication table to 0 is equivalent to disabling the table and eliminating it from the search sequence.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • authentication-source (Security) on page 191 • Understanding User Role Firewalls on page 85

forward-only (DNS)

Syntax	forward-only;
Hierarchy Level	[edit system services dns dns-proxy view <i>view-name</i> domain <i>domain-name</i>]
Release Information	Statement introduced in Junos OS Release 12.1X46-D10.
Description	Specify that the server to forward only DNS queries. This configuration prevents the device from acquiring public IP addresses, in case the IP address specified in forwarders option is not reachable, by terminating the DNS query.
Required Privilege Level	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • DNS Overview

from-zone (Security Policies)

```
Syntax  from-zone zone-name to-zone zone-name {  
        policy policy-name {  
            description description;  
            match {  
                application {  
                    [application];  
                    any;  
                }  
                destination-address {  
                    [address];  
                    any;  
                    any-ipv4;  
                    any-ipv6;  
                }  
                source-address {  
                    [address];  
                    any;  
                    any-ipv4;  
                    any-ipv6;  
                }  
                source-identity {  
                    [role-name];  
                    any;  
                    authenticated-user;  
                    unauthenticated-user;  
                    unknown-user;  
                }  
                source-end-user-profile {  
                    profile-name;  
                }  
            }  
            scheduler-name scheduler-name;  
            then {  
                count {  
                    alarm {  
                        per-minute-threshold number;  
                        per-second-threshold number;  
                    }  
                }  
                deny;  
                log {  
                    session-close;  
                    session-init;  
                }  
                permit {  
                    application-services {  
                        application-firewall {  
                            rule-set rule-set-name;  
                        }  
                    }  
                    application-traffic-control {  
                        rule-set rule-set-name;  
                    }  
                }  
            }  
        }  
    }
```

```

gprs-gtp-profile profile-name;
gprs-sctp-profile profile-name;
idp;
redirect-wx | reverse-redirect-wx;
ssl-proxy {
    profile-name profile-name;
}
uac-policy {
    captive-portal captive-portal;
}
utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        ssl-termination-profile profile-name;
        web-redirect;
        web-redirect-to-https;
    }
    user-firewall {
        access-profile profile-name;
        domain domain-name;
        ssl-termination-profile profile-name;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    initial-tcp-mss mss-value;
    reverse-tcp-mss mss-value;
    sequence-check-required;
    sequence-check-required;
    syn-check-required;
}
tunnel {
    ipsec-group-vpn group-vpn;
    ipsec-vpn vpn-name;
    pair-policy pair-policy;
}
}
reject;
}
}

```

Hierarchy Level [edit security policies]

Release Information	Statement introduced in Junos OS Release 8.5. Support for the services-offload option added in Junos OS Release 11.4. Support for the source-identity option added in Junos OS Release 12.1. Support for the description option added in Junos OS Release 12.1. Support for the ssl-termination-profile and web-redirect-to-https options added in Junos OS Release 12.1X44-D10. Support for the user-firewall option added in Junos OS Release 12.1X45-D10. Support for the initial-tcp-mss and reverse-tcp-mss options added in Junos OS Release 12.3X48-D20.
Description	Specify a source zone and destination zone to be associated with the security policy.
Options	<ul style="list-style-type: none">• from-zone <i>zone-name</i>—Name of the source zone.• to-zone <i>zone-name</i>—Name of the destination zone. <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43• Understanding Security Policy Rules on page 45• Understanding Security Policy Elements on page 49

from-zone (Security Policies Global)

Syntax	<pre>from-zone { [<i>zone-name</i>]; any; }</pre>
Hierarchy Level	[edit security policies global policy <i>policy-name</i> match]
Release Information	Statement introduced in Junos OS Release 12.1X47-D10.
Description	Identify a single source zone or multiple source zones to be used as a match criteria for a policy. You must configure specific zones or default to any zone, but you cannot have both in a global policy.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

functional-zone

Syntax	<pre> functional-zone { management { description <i>text</i>; host-inbound-traffic { protocols <i>protocol-name</i> { except; } system-services <i>service-name</i> { except; } } } interfaces <i>interface-name</i> { host-inbound-traffic { protocols <i>protocol-name</i> { except; } system-services <i>service-name</i> { except; } } } screen <i>screen-name</i>; } </pre>
Hierarchy Level	[edit security zones]
Release Information	Statement introduced in Junos OS Release 8.5. The description option added in Junos OS Release 12.1.
Description	Configure a functional zone.
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	<ul style="list-style-type: none"> • Understanding Functional Zones on page 8

global (Security Policies)

```
Syntax  global {
        policy policy-name {
            description description;
            match {
                application {
                    [application];
                    any;
                }
                destination-address {
                    [address];
                    any;
                    any-ipv4;
                    any-ipv6;
                }
                from-zone {
                    [zone-name];
                    any;
                }
                source-address {
                    [address];
                    any;
                    any-ipv4;
                    any-ipv6;
                }
                source-identity {
                    [role-name];
                    any;
                    authenticated-user;
                    unauthenticated-user;
                    unknown-user;
                }
                to-zone {
                    [zone-name];
                    any;
                }
            }
            scheduler-name scheduler-name;
            then {
                count {
                    alarm {
                        per-minute-threshold number;
                        per-second-threshold number;
                    }
                }
                deny;
                log {
                    session-close;
                    session-init;
                }
                permit {
                    application-services {
                        application-firewall {
```

```

        rule-set rule-set-name;
    }
    application-traffic-control {
        rule-set rule-set-name;
    }
    gprs-gtp-profile profile-name;
    gprs-sctp-profile profile-name;
    idp;
    redirect-wx | reverse-redirect-wx;
    ssl-proxy {
        profile-name profile-name;
    }
    uac-policy {
        captive-portal captive-portal;
    }
    utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        web-redirect;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    sequence-check-required;
    syn-check-required;
}
}
reject;
}
}

```

Hierarchy Level	[edit security policies]
Release Information	Statement introduced in Junos OS Release 8.5. Statement updated with from-zone and to-zone policy match options in Junos OS Release 12.1X47-D10.
Description	Configure a global policy.
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**
- [Global Policy Overview on page 73](#)

host-inbound-traffic

Syntax	<pre>host-inbound-traffic { protocols protocol-name { except; } system-services <i>service-name</i> { except; } }</pre>
Hierarchy Level	[edit security zones functional-zone management], [edit security zones functional-zone management interfaces <i>interface-name</i>], [edit security zones security-zone <i>zone-name</i>], [edit security zones security-zone <i>zone-name</i> interfaces <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Control the type of traffic that can reach the device from interfaces bound to the zone.
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	<ul style="list-style-type: none">• Understanding How to Control Inbound Traffic Based on Traffic Types on page 13• Understanding How to Control Inbound Traffic Based on Protocols on page 16

icmp-code (Applications)

Syntax	<code>icmp-code value;</code>
Hierarchy Level	[edit applications application <i>application-name</i>] [edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	Specify the Internet Control Message Protocol (ICMP) code value.
Options	value — Specify the Internet Control Message Protocol (ICMP) code value such as host-unreachable or host-unreachable-for-tos . Range: 0 through 255.
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Policy Application Sets Overview on page 130

icmp-type (Applications)

Syntax	<code>icmp-type value;</code>
Hierarchy Level	[edit applications application <i>application-name</i>] [edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	Specify the ICMP packet type value.
Options	value —ICMP type value, such as echo or echo-reply . Range: 0 through 255.
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Policy Application Sets Overview on page 130

inactivity-timeout (Applications)

Syntax	<code>inactivity-timeout (seconds never) ;</code>
Hierarchy Level	<code>[edit applications application <i>application-name</i>]</code> <code>[edit applications application <i>application-name</i> term <i>term-name</i>]</code>
Release Information	Statement modified in Junos OS Release 8.5.
Description	Inactivity timeout period, in seconds.
Options	seconds —Specify the amount of time the application is inactive before it times out in seconds. Range: 4 through 129,600 seconds. Default: For TCP, 1800 seconds; for UDP, 60 seconds.
Required Privilege Level	<code>system</code> —To view this statement in the configuration. <code>system-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Policy Application Sets Overview on page 130

interfaces (Security Zones)

Syntax	<pre> interfaces <i>interface-name</i> { host-inbound-traffic { protocols <i>protocol-name</i> { except; } system-services <i>service-name</i> { except; } } } </pre>
Hierarchy Level	[edit security zones functional-zone management], [edit security zones security-zone <i>zone-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the set of interfaces that are part of the zone.
Options	<p><i>interface-name</i> —Name of the interface.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Understanding Security Zones on page 8

initial-tcp-mss

Syntax	<code>initial-tcp-mss <i>mss-value</i>;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit tcp-options]
Release Information	Statement introduced in Junos OS Release 12.3X48-D20.
Description	<p>Configure the TCP maximum segment size (MSS) for packets that arrive at the ingress interface (initial direction), match a specific policy, and for which a session is created. The value you configure overrides the TCP MSS value in the incoming packet when the value in the packet is higher than the one you specify.</p> <p>The initial-tcp-mss value per policy takes precedence over a global tcp-mss value (all-tcp, ipsec-vpn, gre-in, gre-out), if one is configured. However, when the syn-flood-protection-mode syn-proxy statement at the [edit security flow] hierarchy level is used to enable SYN proxy defenses against SYN attacks, the TCP MSS value is not overridden.</p> <p>Because each policy has two directions, you can configure a value for both directions or for just one direction. To configure a TCP MSS value for the reverse session, use the reverse-tcp-mss option.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• reverse-tcp-mss on page 249• <i>tcp-mss (Security Flow)</i>• <i>syn-flood-protection-mode</i>

ipsec-group-vpn (Security Policies)

Syntax	<code>ipsec-group-vpn <i>group-vpn</i>;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit tunnel]
Release Information	Statement introduced in Junos OS Release 10.2.
Description	Specify group VPN tunnel for the traffic configured by the scope policy on a group member.
Options	<i>group-vpn</i> —Name of the group VPN tunnel configured on the group member.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • Group VPNv2 Overview • Understanding Security Building Blocks for Security Devices on page 3

ipsec-vpn (Security Policies)

Syntax	<code>ipsec-vpn <i>vpn-name</i>;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit tunnel]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Define IPsec name for VPN.
Options	<i>vpn-name</i> —Name of the IPsec.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

local-authentication-table

Syntax	<code>local-authentication-table priority <i>priority</i>;</code>
Hierarchy Level	[edit security user-identification authentication-source]
Release Information	Statement introduced in Junos OS Release 12.1. Support for disable option dropped in Junos OS Release 12.1X47-D10.
Description	An authentication table created on the SRX Series device using the request security user-identification local-authentication-table add command.
Options	<p>priority <i>priority</i>—A unique value between 0 and 65535 that determines the sequence for searching multiple tables to retrieve a user role. Each table is given a unique priority value. The lower the value, the higher the priority. A table with priority 120 is searched before a table with priority 200. The default priority value of the local authentication table is 100.</p> <p>Setting the priority value of the local authentication table to 0 is equivalent to disabling the table and eliminating it from the search sequence.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Understanding User Role Firewalls on page 85• Understanding the User Identification Table on page 88

log (Security Policies)

Syntax	<code>log (session-close session-init);</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Log traffic information for a specific policy. Traffic information is logged when a session begins (session-init) or closes (session-close).
Options	<p>session-close—Start logging traffic when the session ends.</p> <p>session-init—Start logging traffic when the session begins.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

management (Security Zones)

```
Syntax  management {
        description text;
        host-inbound-traffic {
            protocols protocol-name {
                except;
            }
            system-services service-name {
                except;
            }
        }
        interfaces interface-name {
            host-inbound-traffic {
                protocols protocol-name {
                    except;
                }
                system-services service-name {
                    except;
                }
            }
        }
        screen screen-name;
    }
```

Hierarchy Level [edit security zones functional-zone]

Release Information Statement introduced in Junos OS Release 8.5. The **description** option added in Junos OS Release 12.1.

Description Specify the host for out-of-band management interfaces. You can set firewall options in this zone to protect the management interface from different types of attacks. Because this zone cannot be specified in policies, traffic entering from this zone can only be traffic originating from the device itself and cannot originate from any other zone.

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

- [Security Zones and Interfaces Overview on page 7](#)
- [Understanding Functional Zones on page 8](#)

match (Security Policies)

Syntax

```
match {  
  application {  
    [application];  
    any;  
  }  
  destination-address {  
    [address];  
    any;  
    any-ipv4;  
    any-ipv6;  
  }  
  source-address {  
    [address];  
    any;  
    any-ipv4;  
    any-ipv6;  
  }  
  source-identity {  
    [role-name];  
    any;  
    authenticated-user;  
    unauthenticated-user;  
    unknown-user;  
  }  
}
```

Hierarchy Level [edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name*]

Release Information Statement introduced in Junos OS Release 8.5. Statement updated with the **source-identity** option in Junos OS Release 12.1.

Description Configure security policy match criteria.

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

- [Security Policies Overview on page 43](#)

match (Security Policies Global)

```
Syntax  match {
        application {
            [application];
            any;
        }
        destination-address {
            [address];
            any;
            any-ipv4;
            any-ipv6;
        }
        from-zone {
            [zone-name];
            any;
        }
        source-address {
            [address];
            any;
            any-ipv4;
            any-ipv6;
        }
        source-identity {
            [role-name];
            any;
            authenticated-user;
            unauthenticated-user;
            unknown-user;
        }
        to-zone {
            [zone-name];
            any;
        }
    }
```

Hierarchy Level [edit security policies global policy *policy-name*]

Release Information Statement modified in Junos OS Release 8.5. Statement updated with **source-identity** option in Junos OS Release 12.1. Statement updated with **to-zone** and **from-zone** options in Junos OS Release 12.1X47-D10.

Description Configure security global policy match criteria.



NOTE: We recommend that, for security reasons and to avoid spoofing traffic, when you create a multizone policy you use identical matching criteria (source address, destination address, application) and an identical action. For more information see “[Global Policy Overview](#)” on [page 73](#).

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

- [Security Policies Overview on page 43](#)

no-policy-cold-synchronization

Syntax no-policy-cold-synchronization

Hierarchy Level [edit security idp sensor-configuration high-availability]

Release Information Statement introduced in Junos OS Release 11.1.

Description Disable policy cold synchronization functionality. This prevents the SRX Series devices from waiting for the IPS policy to be loaded on all service PICs, and there by forfeits IPS service protection during the ISSU (In-service software upgrade) operation/window.

Required Privilege Level security—To view this statement in the configuration.
security-control—To add this statement to the configuration.


Related Documentation

- [Security Policies Overview on page 43](#)

pair-policy

Syntax	<code>pair-policy <i>pair-policy</i> ;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit tunnel]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Link the policy that you are configuring with another policy that references the same VPN tunnel so that both policies share one proxy ID and one security association (SA). Policy pairing is useful when you want to allow bidirectional traffic over a policy-based VPN that is using source or destination address translation with a dynamic IP address pool or destination address translation with a mapped IP (MIP) or dynamic IP (DIP) address pool.</p> <p>Without policy pairing, the device derives a different proxy ID from the outbound and inbound policies. Two proxy IDs causes a problem for the remote peer with a single proxy ID for the VPN tunnel.</p> <p>Pairing two policies solves the proxy ID problem for the remote peer and conserves SA resources. The single proxy ID is derived from the policy you configured last.</p>
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

pass-through

Syntax	<pre>pass-through { access-profile <i>profile-name</i>; client-match <i>user-or-group-name</i>; ssl-termination-profile <i>profile-name</i>; web-redirect; web-redirect-to-https; }</pre>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit firewall-authentication]
Release Information	Statement introduced in Junos OS Release 8.5. Support for ssl-termination-profile and web-redirect-to-https options added in Junos OS Release 12.1X44-D10.
Description	<p>Configure pass-through firewall user authentication. The user needs to use an FTP, Telnet, or HTTP client to access the IP address of the protected resource in another zone. Subsequent traffic from the user or host is allowed or denied based on the result of this authentication. Once authenticated, the firewall proxies the connection.</p>
Options	<ul style="list-style-type: none"> • access-profile <i>profile-name</i> —(Optional) Specify the name of the access profile. • client-match <i>user-or-group</i> —(Optional) Specify the name of the users or user groups in a profile who are allowed access by this policy. If you do not specify any users or user groups, any user who is successfully authenticated is allowed access. • ssl-termination-profile <i>profile-name</i> —(Optional) Specify the SSL termination profile used for SSL offloading. • web-redirect—(Optional) Enable redirecting an HTTP request to the device and redirecting the client system to a webpage for authentication. Including this statement allows users an easier authentication process because they need to know only the name or IP address of the resource they are trying to access. • web-redirect-to-https—(Optional) Redirect unauthenticated HTTP requests to the internal HTTPS Web server of the device.
<div style="display: flex; align-items: center;">  <div> <p>NOTE: If web-redirect-to-https is set, then you must specify the SSL termination profile used for SSL offloading.</p> </div> </div>	
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

permit (Security Policies)

```
Syntax  permit {
    application-services {
        application-firewall {
            rule-set rule-set-name;
        }
        application-traffic-control {
            rule-set rule-set-name;
        }
        gprs-gtp-profile profile-name;
        gprs-sctp-profile profile-name;
        idp;
        redirect-wx | reverse-redirect-wx;
        ssl-proxy {
            profile-name profile-name;
        }
        uac-policy {
            captive-portal captive-portal;
        }
        utm-policy policy-name;
    }
    destination-address {
        drop-translated;
        drop-untranslated;
    }
    firewall-authentication {
        pass-through {
            access-profile profile-name;
            client-match user-or-group-name;
            ssl-termination-profile profile-name;
            web-redirect;
            web-redirect-to-https;
        }
        user-firewall {
            access-profile profile-name;
            domain domain-name;
            ssl-termination-profile profile-name;
        }
        web-authentication {
            client-match user-or-group-name;
        }
    }
    services-offload;
    tcp-options {
        sequence-check-required;
        syn-check-required;
    }
    tunnel {
        ipsec-group-vpn group-vpn;
        ipsec-vpn vpn-name;
        pair-policy pair-policy;
    }
}
```

Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then]
Release Information	Statement introduced in Junos OS Release 8.5. Support for the tcp-options added in Junos OS Release 10.4. Support for the services-offload option added in Junos OS Release 11.4. Support for the ssl-termination-profile and web-redirect-to-https options added in Junos OS Release 12.1X44-D10. Support for the user-firewall option added in Junos OS Release 12.1X45-D10.
Description	Specify the policy action to perform when packets match the defined criteria.
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.

policies

```

Syntax  policies {
        default-policy (deny-all | permit-all);
        from-zone zone-name to-zone zone-name {
            policy policy-name {
                description description;
                match {
                    application {
                        [application];
                        any;
                    }
                    destination-address {
                        [address];
                        any;
                        any-ipv4;
                        any-ipv6;
                    }
                    source-address {
                        [address];
                        any;
                        any-ipv4;
                        any-ipv6;
                    }
                    source-identity {
                        [role-name];
                        any;
                        authenticated-user;
                        unauthenticated-user;
                        unknown-user;
                    }
                }
            }
            scheduler-name scheduler-name;
            then {
                count {
                    alarm {
                        per-minute-threshold number;
                        per-second-threshold number;
                    }
                }
                deny;
                log {
                    session-close;
                    session-init;
                }
                permit {
                    application-services {
                        application-firewall {
                            rule-set rule-set-name;
                        }
                    }
                    application-traffic-control {
                        rule-set rule-set-name;
                    }
                    gprs-gtp-profile profile-name;
                }
            }
        }
    }

```

```
    gprs-sctp-profile profile-name;  
    idp;  
    redirect-wx | reverse-redirect-wx;  
    ssl-proxy {  
        profile-name profile-name;  
    }  
    uac-policy {  
        captive-portal captive-portal;  
    }  
    utm-policy policy-name;  
}  
destination-address {  
    drop-translated;  
    drop-untranslated;  
}  
firewall-authentication {  
    pass-through {  
        access-profile profile-name;  
        client-match user-or-group-name;  
        ssl-termination-profile profile-name;  
        web-redirect;  
        web-redirect-to-https;  
    }  
    user-firewall {  
        access-profile profile-name;  
        domain domain-name  
        ssl-termination-profile profile-name;  
    }  
    web-authentication {  
        client-match user-or-group-name;  
    }  
}  
services-offload;  
tcp-options {  
    sequence-check-required;  
    syn-check-required;  
}  
tunnel {  
    ipsec-group-vpn group-vpn;  
    ipsec-vpn vpn-name;  
    pair-policy pair-policy;  
}  
}  
reject;  
}  
}  
}  
global {  
    policy policy-name {  
        description description;  
        match {  
            application {  
                [application];  
                any;  
            }  
        }  
        destination-address {
```

```

    [address];
    any;
    any-ipv4;
    any-ipv6;
}
from-zone {
    [zone-name];
    any;
}
source-address {
    [address];
    any;
    any-ipv4;
    any-ipv6;
}
source-identity {
    [role-name];
    any;
    authenticated-user;
    unauthenticated-user;
    unknown-user;
}
to-zone {
    [zone-name];
    any;
}
}
scheduler-name scheduler-name;
then {
    count {
        alarm {
            per-minute-threshold number;
            per-second-threshold number;
        }
    }
    deny;
    log {
        session-close;
        session-init;
    }
    permit {
        application-services {
            application-firewall {
                rule-set rule-set-name;
            }
            application-traffic-control {
                rule-set rule-set-name;
            }
            gprs-gtp-profile profile-name;
            gprs-sctp-profile profile-name;
            idp;
            redirect-wx | reverse-redirect-wx;
            ssl-proxy {
                profile-name profile-name;
            }
            uac-policy {

```

```

        captive-portal captive-portal;
    }
    utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        ssl-termination-profile profile-name;
        web-redirect;
        web-redirect-to-https;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    initial-tcp-mss mss-value;
    reverse-tcp-mss mss-value;
    sequence-check-required;
    syn-check-required;
}
}
reject;
}
}
}
policy-rematch;
policy-stats {
    system-wide (disable | enable) ;
}
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]

Release Information	<p>Statement introduced in Junos OS Release 8.5.</p> <p>Support for the services-offload option added in Junos OS Release 11.4.</p> <p>Support for the source-identity option added in Junos OS Release 12.1.</p> <p>Support for the description option added in Junos OS Release 12.1.</p> <p>Support for the ssl-termination-profile and web-redirect-to-https options added on high-end SRX Series Services Gateways starting from Junos OS Release 12.1X44-D10 and on vSRX, SRX300, SRX320, SRX340, SRX345, SRX550M, and SRX1500 Services Gateways starting from Junos OS Release 15.1X49-D40.</p> <p>Support for the user-firewall option added in Junos OS Release 12.1X45-D10.</p> <p>Support for the domain option, and for the from-zone and to-zone global policy match options, added in Junos OS Release 12.1X47-D10.</p> <p>Support for the initial-tcp-mss and reverse-tcp-mss options added in Junos OS Release 12.3X48-D20. Support for the extensive option for policy-rematch added in Junos OS Release 15.1X49-D20.</p>
Description	Configure network security policies.
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

policy (Security Alarms)

Syntax

```
policy {  
  application {  
    duration interval;  
    size count;  
    threshold value;  
  }  
  destination-ip {  
    duration interval;  
    size count;  
    threshold value;  
  }  
  policy match {  
    duration interval;  
    size count;  
    threshold value;  
  }  
  source-ip {  
    duration interval;  
    size count;  
    threshold value;  
  }  
}
```

Hierarchy Level [edit security alarms potential-violation]

Release Information Statement introduced in Junos OS Release 11.2.

Description Configure alarms for policy violation, based on source IP, destination IP, application, and policy rule.

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

- [Security Policies Overview on page 43](#)

policy (Security Policies)

```

Syntax  policy policy-name {
    description description;
    match {
        application {
            [application];
            any;
        }
        destination-address {
            [address];
            any;
            any-ipv4;
            any-ipv6;
        }
        source-address {
            [address];
            any;
            any-ipv4;
            any-ipv6;
        }
        source-identity {
            [role-name];
            any;
            authenticated-user;
            unauthenticated-user;
            unknown-user;
        }
    }
    scheduler-name scheduler-name;
    then {
        count {
            alarm {
                per-minute-threshold number;
                per-second-threshold number;
            }
        }
        deny;
        log {
            session-close;
            session-init;
        }
        permit {
            application-services {
                application-firewall {
                    rule-set rule-set-name;
                }
            }
            application-traffic-control {
                rule-set rule-set-name;
            }
            gprs-gtp-profile profile-name;
            gprs-sctp-profile profile-name;
            idp;
            redirect-wx | reverse-redirect-wx;
        }
    }
  }

```

```

    ssl-proxy {
        profile-name profile-name;
    }
    uac-policy {
        captive-portal captive-portal;
    }
    utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        web-redirect;
    }
    user-firewall {
        access-profile profile-name;
        domain domain-name
        ssl-termination-profile profile-name;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    initial-tcp-mss mss-value;
    reverse-tcp-mss mss-value;
    sequence-check-required;
    syn-check-required;
}
tunnel {
    ipsec-group-vpn group-vpn;
    ipsec-vpn vpn-name;
    pair-policy pair-policy;
}
}
reject;
}

```

Hierarchy Level [edit security policies from-zone *zone-name* to-zone *zone-name*]

Release Information Statement introduced in Junos OS Release 8.5. The **services-offload** option added in Junos OS Release 11.4. Statement updated with the **source-identity** option and the **description** option added in Junos OS Release 12.1. Support for the **user-firewall** option added in Junos OS Release 12.1X45-D10. Support for the **initial-tcp-mss** and **reverse-tcp-mss** options added in Junos OS Release 12.3X48-D20.


Description Define a security policy.

Options	<p><i>policy-name</i>—Name of the security policy.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring SSL Proxy • Security Policies Overview on page 43

policy-match

Syntax	<pre>policy match { duration <i>interval</i>; size <i>count</i>; threshold <i>value</i>; }</pre>
Hierarchy Level	[edit security alarms potential-violation policy]
Release Information	Statement introduced in Junos OS Release 11.2.
Description	Configure alarms for a policy rule or a group of rule violations within a specified time period.
Options	<ul style="list-style-type: none"> • duration <i>interval</i>—Indicate the duration of counters. Range: 1 through 3600 seconds. Default: 1 second. • size <i>count</i>—Indicate the number of policies for which policy violation checks can be done concurrently. Range: 1 through 10240. Default: 1024. • threshold <i>value</i>—Indicate the number of policies for which policy violation checks can be done concurrently. Range: 1 through 4294967295. Default: 1000.
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

policy-rematch

Syntax	<code>policy-rematch <extensive>;</code>
Hierarchy Level	[edit security policies]
Release Information	Statement introduced in Junos OS Release 8.5. Support for the extensive option added in Junos OS Release 15.1X49D20.
Description	<p>Enable the device to reevaluate an active session when its associated security policy is changed, renamed, deactivated, or deleted. The session remains open if it matches any policy that allows the session.</p> <p>The policy rematch feature is disabled by default, so that modified policies do not affect active sessions, and an active session is closed if its associated policy is renamed, deactivated, or deleted.</p>
Options	<p>extensive—When a security policy associated with an active session is changed, renamed, deactivated, or deleted, the session remains active if it matches another policy that allows the session. If a match occurs, the new policy is applied to the session, along with the new scheduler (if any), but the session retains the timeout value of the old policy. If policy-rematch is specified without extensive, a rematch is attempted only for changed policies, and a session is closed if it no longer matches the modified policy.</p> <div><p>NOTE: The extensive option does not apply to ALG data sessions or to policies that specify a source-identity, application-services, destination-address (drop-untranslated or drop-translated), firewall-authentication, or a tunnel.</p></div>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

policy-stats

Syntax	<pre>policy-stats { system-wide (disable enable) ; }</pre>
Hierarchy Level	[edit security policies]
Release Information	Statement introduced in Junos OS Release 12.1X46-D10.
Description	Configure systemwide policies statistics. The systemwide policies statistics are disabled by default.
Options	disable —Disable systemwide policy statistics. enable —Enable systemwide policy statistics.
Required Privilege Level	security —To view this statement in the configuration. security-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• show security policies on page 323

potential-violation

Syntax potential-violation {
 authentication *failures*;
 cryptographic-self-test;
 decryption-failures {
 threshold *value*;
 }
 encryption-failures {
 threshold *value*;
 }
 idp;
 ike-phase1-failures {
 threshold *value*;
 }
 ike-phase2-failures {
 threshold *value*;
 }
 key-generation-self-test;
 non-cryptographic-self-test;
 policy {
 application {
 duration *interval*;
 size *count*;
 threshold *value*;
 }
 destination-ip {
 duration *interval*;
 size *count*;
 threshold *value*;
 }
 policy match {
 duration *interval*;
 size *count*;
 threshold *value*;
 }
 source-ip {
 duration *interval*;
 size *count*;
 threshold *value*;
 }
 }
 replay-attacks {
 threshold *value*;
 }
 security-log-percent-full *percentage*;
 }
}

Hierarchy Level [edit security alarms]


Release Information Statement introduced in Junos OS Release 11.2.

Description Configure alarms for potential violation.

Options The remaining statements are explained separately. See [CLI Explorer](#).

Required Privilege security—To view this statement in the configuration.
Level security-control—To add this statement to the configuration.

protocol (Applications)

Syntax	<code>protocol number;</code>
Hierarchy Level	[edit applications application <i>application-name</i>] [edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	Specify the networking protocol name or number.
Options	<p><i>protocol-name</i>— Networking protocol name. The following text values are supported. For a complete list of possible numeric values, see RFC 1700, <i>Assigned Numbers (for the Internet Protocol Suite)</i>.</p> <ul style="list-style-type: none"> • ah—IP Security Authentication Header • egp—Exterior gateway protocol • esp—IPsec Encapsulating Security Payload • gre—Generic routing encapsulation • icmp—Internet Control Message Protocol • igmp—Internet Group Management Protocol • ipip—IP over IP • node—Clear each session that uses the specified IP protocol on a specific node. • ospf—Open Shortest Path First • pim—Protocol Independent Multicast • rsvp—Resource Reservation Protocol • sctp—Stream Control Transmission Protocol • tcp—Transmission Control Protocol • udp—User Datagram Protocol
<div>  <p>NOTE: Internet Protocol version 6 (IPv6) is not supported as a network protocol in application definitions.</p> </div>	
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Policy Application Sets Overview on page 130

protocols (Security Zones Host Inbound Traffic)

Syntax	<pre>protocols { (protocol-name all <protocol-name except>); }</pre>
Hierarchy Level	[edit security zones security-zone <i>zone-name</i> host-inbound-traffic]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Specify the types of protocol traffic that can reach the device for all interfaces in a zone. You can do this in one of several ways:</p> <ul style="list-style-type: none"> • You can enable traffic from each protocol individually. • You can enable traffic from all protocols. • You can enable traffic from all but some protocols.
Options	<p><i>protocol-name</i>—Protocol for which traffic is allowed. The following protocols are supported:</p> <ul style="list-style-type: none"> • all—Enable traffic from all possible protocols available. Use the <i>except</i> option to disallow specific protocols. • bfd—Enable incoming Bidirectional Forwarding Detection (BFD) protocol traffic. • bgp—Enable incoming BGP traffic. • dvmrp—Enable incoming Distance Vector Multicast Routing Protocol (DVMRP) traffic. • igmp—Enable incoming Internet Group Management Protocol (IGMP) traffic. • ldp—Enable incoming Label Distribution Protocol (LDP) traffic (UDP and TCP port 646). • msdp—Enable incoming Multicast Source Discovery Protocol (MSDP) traffic. • nhrp—Enable incoming Next Hop Resolution Protocol (NHRP) traffic. • ospf—Enable incoming OSPF traffic. • ospf3—Enable incoming OSPF version 3 traffic. • pgm—Enable incoming Pragmatic General Multicast (PGM) protocol traffic (IP protocol number 113). • pim—Enable incoming Protocol Independent Multicast (PIM) traffic. • rip—Enable incoming RIP traffic. • ripng—Enable incoming RIP next generation traffic. • router-discovery—Enable incoming router discovery traffic. • rsvp—Enable incoming Resource Reservation Protocol (RSVP) traffic (IP protocol number 46).

- **sap**— Enable incoming Session Announcement Protocol (SAP) traffic. SAP always listens on **224.2.127.254:9875**. New addresses and ports can be added dynamically. This information must be propagated to the Packet Forwarding Engine (PFE).
- **vrrp**—Enable incoming Virtual Router Redundancy Protocol (VRRP) traffic.

except—(Optional) Disable specific incoming protocol traffic, but only when the *all* option has been defined . For example, to enable all but BGP and VRRP protocol traffic:

```
set security zones security-zone trust host-inbound-traffic protocols all
set security zones security-zone trust host-inbound-traffic protocols bgp except
set security zones security-zone trust host-inbound-traffic protocols vrrp except
```

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
---------------------------------	---

Related Documentation	<ul style="list-style-type: none">• Security Zones and Interfaces Overview on page 7• Understanding Functional Zones on page 8
------------------------------	---

protocols (Security Zones Interfaces)

Syntax	<code>protocols <i>protocol-name</i> { except; }</code>
Hierarchy Level	[edit security zones security-zone <i>zone-name</i> interfaces <i>interface-name</i> host-inbound-traffic]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the types of routing protocol traffic that can reach the device on a per-interface basis.
Options	<ul style="list-style-type: none"> • <i>protocol-name</i>—Protocol for which traffic is allowed. The following protocols are supported: <ul style="list-style-type: none"> • all—Enable traffic from all possible protocols available. • bfd—Enable incoming Bidirectional Forwarding Detection (BFD) Protocol traffic. • bgp—Enable incoming BGP traffic. • dvmrp—Enable incoming Distance Vector Multicast Routing Protocol (DVMRP) traffic. • igmp—Enable incoming Internet Group Management Protocol (IGMP) traffic. • ldp—Enable incoming Label Distribution Protocol (LDP) traffic (UDP and TCP port 646). • msdp—Enable incoming Multicast Source Discovery Protocol (MSDP) traffic. • nhrp—Enable incoming Next Hop Resolution Protocol (NHRP) traffic. • ospf—Enable incoming OSPF traffic. • ospf3—Enable incoming OSPF version 3 traffic. • pgm—Enable incoming Pragmatic General Multicast (PGM) protocol traffic (IP protocol number 113). • pim—Enable incoming Protocol Independent Multicast (PIM) traffic. • rip—Enable incoming RIP traffic. • ripng—Enable incoming RIP next generation traffic. • router-discovery—Enable incoming router discovery traffic. • rsvp—Enable incoming Resource Resolution Protocol (RSVP) traffic (IP protocol number 46). • sap—Enable incoming Session Announcement Protocol (SAP) traffic. SAP always listens on 224.2.127.254:9875. • vrp—Enable incoming Virtual Router Redundancy Protocol (VRRP) traffic. <p>except—(Optional) except can only be used if all has been defined.</p>

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Zones and Interfaces Overview on page 7• Understanding Functional Zones on page 8

range-address

Syntax	<code>range-address <i>lower-limit</i> to <i>upper-limit</i>;</code>
Hierarchy Level	<code>[edit security address-book address <i>address-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 12.1.
Description	Configure the address range for an address book.
Options	<ul style="list-style-type: none">• lower-limit—Lower limit of an address range.• upper-limit—Upper limit of an address range.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Understanding Address Books on page 27• Understanding Address Sets on page 29

redirect-wx (Application Services)

Syntax	<code>redirect-wx;</code>
Hierarchy Level	<code>[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit application-services]</code>
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Define the acceleration zone security policy for WX redirection of packets to the WXC Integrated Service Module (ISM 200) for WAN acceleration. During the redirection process, the direction of the WX packet and its type determine further processing of the packet.</p> <p>Specify the WX redirection needed for the packets that arrive from the LAN. Use the reverse-redirect-wx statement to specify the WX redirection needed for the reverse flow of the packets that arrive from the WAN.</p>
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

reject (Security)

Syntax	<code>reject;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Block the service at the firewall. The device drops the packet and sends a TCP reset (RST) segment to the source host for TCP traffic and an ICMP “destination unreachable, port unreachable” message (type 3, code 3) for UDP traffic. For types of traffic other than TCP and UDP, the device drops the packet without notifying the source host, which is also what occurs when the action is deny .
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

reverse-tcp-mss

Syntax	<code>reverse-tcp-mss <i>mss-value</i>;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit tcp-options]
Release Information	Statement introduced in Junos OS Release 12.3X48-D20.
Description	<p>Configure the TCP maximum segment size (MSS) for packets that match a specific policy and travel in the reverse direction of a session. The value you configure replaces the TCP MSS value when the value in the packet is higher than the one you specify.</p> <p>The reverse-tcp-mss value per policy takes precedence over a global tcp-mss value (all-tcp, ipsec-vpn, gre-in, gre-out), if one is configured. However, when the syn-flood-protection-mode syn-proxy statement at the [edit security flow] hierarchy level is used to enable SYN proxy defenses against SYN attacks, the TCP MSS value is not overridden.</p> <p>Because each policy has two directions, you can configure a value for both directions or for just one direction. To configure the TCP MSS value for the initial session, use the initial-tcp-mss option.</p>
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • initial-tcp-mss on page 220 • <i>tcp-mss (Security Flow)</i> • <i>syn-flood-protection-mode</i>

rpc-program-number (Applications)

Syntax	<code>rpc-program-number <i>number</i>;</code>
Hierarchy Level	[edit applications application <i>application-name</i>] [edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	Specify the remote procedure call (RPC) or Distributed Computing Environment (DCE) value.
Options	<i>number</i> —RPC or DCE program value. Range: 0 through 65,535
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Policy Application Sets Overview on page 130

scheduler (Security Policies)

Syntax	<pre> scheduler scheduler-name { daily { (all-day exclude start-time hh:mm stop-time hh:mm); } description text; friday { (all-day exclude start-time hh:mm stop-time hh:mm); } monday { (all-day exclude start-time hh:mm stop-time hh:mm); } saturday { (all-day exclude start-time hh:mm stop-time hh:mm); } start-date date-time stop-date date-time; sunday { (all-day exclude start-time hh:mm stop-time hh:mm); } thursday { (all-day exclude start-time hh:mm stop-time hh:mm); } tuesday { (all-day exclude start-time hh:mm stop-time hh:mm); } wednesday { (all-day exclude start-time hh:mm stop-time hh:mm); } } </pre>
Hierarchy Level	[edit schedulers]
Release Information	Statement introduced in Junos OS Release 8.5. The description option added in Junos OS Release 12.1.
Description	<p>Create or modify a scheduler that defines when security policies are in effect.</p> <p>You configure a scheduler to start at a specific date and time or start on a recurrent basis.</p>
Options	<p>scheduler-name —Name of the scheduler. The scheduler name must consist of 1 to 63 characters that can be letters, numbers, dashes, and underscores and can begin with a number or letter.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • [edit security policies] Hierarchy Level on page 168

scheduler-name

Syntax	<code>scheduler-name scheduler-name;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the schedule (as defined by the scheduler <i>scheduler-name</i> statement) for which the policy is in effect.
Options	<i>scheduler-name</i> —Name of the scheduler.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

schedulers (Security Policies)

Syntax	<code>schedulers { ... }</code>
Hierarchy Level	[edit]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure schedules for security policies that allow you to control network traffic flow and enforce network security.
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	<ul style="list-style-type: none">• Security Policies Overview on page 43• [edit security policies] Hierarchy Level on page 168

screen (Security Zones)

Syntax	<code>screen <i>screen-name</i>;</code>
Hierarchy Level	[edit security zones functional-zone management], [edit security zones security-zone <i>zone-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify a security screen for a security zone.
Options	<i>screen-name</i> —Name of the screen.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Attack Detection and Prevention Overview</i> • <i>Example: Configuring Multiple Screening Options</i>

secure-domains

Syntax	<code>secure-domains [<i>domain-name</i>];</code>
Hierarchy Level	[edit system services dns dnssec]
Release Information	Statement introduced in Junos OS Release 10.2.
Description	Configure secure domains in the DNS server. The server accepts only signed responses for this domain. For unsigned responses, the server returns SERVFAIL error to the client.
Options	<i>domain-name</i> —Name of the domain.
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>DNS Overview</i>

secure-neighbor-discovery

Syntax	<pre>secure-neighbor-discovery { command <i>binary-file-path</i>; disable; failover (alternate-media other-routing-engine); }</pre>
Hierarchy Level	[edit system processes]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Provide support for protecting Secure Neighbor Discovery Protocol (SEND) messages.
Options	<ul style="list-style-type: none">• command <i>binary-file-path</i>—Path to the binary process.• disable—Disable the Secure Neighbor Discovery (SEND) protocol process.• failover—Configure the device to reboot if the software process fails four times within 30 seconds, and specify the software to use during the reboot.<ul style="list-style-type: none">• alternate-media—Configure the device to switch to backup media that contains a version of the system if a software process fails repeatedly.• other-routing-engine—Instruct the secondary Routing Engine to take mastership if a software process fails. If this statement is configured for a process, and that process fails four times within 30 seconds, then the device reboots from the secondary Routing Engine.
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	

security-zone

```
Syntax  security-zone zone-name {
        address-book {
            address address-name {
                ip-prefix {
                    description text;
                }
                description text;
                dns-name domain-name {
                    ipv4-only;
                    ipv6-only;
                }
                range-address lower-limit to upper-limit;
                wildcard-address ipv4-address/wildcard-mask;
            }
            address-set address-set-name {
                address address-name;
                address-set address-set-name;
                description text;
            }
        }
        advance-policy-based-routing;
        application-tracking;
        description text;
        host-inbound-traffic {
            protocols protocol-name {
                except;
            }
            system-services service-name {
                except;
            }
        }
        interfaces interface-name {
            host-inbound-traffic {
                protocols protocol-name {
                    except;
                }
                system-services service-name {
                    except;
                }
            }
        }
        screen screen-name;
        tcp-rst;
    }
```

Hierarchy Level [edit security zones]

Release Information Statement introduced in Junos OS Release 8.5. Support for wildcard addresses added in Junos OS Release 11.1. The **description** option added in Junos OS Release 12.1.

Description Define a security zone, which allows you to divide the network into different segments and apply different security options to each segment.

Options *zone-name* —Name of the security zone.

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

- [Security Zones and Interfaces Overview on page 7](#)
- *Example: Configuring Application Firewall Rule Sets Within Security Policy*

sequence-check-required

Syntax sequence-check-required;

Hierarchy Level [edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name* then permit tcp-options]

Release Information Statement introduced in Junos OS Release 10.4.

Description Enable sequence check per policy. The sequence-check-required value overrides the global value no-sequence-check.

Required Privilege Level security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)

services-offload (Security)

Syntax services-offload;

Hierarchy Level [edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name* then permit]

Release Information Statement introduced in Junos OS Release 11.4.

Description Enable services offloading within a security policy.

Required Privilege Level security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

Related Documentation

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Elements on page 49](#)

session-close

Syntax	session-close;
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then log]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Enable traffic to which the policy applies to be logged at the end of a session.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • Understanding Security Policy Rules on page 45 • Understanding Security Policy Elements on page 49

session-init

Syntax	session-init;
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then log]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Enable traffic to which the policy applies to be logged at the beginning of a session.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • Understanding Security Policy Rules on page 45 • Understanding Security Policy Elements on page 49

simple-mail-client-service

Syntax	<pre>simple-mail-client-service { command <i>binary-file-path</i>; disable; }</pre>
Hierarchy Level	[edit system processes]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the SMTP client process.
Options	<ul style="list-style-type: none">• command <i>binary-file-path</i>—Path to the binary process.• disable—Disable the SMTP client process.
Required Privilege Level	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
Related Documentation	

source-address (Security Policies)

Syntax	source-address { [address]; any; any-ipv4; any-ipv6; }
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> match] [edit security policies global policy <i>policy-name</i> match]
Release Information	Statement introduced in Junos OS Release 8.5. Support for IPv6 addresses added in Junos OS Release 10.2. Support for IPv6 addresses in active/active chassis cluster configurations (in addition to the existing support of active/passive chassis cluster configurations) added in Junos OS Release 10.4. Support for wildcard addresses added in Junos OS Release 11.1.
Description	Define the matching criteria. You can specify one or more IP addresses, address sets, or wildcard addresses. You can specify wildcards any , any-ipv4 , or any-ipv6 .
Options	address —IP addresses, address sets, or wildcard addresses (represented as A.B.C.D/wildcard-mask). You can configure multiple addresses or address prefixes separated by spaces and enclosed in square brackets.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • Understanding Security Policy Rules on page 45 • Understanding Security Policy Elements on page 49

source-address-excluded

Syntax	source-address-excluded;
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> match]
Release Information	Statement introduced in Junos OS Release 12.1X45-D10.
Description	Exclude the source address(es) from the policy.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

source-identity

Syntax	<pre>source-identity { [user-or-role-name]; any; authenticated-user; unauthenticated-user; unknown-user; }</pre>
Hierarchy Level	<p>[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> match]</p> <p>[edit security policies global policy <i>policy-name</i> match]</p>
Release Information	Statement introduced in Junos OS Release 12.1. Statement updated in Junos OS Release 12.1X44-D10.
Description	<p>Identifies users and roles to be used as match criteria for a policy. If a value other than any is specified as match criteria for a policy within a zone pair, the traffic is matched to table entries to retrieve associated user and roles before policy lookup occurs. Users and roles are retrieved from the local authentication table or from a UIT pushed to the SRX Series device from an access control service when a user is authenticated.</p> <p>The following entries specify the source identities that match a policy.</p> <p><i>user-or-role-name</i>—A list of specific users and roles.</p> <p>any—Any user or role, as well as the keywords authenticated-user, unauthenticated-user, and unknown-user.</p> <p>authenticated-user—All users and roles that have been authenticated.</p> <p>unauthenticated-user—Any user or role that does not have an IP-address mapped to authentication sources and the authentication source is up and running.</p> <p>unknown-user—Any user or role that does not have an IP address mapped to authentication sources, because the authentication source is disconnected from the SRX Series device. In this case, users are unable to be authenticated due to an authentication server disconnection, such as a power outage.</p> <p>Unknown-user must be configured for non-domain users to be able to authenticate and log in.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Understanding User Role Firewalls on page 85• Understanding the User Identification Table on page 88• Security Policies Overview on page 43

source-ip (Security Alarms)

Syntax	<pre>source-ip { duration <i>interval</i>; size <i>count</i>; threshold <i>value</i>; }</pre>
Hierarchy Level	[edit security alarms potential-violation policy]
Release Information	Statement introduced in Junos OS Release 11.2.
Description	Configure alarms for a number of policy violations by a source network identifier within a specified time period.
Options	<ul style="list-style-type: none"> • duration <i>interval</i>—Indicate the duration of counters. Range: 1 through 3600 seconds. Default: 1 second. • size <i>count</i>—Indicate the number of source IP addresses for which policy violation checks can be done concurrently. Range: 1 through 10240. Default: 1024. • threshold <i>value</i>—Indicate the maximum number of source IP address matches required to raise an alarm. Range: 1 through 4294967295. Default: 1000.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

source-port (Applications)

Syntax	<code>source-port <i>port-number</i>;</code>
Hierarchy Level	[edit applications application <i>application-name</i>] [edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	Specify the source port identifier.
Options	<i>port-number</i> —Identifier for the port. You can use a numeric value or one of the text synonyms listed in destination-port (Applications) .
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Policy Application Sets Overview on page 130

ssl-proxy (Application Services)

Syntax	<code>ssl-proxy { profile-name <i>profile-name</i> }</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit application-services]
Release Information	Statement introduced in Junos OS Release 12.1.
Description	Enable SSL proxy and identify the name of the SSL proxy profile to be used.
Options	<i>profile-name</i> —SSL proxy profile.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring SSL Proxy

ssl-termination-profile

Syntax	<code>ssl-termination-profile <i>profile-name</i>;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit firewall-authentication pass-through]
Release Information	Statement introduced in Junos OS Release 12.1X44-D10.
Description	Specify the SSL termination profile used for SSL offloading.
Options	<i>profile-name</i> —Specify the name of the SSL termination profile used to the SSL offload.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43

start-date

Syntax	<code>start-date <i>date-time</i>;</code>
Hierarchy Level	[edit schedulers scheduler <i>scheduler-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Specify the time, day, month, and year that the schedule starts.</p> <p>Specifying the year is optional. If no year is specified, the schedule applies to the current year and all subsequent years. If the year is specified in either the start-date or stop-date statement, that year is used for both statements.</p>
Options	<i>date-time</i> —Use the format [<i>yyyy -</i>] <i>mm - dd . hh . mm</i> to specify the year, month, day, hour, and minutes.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • [edit security policies] Hierarchy Level on page 168

start-time (Schedulers)

Syntax	<code>start-time <i>hh:mm</i>;</code>
Hierarchy Level	<code>[edit schedulers scheduler <i>scheduler-name</i> daily],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> friday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> monday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> saturday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> sunday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> tuesday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> thursday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> wednesday]</code>
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Specify the time that a schedule starts for a specified day.</p> <p>If you specify a starting time for a daily schedule with the daily statement and also include the friday, monday, saturday, sunday, tuesday, thursday, and wednesday statements in the schedule, the starting time specified for a specific day (for example, Friday using the friday statement) overrides the starting time set with the daily statement.</p>
Options	time —Use the 24-hour format (<i>hh:mm:ss</i>) to specify the hours, minutes, and seconds.
Required Privilege Level	security —To view this statement in the configuration. security-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43• [edit security policies] Hierarchy Level on page 168

stop-date

Syntax	<code>stop-date <i>date-time</i>;</code>
Hierarchy Level	<code>[edit schedulers scheduler <i>scheduler-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Specify the time, day, month, and year that the schedule ends.</p> <p>Specifying the year is optional. If no year is specified, the schedule applies to the current year and all subsequent years. If the year is specified in either the start-date or stop-date statement, that year is used for both statements.</p>
Options	<i>date-time</i> —Use the format <code>[<i>yyyy</i> -] <i>mm</i> - <i>dd</i> . <i>hh</i> . <i>mm</i></code> to specify the year, month, day, hour, and minutes.
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • [edit security policies] Hierarchy Level on page 168

stop-time

Syntax	<code>stop-time <i>hh:mm</i>;</code>
Hierarchy Level	<code>[edit schedulers scheduler <i>scheduler-name</i> daily],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> friday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> monday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> saturday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> sunday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> tuesday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> thursday],</code> <code>[edit schedulers scheduler <i>scheduler-name</i> wednesday]</code>
Release Information	Statement introduced in Junos OS Release.
Description	<p>Specify the time that a schedule stops for a specified day.</p> <p>If you specify a stop time for a daily schedule with the daily statement and also include the the friday, monday, saturday, sunday, tuesday, thursday, and wednesday statements in the schedule, the stop time specified for a specific day (for example, Friday using the friday statement) overrides the stop time set with the daily statement.</p>
Options	time —Use the 24-hour format (<i>hh:mm:ss</i>) to specify the hours, minutes, and seconds.
Required Privilege Level	security —To view this statement in the configuration. security-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43• [edit security policies] Hierarchy Level on page 168

syn-check-required

Syntax	<code>syn-check-required;</code>
Hierarchy Level	<code>[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit tcp-options]</code>
Release Information	Statement introduced in Junos OS Release 10.4.
Description	Enable sync check per policy. The syn-check-required value overrides the global value no-syn-check.
Required Privilege Level	security —To view this statement in the configuration. security-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Attack Detection and Prevention Overview• Example: Configuring Multiple Screening Options

system-services (Security Zones Host Inbound Traffic)

Syntax	<pre>system-services { (service-name all <service-name except>); }</pre>
Hierarchy Level	[edit security zones security-zone <i>zone-name</i> host-inbound-traffic]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Specify the types of incoming system service traffic that can reach the device for all interfaces in a zone. You can do this in one of several ways:</p> <ul style="list-style-type: none"> • You can enable traffic from each system service individually. • You can enable traffic from all system services. • You can enable traffic from all but some system services.
Options	<ul style="list-style-type: none"> • service-name—System-service for which traffic is allowed. The following system services are supported: <ul style="list-style-type: none"> • all—Enable traffic from the defined system services available on the Routing Engine (RE). Use the <i>except</i> option to disallow specific system services. • any-service—Enable all system services on entire port range including the system services that are not defined. • bootp—Enable traffic destined to BOOTP and DHCP relay agents. • dhcp—Enable incoming DHCP requests. • dhcpv6—Enable incoming DHCP requests for IPv6. • dns—Enable incoming DNS services. • finger—Enable incoming finger traffic. • ftp—Enable incoming FTP traffic. • http—Enable incoming J-Web or clear-text Web authentication traffic. • https—Enable incoming J-Web or Web authentication traffic over Secure Sockets Layer (SSL). • ident-reset—Enable the access that has been blocked by an unacknowledged identification request. • ike—Enable Internet Key Exchange traffic. • lsping—Enable label switched path ping service. • netconf—Enable incoming NETCONF service. • ntp—Enable incoming Network Time Protocol (NTP) traffic. • ping—Allow the device to respond to ICMP echo requests. • r2cp—Enable incoming Radio Router Control Protocol traffic.

- **reverse-ssh**—Reverse SSH traffic.
- **reverse-telnet**—Reverse Telnet traffic.
- **rlogin**—Enable incoming **rlogin** (remote login) traffic.
- **rpm**—Enable incoming Real-time performance monitoring (RPM) traffic.
- **rsh**—Enable incoming Remote Shell (**rsh**) traffic.
- **snmp**—Enable incoming SNMP traffic (UDP port 161).
- **snmp-trap**—Enable incoming SNMP traps (UDP port 162).
- **ssh**—Enable incoming SSH traffic.
- **telnet**—Enable incoming Telnet traffic.
- **tftp**—Enable TFTP services.
- **traceroute**—Enable incoming traceroute traffic (UDP port 33434).
- **xnm-clear-text**—Enable incoming Junos XML protocol traffic for all specified interfaces.
- **xnm-ssl**— Enable incoming Junos XML protocol-over-SSL traffic for all specified interfaces.
- **except**—(Optional) Enable specific incoming system service traffic but only when the *all* option has been defined . For example, to enable all but FTP and HTTP system service traffic:

```
set security zones security-zone trust host-inbound-traffic system-services all
set security zones security-zone trust host-inbound-traffic system-services ftp except
set security zones security-zone trust host-inbound-traffic system-services http except
```

Required Privilege Level security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

Related Documentation

- [Security Zones and Interfaces Overview on page 7](#)
- [Supported System Services for Host Inbound Traffic on page 19](#)

system-services (Security Zones Interfaces)

Syntax	<code>system-services <i>service-name</i> { except; }</code>
Hierarchy Level	[edit security zones security-zone <i>zone-name</i> interfaces <i>interface-name</i> host-inbound-traffic]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the types of traffic that can reach the device on a particular interface.
Options	<ul style="list-style-type: none"> • <i>service-name</i>—Service for which traffic is allowed. The following services are supported: <ul style="list-style-type: none"> • all—Enable all possible system services available on the Routing Engine (RE). • any-service—Enable services on entire port range. • bootp—Enable traffic destined to BOOTP and DHCP relay agents. • dhcp—Enable incoming DHCP requests. • dhcipv6—Enable incoming DHCP requests for IPv6. • dns—Enable incoming DNS services. • finger—Enable incoming finger traffic. • ftp—Enable incoming FTP traffic. • http—Enable incoming J-Web or clear-text Web authentication traffic. • https—Enable incoming J-Web or Web authentication traffic over Secure Sockets Layer (SSL). • ident-reset—Enable the access that has been blocked by an unacknowledged identification request. • ike—Enable Internet Key Exchange traffic. • netconf SSH—Enable incoming NetScreen Security Manager (NSM) traffic over SSH. • ntp—Enable incoming Network Time Protocol (NTP) traffic. • ping—Allow the device to respond to ICMP echo requests. • r2cp—Enable incoming Radio Router Control Protocol traffic. • reverse-ssh—Reverse SSH traffic. • reverse-telnet—Reverse Telnet traffic. • rlogin—Enable incoming rlogin (remote login) traffic. • rpm—Enable incoming real-time performance monitoring (RPM) traffic. • rsh—Enable incoming Remote Shell (rsh) traffic. • snmp—Enable incoming SNMP traffic (UDP port 161).

- **snmp-trap**—Enable incoming SNMP traps (UDP port 162).
 - **ssh**—Enable incoming SSH traffic.
 - **telnet**—Enable incoming Telnet traffic.
 - **tftp**—Enable TFTP services.
 - **traceroute**—Enable incoming traceroute traffic (UDP port 33434).
 - **xnm-clear-text**—Enable incoming Junos XML protocol traffic for all specified interfaces.
 - **xnm-ssl**— Enable incoming Junos XML protocol-over-SSL traffic for all specified interfaces.
- **except**—(Optional) except can only be used if all has been defined.

Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
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Related Documentation	<ul style="list-style-type: none">• Security Zones and Interfaces Overview on page 7• Supported System Services for Host Inbound Traffic on page 19
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tcp-options (Security Policies)

Syntax	<pre>tcp-options { initial-tcp-mss <i>mss-value</i>; reverse-tcp-mss <i>mss-value</i>; sequence-check-required; syn-check-required; }</pre>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit]
Release Information	Statement introduced in Junos OS Release 10.4. Support for the user-firewall option added in Junos OS Release 12.1X45-D10. Support for the initial-tcp-mss and reverse-tcp-mss options added in Junos OS Release 12.3X48-D20.
Description	Specify the TCP options for each policy. You can configure sync and sequence checks for each policy based on your requirements, and, because each policy has two directions, you can configure a TCP MSS value for both directions or for just one direction. To configure per-policy TCP options, you must turn off the respective global options. Otherwise, the commit check will fail.
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	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • Understanding Security Policy Rules on page 45 • Understanding Security Policy Elements on page 49

tcp-rst

Syntax	tcp-rst;
Hierarchy Level	[edit security zones security-zone <i>zone-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Enable the device to send a TCP segment with the RST (reset) flag set to 1 (one) in response to a TCP segment with any flag other than SYN set and that does not belong to an existing session.
Required Privilege Level	security—To view this statement in the configuration. security-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Understanding How to Identify Duplicate Sessions Using the TCP-Reset Parameter on page 23• Example: Configuring the TCP-Reset Parameter on page 23

term (Applications)

Syntax	<pre>term <i>term-name</i> { alg <i>application</i>; destination-port <i>port-identifier</i>; icmp-code <i>value</i>; icmp-type <i>value</i>; icmp6-code <i>value</i>; icmp6-type <i>value</i>; inactivity-timeout (<i>seconds</i> never); protocol <i>number</i>; rpc-program-number <i>number</i>; source-port <i>port-number</i>; uuid <i>hex-value</i>; }</pre>
Hierarchy Level	[edit applications application <i>application-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Define individual application protocols.
Options	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	<ul style="list-style-type: none">• Security Policy Applications Overview on page 129

then (Security Policies)

```
Syntax  then {
        count {
            alarm {
                per-minute-threshold number;
                per-second-threshold number;
            }
        }
        deny;
        log {
            session-close;
            session-init;
        }
        permit {
            application-services {
                application-firewall {
                    rule-set rule-set-name;
                }
                application-traffic-control {
                    rule-set rule-set-name;
                }
                gprs-gtp-profile profile-name;
                gprs-sctp-profile profile-name;
                idp;
                redirect-wx | reverse-redirect-wx;
                ssl-proxy {
                    profile-name profile-name;
                }
                uac-policy {
                    captive-portal captive-portal;
                }
                utm-policy policy-name;
            }
            destination-address {
                drop-translated;
                drop-untranslated;
            }
            firewall-authentication {
                pass-through {
                    access-profile profile-name;
                    client-match user-or-group-name;
                    ssl-termination-profile profile-name;
                    web-redirect;
                    web-redirect-to-https;
                }
                user-firewall {
                    access-profile profile-name;
                    domain domain-name;
                    ssl-termination-profile profile-name;
                }
                web-authentication {
                    client-match user-or-group-name;
                }
            }
        }
    }
```

```
    }
    services-offload;
    tcp-options {
        initial-tcp-mss mss-value;
        reverse-tcp-mss mss-value;
        sequence-check-required;
        syn-check-required;
    }
    tunnel {
        ipsec-group-vpn group-vpn;
        ipsec-vpn vpn-name;
        pair-policy pair-policy;
    }
}
reject;
}
```

Hierarchy Level [edit security policies from-zone *zone-name* to-zone *zone-name* policy *policy-name*]

Release Information Statement introduced in Junos OS Release 8.5. Support for the **services-offload** option added in Junos OS Release 11.4. Support for the **ssl-termination-profile** and **web-redirect-to-https** options added in Junos OS Release 12.1X44-D10. Support for the **user-firewall** option added in Junos OS Release 12.1X45-D10. Support for the **initial-tcp-mss** and **reverse-tcp-mss** options added in Junos OS Release 12.3X48-D20.

Description Specify the policy action to be performed when packets match the defined criteria.

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

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)

to-zone (Security Policies)

```

Syntax  to-zone zone-name {
        policy policy-name {
            description description;
            match {
                application {
                    [application];
                    any;
                }
                destination-address {
                    [address];
                    any;
                    any-ipv4;
                    any-ipv6;
                }
                source-address {
                    [address];
                    any;
                    any-ipv4;
                    any-ipv6;
                }
                source-identity {
                    [role-name];
                    any;
                    authenticated-user;
                    unauthenticated-user;
                    unknown-user;
                }
            }
            scheduler-name scheduler-name;
            then {
                count {
                    alarm {
                        per-minute-threshold number;
                        per-second-threshold number;
                    }
                }
                deny;
                log {
                    session-close;
                    session-init;
                }
                permit {
                    application-services {
                        application-firewall {
                            rule-set rule-set-name;
                        }
                    }
                    application-traffic-control {
                        rule-set rule-set-name;
                    }
                    gprs-gtp-profile profile-name;
                    gprs-sctp-profile profile-name;
                    idp;
                }
            }
        }
    }

```

```

    redirect-wx | reverse-redirect-wx;
    ssl-proxy {
        profile-name profile-name;
    }
    uac-policy {
        captive-portal captive-portal;
    }
    utm-policy policy-name;
}
destination-address {
    drop-translated;
    drop-untranslated;
}
firewall-authentication {
    pass-through {
        access-profile profile-name;
        client-match user-or-group-name;
        ssl-termination-profile profile-name;
        web-redirect;
        web-redirect-to-https;
    }
    web-authentication {
        client-match user-or-group-name;
    }
}
services-offload;
tcp-options {
    sequence-check-required;
    syn-check-required;
}
tunnel {
    ipsec-group-vpn group-vpn;
    ipsec-vpn vpn-name;
    pair-policy pair-policy;
}
}
reject;
}
}

```

Hierarchy Level [edit security policies from-zone *zone-name*]

Release Information Statement introduced in Junos OS Release 8.5. Support for the **services-offload** and **junos-host** options added in Junos OS Release 11.4. Support for the **source-identity** option added in Junos OS Release 12.1. Support for the **ssl-termination-profile** and **web-redirect-to-https** options added in Junos OS Release 12.1X44-D10.

Description Specify a destination zone to be associated with the security policy.

- Options**
- **zone-name**—Name of the destination zone object.
 - **junos-host**—Default security zone for self-traffic of 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

- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)

to-zone (Security Policies Global)

Syntax

```
to-zone {
    [zone-name];
    any;
}
```

Hierarchy Level [edit security policies global policy *policy-name* match]

Release Information Statement introduced in Junos OS Release 12.1X47-D10.

Description Identify a single destination zone or multiple destination zones to be used as a match criteria for a policy. You must configure specific zones or default to any zone, but you cannot have both in a global policy.

Required Privilege Level security—To view this statement in the configuration.
security-control—To add this statement to the configuration.

Related Documentation

- [Global Policy Overview on page 73](#)
- [Example: Configuring a Global Policy with No Zone Restrictions on page 75](#)
- [Example: Configuring a Global Policy with Multiple Zones on page 77](#)

traceoptions (Security Policies)

Syntax	<pre> traceoptions { file { filename; files number; match regular-expression; size maximum-file-size; (world-readable no-world-readable); } flag flag; no-remote-trace; } </pre>
Hierarchy Level	[edit security policies]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Configure policy tracing options.
Options	<ul style="list-style-type: none"> file—Configure the trace file options. <ul style="list-style-type: none"> filename—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory <code>/var/log</code>. By default, the name of the file is the name of the process being traced. files number—Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed to trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. The oldest archived file is overwritten. <p>If you specify a maximum number of files, you also must specify a maximum file size with the size option and a filename.</p> <p>Range: 2 through 1000 files</p> <p>Default: 10 files</p> match regular-expression—Refine the output to include lines that contain the regular expression. size maximum-file-size—Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named trace-file reaches this size, it is renamed trace-file.0. When the trace-file again reaches its maximum size, trace-file.0 is renamed trace-file.1 and trace-file is renamed trace-file.0. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten. <p>If you specify a maximum file size, you also must specify a maximum number of trace files with the files option and a filename.</p> <p>Syntax: x K to specify KB, x m to specify MB, or x g to specify GB</p> <p>Range: 10 KB through 1 GB</p>

Default: 128 KB

- **world-readable | no-world-readable**—By default, log files can be accessed only by the user who configures the tracing operation. The **world-readable** option enables any user to read the file. To explicitly set the default behavior, use the **no-world-readable** option.
- **flag**—Trace operation to perform. To specify more than one trace operation, include multiple **flag** statements.
 - **all**—Trace with all flags enabled
 - **configuration**—Trace configuration events
 - **compilation**—Trace policy compilation events
 - **ipc**—Trace process inter communication events
 - **lookup**—Trace policy lookup events
 - **routing-socket**—Trace routing socket events
 - **rules**—Trace policy rules-related events
- **no-remote-trace**—Set remote tracing as disabled.

Required Privilege Level	trace—To view this statement in the configuration.
	trace-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Security Policies Overview on page 43

traceoptions (Security User Identification)

Syntax 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 user-identification]

Release Information Statement introduced in Junos OS Release 12.1.

Description Configure flow tracing options.

Options • **file**—Configure the trace file options.

- **filename**—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory **/var/log**. By default, the name of the file is the name of the process being traced.
- **files *number***—Maximum number of trace files. When a trace file named **trace-file** its maximum size, it is renamed to **trace-file.0**, then **trace-file.1**, and so on, until the maximum number of trace files is reached. The oldest archived file is overwritten.

If you specify a maximum number of files, you also must specify a maximum file size with the **size** option and a filename.

Range: 2 through 1000 files

Default: 10 files

- **match *regular-expression***—Refine the output to include lines that contain the regular expression.
- **size *maximum-file-size***—Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named **trace-file** reaches this size, it is renamed **trace-file.0**. When the **trace-file** again reaches its maximum size, **trace-file.0** is renamed **trace-file.1** and **trace-file** is renamed **trace-file.0**. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option and a filename.

Syntax: **x K** to specify KB, **x m** to specify MB, or **x g** to specify GB

Range: 10 KB through 1 GB

Default: 128 KB

- **world-readable | no-world-readable**—By default, log files can be accessed only by the user who configures the tracing operation. The **world-readable** option enables any user to read the file. To explicitly set the default behavior, use the **no-world-readable** option.
- **flag**—Trace operation to perform.
 - **all**—Trace with all flags enabled
 - **no-remote-trace**—Set remote tracing as disabled.

Required Privilege	trace—To view this statement in the configuration.
Level	trace-control—To add this statement to the configuration.

Related Documentation	<ul style="list-style-type: none">• Understanding User Role Firewalls on page 85
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traceoptions (System Services DNS)

Syntax	<pre>traceoptions { category { category-type; } file; }</pre>
Hierarchy Level	[edit system services dns]
Release Information	Statement introduced in Junos OS Release 10.2.
Description	Defines tracing options for DNS services.
Options	<p>category—Specifies the logging category. See Table 30 on page 283 for the different logging categories and their descriptions.</p> <p>file—Trace file information.</p>

Table 30: Category Names

Category Name	Description
client	Processing of client requests
config	Configuration file parsing and processing
database	Messages relating to the databases
default	Categories for which there is no specific configuration
delegation-only	Delegation only
dispatch	Dispatching of incoming packets to the server
dnssec	DNSSEC and TSIG protocol processing
edns-disabled	Log query using plain DNS
general	General information
lame-servers	Lame servers
network	Network options
notify	NOTIFY protocol
queries	DNS query resolver
resolver	DNS resolution security
security	Approval and denial of requests
unmatched	Unable to determine the class for messages named
update	Dynamic updates
update-security	Approval and denial of update requests
xfer-in	Zone transfers that the server is receiving xfer-out
xfer-out	Zone transfers that the server is sending

Required Privilege Level system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation • *DNS Overview*

tunnel (Security Policies)

Syntax	<pre>tunnel { ipsec-group-vpn <i>group-vpn</i>; ipsec-vpn <i>vpn-name</i>; pair-policy <i>pair-policy</i>; }</pre>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit]
Release Information	Statement introduced in Junos OS Release 8.5. The ipsec-group-vpn option added in Junos OS Release 10.2.
Description	Encapsulate outgoing IP packets and decapsulate incoming IP packets.
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	<ul style="list-style-type: none">• Security Policies Overview on page 43• Understanding Security Policy Rules on page 45• Understanding Security Policy Elements on page 49

uac-policy (Application Services)

Syntax	<pre>uac-policy { captive-portal <i>captive-portal</i>; }</pre>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit application-services]
Release Information	Statement modified in Junos OS Release 9.4.
Description	Enable Unified Access Control (UAC) for the security policy. This statement is required when you are configuring the SRX Series device to act as a Junos OS Enforcer in a UAC deployment. When deployed as a Junos OS Enforcer, the SRX Series device enforces the policies that are defined on the UAC's IC Series UAC Appliance .
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	<ul style="list-style-type: none">• Understanding User Role Firewalls on page 85• Example: Configuring a User Role Firewall on an SRX Series Device on page 96

unified-access-control (Security)

Syntax	<code>unified-access-control priority <i>priority</i>;</code>
Hierarchy Level	[edit security user-identification authentication-source]
Release Information	Statement introduced in Junos OS Release 12.1. Support for disable option dropped in Junos OS Release 12.1X47-D10.
Description	An authentication table pushed from a configured authentication device, such as the Junos Pulse Access Control Service.
Options	<p>priority <i>priority</i>—A unique value between 0 and 65535 that determines the sequence for searching multiple tables to retrieve a user role. Each authentication table is given a unique priority value. The lower the value, the higher the priority. A table with priority 120 is searched before a table with priority 200. The default priority value of the unified-access-control authentication table is 200.</p> <p>Setting the priority value of the unified-access-control authentication table to 0 is equivalent to disabling the table and eliminating it from the search sequence.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • authentication-source (Security) on page 191 • Understanding User Role Firewalls on page 85 • Understanding the User Identification Table on page 88

user-firewall

Syntax	<pre>user-firewall { access-profile <i>profile-name</i>; domain <i>domain-name</i> ssl-termination-profile <i>profile-name</i>; }</pre>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit firewall-authentication]
Release Information	Statement introduced in Junos OS Release 12.1X45-D10. Support for the domain keyword added in Junos OS Release 12.1X47-D10.
Description	Configure user role firewall authentication, and map the source IP address to the username and its associated roles (groups). The mapped data is written to the firewall authentication table for later retrieval by the user role firewall. The user role firewall uses the username and role information to determine whether to permit or deny a user's session or traffic.
Options	<p>access-profile <i>profile-name</i>—Specify the name of the access profile to be used for authentication.</p> <p>domain <i>domain-name</i>—Specify the name of the domain where firewall authentication occurs in the event that the Windows Management Instrumentation client (WMIC) is not available to get IP-to-user mapping for the integrated user firewall feature. The maximum length is 65 bytes.</p> <p>ssl-termination-profile <i>profile-name</i>—For HTTPS traffic, specify the name of the SSL termination profile used for SSL offloading.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Overview of Integrated User Firewall</i>• <i>Using Firewall Authentication as an Alternative to WMIC</i>• Understanding User Role Firewalls on page 85• Example: Configuring a User Role Firewall on an SRX Series Device on page 96

user-identification

Syntax	<pre> user-identification { authentication-source { firewall-authentication (disable priority <i>priority</i>); local-authentication-table (disable priority <i>priority</i>); unified-access-control (disable priority <i>priority</i>); } traceoptions { file { <i>filename</i>; files <i>number</i>; match <i>regular-expression</i>; size <i>maximum-file-size</i>; (world-readable no-world-readable); } flag <i>flag</i>; no-remote-trace; } } </pre>
Hierarchy Level	[edit security]
Release Information	Statement introduced in Junos OS Release 12.1. Statement updated in Junos OS Release 12.1X45-D10.
Description	Identifies one or more tables to be used as the source for user role information.
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	<ul style="list-style-type: none"> • Understanding User Role Firewalls on page 85 • Understanding the User Identification Table on page 88

utm-policy


Syntax	<pre> utm-policy <i>policy-name</i> { anti-spam { smtp-profile <i>profile-name</i>; } anti-virus { ftp { download-profile <i>profile-name</i>; upload-profile <i>profile-name</i>; } http-profile <i>profile-name</i>; imap-profile <i>profile-name</i>; pop3-profile <i>profile-name</i>; smtp-profile <i>profile-name</i>; } content-filtering { ftp { download-profile <i>profile-name</i>; upload-profile <i>profile-name</i>; } http-profile <i>profile-name</i>; imap-profile <i>profile-name</i>; pop3-profile <i>profile-name</i>; smtp-profile <i>profile-name</i>; } traffic-options { sessions-per-client { limit <i>value</i>; over-limit (block log-and-permit); } } web-filtering { http-profile <i>profile-name</i>; } } </pre>
Hierarchy Level	[edit security utm]
Release Information	Statement introduced in Junos OS Release 9.5.
Description	Configure a UTM policy for antivirus, antispam, content-filtering, traffic-options, and Web-filtering protocols and attach this policy to a security profile to implement it.
Options	<p><i>policy-name</i>—Specify name of the UTM policy.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>security—To view this statement in the configuration.</p> <p>security-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Security Policies Overview on page 43

- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)

uuid (Applications)

Syntax	<code>uuid <i>hex-value</i>;</code>
Hierarchy Level	[edit applications application <i>application-name</i> term <i>term-name</i>]
Release Information	Statement modified in Junos OS Release 8.5.
Description	<p>Specify the Universal Unique Identifier (UUID) for objects. DCE RPC services are mainly used by Microsoft applications. The ALG uses well-known TCP port 135 for port mapping services and uses the Universal Unique Identifier (UUID) instead of the program number to identify protocols. The main application-based DCE RPC is the Microsoft Exchange Protocol.</p> <p>Support for stateful firewall and NAT services requires that you configure the DCE RPC port map ALG on TCP port 135. The DCE RPC ALG uses the TCP protocol with application-specific UUIDs.</p>
Options	<code>uuid <i>hex-value</i></code> —Specify the universal unique identifier (UUID) for objects.
Required Privilege Level	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Applications Configuration Statement Hierarchy on page 166

vrrp

Syntax	<pre>vrrp { command <i>binary-file-path</i>; disable; failover (alternate-media other-routing-engine); }</pre>
Hierarchy Level	[edit system processes]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Specify the Virtual Router Redundancy Protocol (VRRP) process.
Options	<ul style="list-style-type: none">• command <i>binary-file-path</i>—Path to the binary process.• disable—Disable the VRRP process.• failover—Configure the device to reboot if the software process fails four times within 30 seconds, and specify the software to use during the reboot.<ul style="list-style-type: none">• alternate-media—Configure the device to switch to backup media that contains a version of the system if a software process fails repeatedly.• other-routing-engine—Instruct the secondary Routing Engine to take mastership if a software process fails. If this statement is configured for a process, and that process fails four times within 30 seconds, then the device reboots from the secondary Routing Engine.
<div> NOTE: On SRX300 and SRX320 devices, you cannot configure the same VRRP group ID on different interfaces of a single device</div>	
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	

web-authentication

Syntax	<code>web-authentication { client-match <i>user-or-group-name</i>; }</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit firewall-authentication]
Release Information	Statement introduced in Junos OS Release 8.5. HTTPS for Web authentication is supported on high-end SRX Series Services Gateways starting from Junos OS Release 12.1X44-D10 and on vSRX, SRX300, SRX320, SRX340, SRX345, SRX550M, and SRX1500 Services Gateways starting from Junos OS Release 15.1X49-D40.
Description	Specify that the policy allows access to users who have previously been authenticated by Web authentication. Web authentication must be enabled on one of the addresses on the interface to which the HTTP or HTTPS request is redirected.
Options	<code>client-match <i>user-or-group</i></code> —(Optional) Username or user group name.
Required Privilege Level	<code>security</code> —To view this statement in the configuration. <code>security-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Understanding User Role Firewalls on page 85

web-redirect

Syntax	<code>web-redirect;</code>
Hierarchy Level	[edit security policies from-zone <i>zone-name</i> to-zone <i>zone-name</i> policy <i>policy-name</i> then permit firewall-authentication pass-through]
Release Information	Statement introduced in Junos OS Release 8.5.
Description	Optionally, redirect HTTP requests to the device's internal webserver by sending a redirect HTTP response to the client system to reconnect to the webserver for user authentication. The interface on which the client's request arrived is the interface to which the request is redirected.
Required Privilege Level	<code>security</code> —To view this statement in the configuration. <code>security-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Understanding User Role Firewalls on page 85

zones

```

Syntax  zones {
        functional-zone {
            management {
                description text;
                host-inbound-traffic {
                    protocols protocol-name {
                        except;
                    }
                    system-services service-name {
                        except;
                    }
                }
            }
            interfaces interface-name {
                host-inbound-traffic {
                    protocols protocol-name {
                        except;
                    }
                    system-services service-name {
                        except;
                    }
                }
            }
            screen screen-name;
        }
    }
    security-zone zone-name {
        address-book {
            address address-name {
                ip-prefix {
                    description text;
                }
                description text;
                dns-name domain-name {
                    ipv4-only;
                    ipv6-only;
                }
                range-address lower-limit to upper-limit;
                wildcard-address ipv4-address/wildcard-mask;
            }
            address-set address-set-name {
                address address-name;
                address-set address-set-name;
                description text;
            }
        }
        advance-policy-based-routing;
        application-tracking;
        description text;
        host-inbound-traffic {
            protocols protocol-name {
                except;
            }
        }
    }

```

```

        system-services service-name {
            except;
        }
    }
    interfaces interface-name {
        host-inbound-traffic {
            protocols protocol-name {
                except;
            }
            system-services service-name {
                except;
            }
        }
    }
    screen screen-name;
    tcp-rst;
}

```

Hierarchy Level	[edit security]
Release Information	Statement introduced in Junos OS Release 8.5. Support for wildcard addresses added in Junos OS Release 11.1. The description option added in Junos OS Release 12.1.
Description	<p>A zone is a collection of interfaces for security purposes. All interfaces in a zone are equivalent from a security point of view. Configure the following zones:</p> <ul style="list-style-type: none"> • Functional zone—Special-purpose zone, such as a management zone that can host dedicated management interfaces. • Security zone—Most common type of zone that is used as a building block in policies.
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	<ul style="list-style-type: none"> • Security Zones and Interfaces Overview on page 7 • Supported System Services for Host Inbound Traffic on page 19

CHAPTER 19

Operational Commands

- clear security alarms
- clear security policies hit-count
- clear security policies statistics
- clear system services dns dns-proxy
- request security user-identification local-authorization-table add
- request security user-identification local-authentication-table delete
- show security alarms
- show security firewall-authentication users address
- show security firewall-authentication users auth-type
- show security flow session application
- show security match-policies
- show security policies
- show security policies hit-count
- show security policies unknown-source-identity
- show security shadow-policies logical-system
- show security user-identification local-authentication-table
- show security user-identification role-provision all
- show security user-identification source-identity-provision all
- show security user-identification user-provision all
- show security zones
- show security zones type
- show system services dns dns-proxy
- show system services dynamic-dns

clear security alarms

Syntax clear security alarms
<all>
<alarm-id *id-number*>
<alarm-type [*types*]>
<newer-than YYYY-MM-DD.HH:MM:SS>
<older-than YYYY-MM-DD.HH:MM:SS>
<process *process*>
<severity *severity*>

Release Information Command introduced in Junos OS Release 11.2.

Description Clear (acknowledge) the alarms that are active on the device.

Options **all**—(Optional) Clear all active alarms.

alarm-id *id-number*—(Optional) Clear the specified alarm.

alarm-type [*types*]—(Optional) Clear the specified alarm type or a set of types.

You can specify one or more of the following alarm types:

- **authentication**
- **cryptographic-self-test**
- **decryption-failures**
- **encryption-failures**
- **ike-phase1-failures**
- **ike-phase2-failures**
- **key-generation-self-test**
- **non-cryptographic-self-test**
- **policy**
- **replay-attacks**

newer-than YYYY-MM-DD.HH:MM:SS—(Optional) Clear active alarms that were raised after the specified date and time.

older-than YYYY-MM-DD.HH:MM:SS—(Optional) Clear active alarms that were raised before the specified date and time.

process *process*—(Optional) Clear active alarms that were raised by the specified system process.

severity *severity*—(Optional) Clear active alarms of the specified severity.

You can specify the following severity levels:

- **alert**
- **crit**
- **debug**
- **emerg**
- **err**
- **info**
- **notice**
- **warning**

Required Privilege Level security—To view this statement in the configuration.

Related Documentation

- [show security alarms on page 305](#)
- [Troubleshooting Security Policies on page 121](#)

List of Sample Output

[clear security alarms all on page 297](#)
[clear security alarms alarm-id <alarm-id> on page 297](#)
[clear security alarms alarm-type authentication on page 297](#)
[clear security alarms newer-than <time> on page 298](#)
[show security alarms older-than <time> on page 298](#)
[show security alarms process <process> on page 298](#)
[show security alarms severity <severity> on page 298](#)

Output Fields This command produces no output, except a statement about the number of security alarms cleared.

Sample Output

[clear security alarms all](#)

```
[3 SECURITY ALARMS] user@router> clear security alarms all

3 security alarms cleared
```

[clear security alarms alarm-id <alarm-id>](#)

```
[3 SECURITY ALARMS] user@router> clear security alarms alarm-id 1

1 security alarm cleared
```

[clear security alarms alarm-type authentication](#)

```
[3 SECURITY ALARMS] user@router> clear security alarms alarm-type authentication

3 security alarms cleared
```

clear security alarms newer-than <time>

```
[3 SECURITY ALARMS] user@router> clear security alarms newer-than 2010-01-19.13:41:59  
1 security alarm cleared
```

show security alarms older-than <time>

```
[3 SECURITY ALARMS] user@router> clear security alarms older-than 2010-01-19.13:41:59  
2 security alarms cleared
```

show security alarms process <process>

```
[3 SECURITY ALARMS] user@router> clear security alarms process sshd  
3 security alarms cleared
```

show security alarms severity <severity>

```
[3 SECURITY ALARMS] user@router> clear security alarms severity notice  
3 security alarms cleared
```

clear security policies hit-count

Syntax	clear security policies hit-count <from-zone <i>zone-name</i> > <to-zone <i>zone-name</i> >
Release Information	Command introduced in Junos Release 12.1.
Description	Clear the hit-count values for security policies.
Options	<ul style="list-style-type: none">• from-zone <i>zone-name</i>—(Optional) Clear the number of hits for security policies associated with the named source zone.• to-zone <i>zone-name</i>—(Optional) Clear the number of hits for security policies associated with the named destination zone.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none">• show security policies hit-count on page 331• Monitoring Policy Statistics on page 120
Output Fields	This command produces no output.

clear security policies statistics

Syntax	clear security policies statistics
Release Information	Command introduced in Junos OS Release 8.5. Support for systemwide policies statistics added in Junos OS Release 12.1X46-D10.
Description	Clear systemwide policies statistics and security policies statistics configured on the device.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none">• show security policies on page 323• Monitoring Policy Statistics on page 120
Output Fields	This command produces no output.

clear system services dns dns-proxy

Syntax	clear system services dns dns-proxy
Release Information	Command introduced in Junos OS Release 12.1X44-D10.
Description	Clear DNS proxy cache information.
Options	<ul style="list-style-type: none">• cache—Clear DNS proxy cache information.• statistics—Clear DNS proxy statistics.• none—Clear all DNS proxy cache information.• hostname—(Optional) Clear DNS proxy cache information from the specified host.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none">• show system services dns dns-proxy on page 349• show system services dynamic-dns on page 352
Output Fields	When you enter this command no output is produced.

request security user-identification local-authorization-table add

Syntax `request security user-identification local-authorization-table add user user-name ip-address ip-address roles [role-name]`

Release Information Command introduced in Junos OS Release 12.1. Command updated in Junos OS Release 12.1X44-D10.

Description This command adds user and role information to the local authentication table. The table is used to retrieve user and role information for traffic from the specified IP address to enforce a user role firewall.

To add an entry, specify the user name, IP address, and up to 40 roles to be associated with this user. Subsequent commands for the same user and IP address aggregates any new roles to the existing list. An authentication entry can contain up to 200 roles.



NOTE: To change the user name of an entry or to remove or change entries in a role list, you must delete the existing entry and create a new one.

An IP address can be associated with only one user. If a second request is made to add a different user using the same IP address, the second authentication entry overwrites the existing entry.

Options `user user-name`—Specify the name of the user to be added to the table.

`ip-address ip-address`—Specify the IP address of the user. Either IPv4 or IPv6 addresses are supported.

`roles [role-name]`—(Optional) Specify the role or list of roles to be associated with the specified user. If the specified user and IP address already exist, any roles specified in the command are added to the existing role list.

Required Privilege Level maintenance

Related Documentation

- [request security user-identification local-authentication-table delete on page 304](#)
- [Understanding the User Identification Table on page 88](#)

List of Sample Output [request security user-identification local-authentication-table add on page 303](#)

Output Fields When you enter this command, either an entry is added to the local authentication table, or the roles of an existing entry are aggregated with additional roles.

Sample Output

`request security user-identification local-authentication-table add`

```
user@host> request security user-identification local-authentication-table add user user1
ip-address 192.0.2.1 roles role1
user@host> request security user-identification local-authentication-table add user user2
ip-address 203.0.113.2 roles [role2 role3]
user@host> request security user-identification local-authentication-table add user user2
ip-address 203.0.113.2 roles role1
user@host> show security user-identification local-authentication-table all
Total entries: 2
Source IP      Username      Roles
192.0.2.1      user1         role1
203.0.113.2    user2         role2, role3, role1
```

request security user-identification local-authentication-table delete

Syntax	<code>request security user-identification local-authentication-table delete <i>ip-address</i> <i>user-name</i></code>
Release Information	Command introduced in Junos OS Release 12.1.
Description	This command removes an entry from the local authentication table. You can identify the entry by IP address or user-name. To change the user name of an entry or to remove or change entries in a role list, you must delete the existing entry and create a new one.
Options	<p><i>ip-address</i>—The IP address of the entry to be deleted.</p> <p><i>user-name</i>—The user name of the entry to be deleted. To change the user name of an entry, you must delete the old entry and create a new one.</p>
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none">• request security user-identification local-authorization-table add on page 302• Understanding the User Identification Table on page 88
Output Fields	The specified show command verifies the table content before and after an entry has been deleted from the local authentication table.

Sample Output

```
user@host> show security user-identification local-authentication-table all
Total entries: 2
  Ip-address: 192.0.2.1
  Username: user1
  Roles: role1

  Ip-address: 203.0.113.2
  Username: user2
  Roles: role2, role3, role1

user@host> request security user-identification local-authentication-table delete 203.0.113.2
user@host> show security user-identification local-authentication-table all
Total entries: 1
  Ip-address: 192.0.2.1
  Username: user1
  Roles: role1
```

show security alarms

Syntax show security alarms
 <detail>
 <alarm-id *id-number*>
 <alarm-type [*types*]>
 <newer-than YYYY-MM-DD.HH:MM:SS>
 <older-than YYYY-MM-DD.HH:MM:SS>
 <process *process*>
 <severity *severity*>

Release Information Command introduced in Junos OS Release 11.2.

Description Display the alarms that are active on the device. Run this command when the CLI prompt indicates that a security alarm has been raised, as shown here:

```
[1 SECURITY ALARM] user@host#
```

Options **none**—Display all active alarms.

detail—(Optional) Display detailed output.

alarm-id *id-number*—(Optional) Display the specified alarm.

alarm-type [*types*]—(Optional) Display the specified alarm type or a set of types.

You can specify one or more of the following alarm types:

- authentication
- cryptographic-self-test
- decryption-failures
- encryption-failures
- ike-phase1-failures
- ike-phase2-failures
- key-generation-self-test
- non-cryptographic-self-test
- policy
- replay-attacks

newer-than YYYY-MM-DD.HH:MM:SS—(Optional) Display active alarms that were raised after the specified date and time.

older-than YYYY-MM-DD.HH:MM:SS—(Optional) Display active alarms that were raised before the specified date and time.

process *process*—(Optional) Display active alarms that were raised by the specified system process.

severity severity—(Optional) Display active alarms of the specified severity.

You can specify the following severity levels:

- **alert**
- **crit**
- **debug**
- **emerg**
- **err**
- **info**
- **notice**
- **warning**

Required Privilege Level security—To view this statement in the configuration.

Related Documentation

- [clear security alarms](#)
- [Example: Generating a Security Alarm in Response to Policy Violations](#)

List of Sample Output

[show security alarms on page 307](#)
[show security alarms detail on page 307](#)
[show security alarms alarm-id on page 307](#)
[show security alarms alarm-type authentication on page 307](#)
[show security alarms newer-than <time> on page 308](#)
[show security alarms older-than <time> on page 308](#)
[show security alarms process <process> on page 308](#)
[show security alarms severity <severity> on page 308](#)

Output Fields [Table 31 on page 306](#) lists the output fields for the **show security alarms** command. Output fields are listed in the approximate order in which they appear. Field names might be abbreviated (as shown in parentheses) when no level of output is specified or when the **detail** keyword is used.

Table 31: show security alarms

Field Name	Field Description	Level of Output
ID	Identification number of the alarm.	All levels
Alarm time	Date and time the alarm was raised..	All levels
Message	Information about the alarm, including the alarm type, username, IP address, and port number.	All levels
Process	System process (For example, login or sshd) and process identification number associated with the alarm.	detail

Table 31: show security alarms (*continued*)

Field Name	Field Description	Level of Output
Severity	Severity level of the alarm.	detail

Sample Output

show security alarms

```
[3 SECURITY ALARMS] user@router> show security alarms
```

```

ID      Alarm time      Message
1      2010-01-19 13:41:36 PST  SSHD_LOGIN_FAILED_LIMIT: Specified number of login
failures (1) for user 'user' reached from '203.0.113.2'
2      2010-01-19 13:41:52 PST  SSHD_LOGIN_FAILED_LIMIT: Specified number of login
failures (1) for user 'user' reached from '203.0.113.2'
3      2010-01-19 13:42:13 PST  SSHD_LOGIN_FAILED_LIMIT: Specified number of login
failures (1) for user 'user' reached from '203.0.113.2'
```

show security alarms detail

```
[3 SECURITY ALARMS] user@router> show security alarms detail
```

```

Alarm ID   : 1
Alarm Type : authentication
Time       : 2010-01-19 13:41:36 PST
Message    : SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for
user 'user' reached from '203.0.113.2'
Process    : sshd (pid 1414)
Severity   : notice

Alarm ID   : 2
Alarm Type : authentication
Time       : 2010-01-19 13:41:52 PST
Message    : SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for
user 'user' reached from '203.0.113.2'
Process    : sshd (pid 1414)
Severity   : notice

Alarm ID   : 3
Alarm Type : authentication
Time       : 2010-01-19 13:42:13 PST
Message    : SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for
user 'user' reached from '203.0.113.2'
Process    : sshd (pid 1414)
Severity   : notice
```

show security alarms alarm-id

```
[3 SECURITY ALARMS] user@router> show security alarms alarm-id 1
```

```

ID      Alarm time      Message
1      2010-01-19 13:41:36 PST  SSHD_LOGIN_FAILED_LIMIT: Specified number of login
failures (1) for user 'user' reached from '203.0.113.2'
```

show security alarms alarm-type authentication

```
[3 SECURITY ALARMS] user@router> show security alarms alarm-type authentication
```

ID	Alarm time	Message
1	2010-01-19 13:41:36 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
2	2010-01-19 13:41:52 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
3	2010-01-19 13:42:13 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'

show security alarms newer-than <time>

```
[3 SECURITY ALARMS] user@router> show security alarms newer-than 2010-01-19.13:41:59
```

3	2010-01-19 13:42:13 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
---	-------------------------	--

show security alarms older-than <time>

```
[3 SECURITY ALARMS] user@router> show security alarms older-than 2010-01-19.13:41:59
```

ID	Alarm time	Message
1	2010-01-19 13:41:36 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
2	2010-01-19 13:41:52 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'

show security alarms process <process>

```
[3 SECURITY ALARMS] user@router> show security alarms process sshd
```

ID	Alarm time	Message
1	2010-01-19 13:41:36 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
2	2010-01-19 13:41:52 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
3	2010-01-19 13:42:13 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'

show security alarms severity <severity>

```
[3 SECURITY ALARMS] user@router> show security alarms severity notice
```

ID	Alarm time	Message
1	2010-01-19 13:41:36 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
2	2010-01-19 13:41:52 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'
3	2010-01-19 13:42:13 PST	SSHD_LOGIN_FAILED_LIMIT: Specified number of login failures (1) for user 'user' reached from '203.0.113.2'

show security firewall-authentication users address

Syntax	show security firewall-authentication users address <i>ip-address</i> <node (<i>node-id</i> all local primary)>
Release Information	Command introduced in Junos OS Release 8.5. The node options added in Junos OS Release 9.0.
Description	Display information about the users at the specified IP address that are currently authenticated.
Options	<ul style="list-style-type: none"> • address <i>ip-address</i>—IP address of the authentication source. • none—Display all the firewall authentication information for users at this IP address. • node—(Optional) For chassis cluster configurations, display user firewall authentication entries on a specific node. <ul style="list-style-type: none"> • <i>node-id</i>—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.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Understanding User Role Firewalls on page 85
List of Sample Output	show security firewall-authentication users address 192.0.2.9 on page 310 show security firewall-authentication users address 192.0.2.9 node local on page 310 show security firewall-authentication users address 198.51.100.29 on page 311
Output Fields	Table 32 on page 309 lists the output fields for the show security firewall-authentication users address command. Output fields are listed in the approximate order in which they appear.

Table 32: show security firewall-authentication users address Output Fields

Field Name	Field Description
Username	User ID.
Source IP	IP address of the authentication source.
Authentication state	Status of authentication (success or failure).
Authentication method	Path chosen for authentication.
Access time remaining	Duration for which the connection exists.

Table 32: show security firewall-authentication users address Output Fields (*continued*)

Field Name	Field Description
Lsys	The logical system where the traffic was received.
Source zone	User traffic received from the zone.
Destination zone	User traffic destined to the zone.
Policy index	Identification number of the policy.
Policy name	Name of the policy.
Access profile	Name of profile used for authentication.
Interface Name	Name of the interface.
Bytes sent by this user	Number of bytes sent by the user.
Bytes received by this user	Number of bytes received by the user.
Client-groups	Name of the client group.

Sample Output

show security firewall-authentication users address 192.0.2.9

```

user@host>show security firewall-authentication users address 192.0.2.9
Username: hello
Source IP: 192.0.2.9
Authentication state: Success
Authentication method: Pass-through using Telnet
Access time remaining: 0
Source zone: z2
Destination zone: z1
Policy index: 5
Access profile: profile1
Interface Name: ge-0/0/2.0
Bytes sent by this user: 0
Bytes received by this user: 0
Client-groups: my-group1-example, my-group2-example

```

Sample Output

show security firewall-authentication users address 192.0.2.9 node local

```

user@host> show security firewall-authentication users address 192.0.2.9 node local
node0:
-----
Username: local1
Source IP: 192.0.2.9
Authentication state: Success
Authentication method: Pass-through using Telnet
Age: 2

```

```
Access time remaining: 4
Source zone: z1
Destination zone: z2
Policy name: POL1
Access profile: p1
Interface Name: reth1.0
Bytes sent by this user: 614
Bytes received by this user: 1880
```

show security firewall-authentication users address 198.51.100.29

```
user@host> show security firewall-authentication users address 198.51.100.29
Username: hello
Source IP: 198.51.100.29/24
Authentication state: Success
Authentication method: User-firewall
Age: 0
Access time remaining: 10
Lsys: root-logical-system
Source zone: N/A
Destination zone: N/A
Access profile: test
```

show security firewall-authentication users auth-type

Syntax	show security firewall-authentication users auth-type [user-firewall pass-through web-authentication]
Release Information	Command introduced in Junos OS Release 12.1X45-D10
Description	Display statistics about the users authenticated by the selected method.
Options	<ul style="list-style-type: none"> • user-firewall—Lists all users authenticated for user firewall. • pass-through—Lists all users authenticated by the pass-through method. • web-authentication—Lists all users authenticated by the user authentication method.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Understanding User Role Firewalls on page 85
List of Sample Output	show security firewall-authentication users auth-type user-firewall on page 313 show security firewall-authentication users auth-type pass-through on page 313 show security firewall-authentication users auth-type pass-through on page 313
Output Fields	Table 33 on page 312 lists the output fields for the show security firewall-authentication users auth-type command. Output fields are listed in the approximate order in which they appear.

Table 33: show security firewall-authentication users auth-type Output Fields

Field Name	Field Description
Total users in table	Total number of users authenticated by this method.
Id	The ID assigned to the entry.
Source IP	The source IP address of the traffic.
Src zone	The source zone of the traffic.
Dst zone	The destination zone of the traffic.
Profile	The profile used to authenticate the used.
Age	The length of time since authentication.
Status	The status of the authentication.
User	The username associated with the traffic.

Sample Output

show security firewall-authentication users auth-type user-firewall

```
user@host> show security firewall-authentication users auth-type user-firewall
User-firewall authentication data:
Total users in table: 2
  Id Source Ip   Src zone Dst zone Profile   Age Status   User
  1 10.208.16.1  N/A     N/A     test      0 Success  jasonliu
  2 10.208.16.6  N/A     N/A     test6     0 Failed  jason
```

show security firewall-authentication users auth-type pass-through

```
user@host> show security firewall-authentication users auth-type pass-through
Pass-through firewall authentication data:
Total users in table: 1
  Id Source Ip   Src zone Dst zone Profile   Age Status   User
  1 10.208.16.2  zone1   zone2   test2     0 Success  jasonliu2
```

show security firewall-authentication users auth-type pass-through

```
user@host> show security firewall-authentication users auth-type web-authentication
Web firewall authentication data:
Total users in table: 1
  Id Source Ip   Src zone Dst zone Profile   Age Status   User
  1 10.208.16.3  N/A     N/A     test3     0 Success  jasonliu3
```

show security flow session application

Syntax	show security flow session application <i>application-name</i> [brief extensive summary]
Release Information	Command introduced in Junos OS Release 8.5. Filter and view options added in Junos OS Release 10.2.
Description	Display information about each session of the specified application type.
Options	<ul style="list-style-type: none">• <i>application-name</i>—Type of application about which to display sessions information. Possible values are:<ul style="list-style-type: none">• dns—Domain Name System• ftp—File Transfer Protocol• ignore—Ignore application type• mgcp-ca—Media Gateway Control Protocol with Call Agent• mgcp-ua—MGCP with User Agent• pptp—Point-to-Point Tunneling Protocol• q931—ISDN connection control protocol• ras—Remote Access Server• realaudio—RealAudio• rsh—UNIX remote shell services• rtsp—Real-Time Streaming Protocol• sccp—Skinny Client Control Protocol• sip—Session Initiation Protocol• sqlnet-v2—Oracle SQLNET• talk—TALK program• tftp—Trivial File Transfer Protocol• brief extensive summary—Display the specified level of output.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• <i>clear security flow session application</i>
List of Sample Output	show security flow session application telnet on page 316 show security flow session application telnet brief on page 316 show security flow session application telnet extensive on page 316 show security flow session application telnet summary on page 317

Output Fields Table 34 on page 315 lists the output fields for the **show security flow session application** command. Output fields are listed in the approximate order in which they appear.

Table 34: show security flow session application Output Fields

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.
Timeout	Idle timeout after which the session expires.
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).
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).
Total sessions	Total number of sessions.
Status	Session status.
Flag	Internal flag depicting the state of the session, used for debugging purposes.
Policy name	Name and ID of the policy that the first packet of the session matched.
Source NAT pool	The name of the source pool where NAT is used.
Application	Name of the application.
Maximum timeout	Maximum session timeout.
Current timeout	Remaining time for the session unless traffic exists in the session.
Session State	Session state.
Start time	Time when the session was created, offset from the system start time.
Unicast-sessions	Number of unicast sessions.
Multicast-sessions	Number of multicast sessions.
Failed-sessions	Number of failed sessions.

Table 34: show security flow session application Output Fields (*continued*)

Field Name	Field Description
Sessions-in-use	Number of sessions in use. <ul style="list-style-type: none"> Valid sessions Pending sessions Invalidated sessions Sessions in other states
Maximum-sessions	Number of maximum sessions.

Sample Output

show security flow session application telnet

```

root> show security flow session application telnet
Flow Sessions on FPC4 PIC1:
Total sessions: 0

Flow Sessions on FPC5 PIC0:
Total sessions: 0

Flow Sessions on FPC5 PIC1:

Session ID: 210067547, Policy name: default-policy/2, Timeout: 1796, Valid
  In: 203.0.113.2/32781 --> 192.0.2.5/23;tcp, If: ge-0/0/2.0, Pkts: 10, Bytes:
610
  Out: 192.0.2.5/23 --> 203.0.113.2/32781;tcp, If: ge-0/0/1.0, Pkts: 9, Bytes:
602
Total sessions: 1

```

show security flow session application telnet brief

```

root> show security flow session application telnet brief
Flow Sessions on FPC4 PIC1:
Total sessions: 0

Flow Sessions on FPC5 PIC0:
Total sessions: 0

Flow Sessions on FPC5 PIC1:

Session ID: 210067547, Policy name: default-policy/2, Timeout: 1796, Valid
  In: 203.0.113.2/32781 --> 192.0.2.5/23;tcp, If: ge-0/0/2.0, Pkts: 10, Bytes:
610
  Out: 192.0.2.5/23 --> 203.0.113.2/32781;tcp, If: ge-0/0/1.0, Pkts: 9, Bytes:
602
Total sessions: 1

```

show security flow session application telnet extensive

```

root> show security flow session application telnet extensive
Flow Sessions on FPC4 PIC1:
Total sessions: 0

Flow Sessions on FPC5 PIC0:
Total sessions: 0

```

Flow Sessions on FPC5 PIC1:

```

Session ID: 210067547, Status: Normal
Flag: 0x40
Policy name: default-policy/2
Source NAT pool: Null, Application: junos-telnet/10
Maximum timeout: 1800, Current timeout: 1788
Session State: Valid
Start time: 670184, Duration: 33
  In: 203.0.113.2/32781 --> 192.0.2.5/23;tcp,
    Interface: ge-0/0/2.0,
    Session token: 0x180, Flag: 0x0x21
    Route: 0x60010, Gateway: 203.0.113.100, Tunnel: 0
    Port sequence: 0, FIN sequence: 0,
    FIN state: 0,
    Pkts: 10, Bytes: 610
  Out: 192.0.2.5/23 --> 203.0.113.2/32781;tcp,
    Interface: ge-0/0/1.0,
    Session token: 0x1c0, Flag: 0x0x20
    Route: 0x70010, Gateway: 192.0.2.100, Tunnel: 0
    Port sequence: 0, FIN sequence: 0,
    FIN state: 0,
    Pkts: 9, Bytes: 602
Total sessions: 1

```

show security flow session application telnet summary

```
root> show security flow session application telnet summary
```

Flow Sessions on FPC4 PIC1:

```

Valid sessions: 0
Pending sessions: 0
Invalidated sessions: 0
Sessions in other states: 0
Total sessions: 0

```

Flow Sessions on FPC5 PIC0:

```

Valid sessions: 0
Pending sessions: 0
Invalidated sessions: 0
Sessions in other states: 0
Total sessions: 0

```

Flow Sessions on FPC5 PIC1:

```

Valid sessions: 1
Pending sessions: 0
Invalidated sessions: 0
Sessions in other states: 0
Total sessions: 1

```

show security match-policies

Syntax `show security match-policies`
`destination-ip ip-address`
`destination-port port-number`
`from-zone zone-name`
`protocol protocol-name | protocol-number`
`result-count number`
`source-identity role-name`
`source-ip ip-address`
`source-port port-number`
`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.

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***—Destination IP address of the traffic.
 - **destination-port *destination-port***—Destination port number of the traffic. Range is 1 through 65,535
 - **from-zone *from-zone***—Name or ID of the source zone of the traffic.
 - **protocol *protocol-name* | *protocol-number***—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) The number of policy matches to display. Valid range is from 1 through 16. The default value is 1.
 - **source-identity** *role-name*—Source identity of the traffic determined by the user role.
 - **source-ip** *source-ip*—Source IP address of the traffic.
 - **source-port** *source-port*—Source port number of the traffic. Range is 1 through 65,535.
 - **to-zone** *to-zone*—Name or ID of the destination zone of the traffic.

Required Privilege Level view

Related Documentation

- [clear security policies statistics on page 300](#)
- [Security Policies Overview on page 43](#)
- [Understanding Security Policy Rules on page 45](#)
- [Understanding Security Policy Elements on page 49](#)

List of Sample Output

[Example 1: show security match-policies on page 321](#)
[Example 2: show security match policies ... result-count on page 321](#)
[Example 3: show security match policies ... source-identity on page 322](#)

Output Fields [Table 35 on page 319](#) lists the output fields for the **show security match-policies** command. Output fields are listed in the approximate order in which they appear.

Table 35: show security match-policies Output Fields

Field Name	Field Description
Policy	Name of the applicable policy.

Table 35: show security match-policies Output Fields (*continued*)

Field Name	Field Description
Action or Action-type	<p>The action to be taken for traffic that matches the policy's match criteria. Actions include the following:</p> <ul style="list-style-type: none"> • permit • firewall-authentication • tunnel ipsec-vpn <i>vpn-name</i> • pair-policy <i>pair-policy-name</i> • source-nat pool <i>pool-name</i> • pool-set <i>pool-set-name</i> • interface • destination-nat <i>name</i> • deny • reject
State	<p>Status of the policy:</p> <ul style="list-style-type: none"> • 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.
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.

Table 35: show security match-policies Output Fields (*continued*)

Field Name	Field Description
Destination-port range	Range of matching destination ports defined in the policy.
Source identities	One or more user roles defined in the matching policy.

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 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
```

show security policies

Syntax	<pre>show security policies none <detail> policy-name <i>policy-name</i> <global></pre>
Release Information	<p>Command modified in Junos OS Release 9.2. Support for IPv6 addresses added in Junos OS Release 10.2. Support for wildcard addresses added in Junos OS Release 11.1. Support for global policy added in Junos OS Release 11.4. Support for services offloading added in Junos OS Release 11.4. Support for source-identities added in Junos OS Release 12.1. The Description output field 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 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 added in Junos OS Release 12.3X48-D20. Output field and description for source-end-user-profile option added in Junos OS Release 15.1x49-D70.</p>
Description	<p>Display a summary of all security policies configured on the device. If a particular policy is specified, display information specific to that policy.</p>
Options	<ul style="list-style-type: none"> • none—Display basic information about all configured policies. • detail—(Optional) Display a detailed view of all of the policies configured on the device. • policy-name <i>policy-name</i>—(Optional) Display information about a specified policy. • global—(Optional) Display information about global policies.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43 • Understanding Security Policy Rules on page 45 • Understanding Security Policy Elements on page 49
List of Sample Output	<p>show security policies on page 326 show security policies policy-name detail on page 327 show security policies (Services-Offload) on page 328 show security policies (Device Identity) on page 328 show security policies detail on page 328 show security policies detail (TCP Options) on page 329 show security policies policy-name (Negated Address) on page 330 show security policies policy-name detail (Negated Address) on page 330 show security policies global on page 330</p>
Output Fields	<p>Table 36 on page 324 lists the output fields for the show security policies command. Output fields are listed in the approximate order in which they appear.</p>

Table 36: 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	<p>Status of the policy:</p> <ul style="list-style-type: none"> • 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	<p>For standard display mode, the names of the source addresses for a policy. Address sets are resolved to their individual names.</p> <p>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.</p>
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.

Table 36: show security policies Output Fields (*continued*)

Field Name	Field Description
Applications	<p>Name of a preconfigured or custom application whose type the packet matches, as specified at configuration time.</p> <ul style="list-style-type: none"> • 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.
Destination Address Translation	<p>Status of the destination address translation traffic:</p> <ul style="list-style-type: none"> • drop translated—Drop the packets with translated destination addresses. • drop untranslated—Drop the packets without translated destination addresses.
Application Firewall	<p>An application firewall includes the following:</p> <ul style="list-style-type: none"> • Rule-set—Name of the rule set. • Rule—Name of the rule. <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • The action taken in regard to a packet that matches the policy's tuples. Actions include the following: <ul style="list-style-type: none"> • permit • firewall-authentication • tunnel ipsec-vpn <i>vpn-name</i> • pair-policy <i>pair-policy-name</i> • source-nat pool <i>pool-name</i> • pool-set <i>pool-set-name</i> • interface • destination-nat <i>name</i> • deny • reject • services-offload
Session log	<p>Session log entry that indicates whether the at-create and at-close flags were set at configuration time to log session information.</p>

Table 36: show security policies Output Fields (*continued*)

Field Name	Field Description
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.
Policy statistics	<ul style="list-style-type: none"> • Input bytes—The total number of bytes presented for processing by the device. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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.
Per policy TCP Options	Configured syn and sequence checks, and the configured TCP MSS value for the initial direction and /or the reverse direction.

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 policy-name detail

```

user@host> show security policies policy-name p1 detail
Policy: p1, action-type: permit, State: enabled, Index: 4
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, junos:YSMG
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	

show security policies (Services-Offload)

```

user@host> show security policies
Default policy: deny-all
From zone: trust, To zone: untrust
  Policy: p1, State: enabled, Index: 4, Scope Policy: 0, Sequence number: 1
    Source addresses: any
    Destination addresses: any
    Source identities: role1, role2, role4
    Applications: any
    Action: permit, services-offload, count
From zone: untrust, To zone: trust
  Policy: p2, State: enabled, Index: 5, Scope Policy: 0, Sequence number: 1
    Source addresses: any
    Destination addresses: any
    Source identities: role1, role2, role4
    Applications: any
    Action: permit, services-offload

```

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

```

show security policies detail (TCP Options)

```

user@host> show security policies policy-name policy1 detail
node0:
-----
Policy: policy1, action-type: permit, State: enabled, Index: 7, Scope Policy: 0
Policy Type: Configured
Sequence number: 2
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: 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
Per policy TCP MSS: initial: 800, reverse: 900

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: 5, Scope Policy: 0, Sequence number: 1
From zones: zone1, zone2
To zones: zone3, zone4 Source addresses: any
Destination addresses: any
Applications: any
Action: permit
```

show security policies hit-count

Syntax	<pre>show security policies hit-count <ascending descending> <from-zone zone-name> <greater-than count> <less-than count> <to-zone zone-name></pre>
Release Information	Command introduced in Junos OS Release 12.1.
Description	<p>Display the utility rate of security policies according to the number of hits they receive. The number of hits can be listed without an order or sorted in either ascending or descending order, and they can be restricted to the number of hits that fall above or below a specific count or within a range. Data is shown for all zones associated with the policies or named zones.</p> <p>In a cluster, the count is a sum of all the Services Processing Cards (SPC) hit counts; it is cluster-wide. If a Packet Forwarding Engine (PFE) in a node is in failover mode, but does not reboot, the counter persists. If a node reboots, the PFE in the node also reboots, and the counter is cleared. During an in-service software upgrade (ISSU), all PFEs reboot, therefore all counters are cleared.</p> <p>Use this command without options to display the number of hits in random order for all security policies and for all zones.</p>
Options	<ul style="list-style-type: none"> • ascending descending—(Optional) Display the number of hits for security policies in ascending or descending order. • from-zone zone-name—(Optional) Display the number of hits for security policies associated with the named source zone. • greater-than count—(Optional) Display security policies for which the number of hits is greater than the specified number. Range: 0 through 4,294,967,295 • less-than count—(Optional) Display security policies for which the number of hits is less than the specified number. Range: 0 through 4,294,967,295 • to-zone zone-name—(Optional) Display the number of hits for security policies associated with the named destination zone.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear security policies hit-count on page 299 • Security Policies Overview on page 43
List of Sample Output	show security policies hit-count on page 332

[show security policies hit-count ascending on page 332](#)

[show security policies hit-count descending greater-than 70 less-than 100 on page 332](#)

[show security policies hit-count from-zone untrust to-zone trust on page 333](#)

Output Fields [Table 37 on page 332](#) lists the output fields for the **show security policies hit-count** command. Output fields are listed in the approximate order in which they appear.

Table 37: show security policies hit-count Output Fields

Field Name	Field Description
from-zone	Name of the source zone.
to-zone	Name of the destination zone.
policy	Name of the security policy.
hit-count	Number of hits for each security policy.
Number of policy	Number of security policies for which hit counts are displayed.

Sample Output

show security policies hit-count

```
user@host> show security policies hit-count
from-zone  to-zone  policy  hit-count
untrust    vrtrust  u2t1    40
untrust    trust    u2t2    20
untrust    trust    u2t3    80
```

Number of policy: 3

Sample Output

show security policies hit-count ascending

```
user@host> show security policies hit-count ascending
from-zone  to-zone  policy  hit-count
untrust    trust    u2t2    20
untrust    vrtrust  u2t1    40
untrust    trust    u2t3    80
```

Number of policy: 3

Sample Output

show security policies hit-count descending greater-than 70 less-than 100

```
user@host> show security policies hit-count descending greater-than 70 less-than 100
from-zone  to-zone  policy  hit-count
untrust    trust    u2t2    100
untrust    vrtrust  u2t1    90
untrust    vrtrust  u2t3    80
```

Number of policy: 3

Sample Output

show security policies hit-count from-zone untrust to-zone trust

```
user@host> show security policies hit-count from-zone untrust to-zone trust
```

from-zone	to-zone	policy	hit-count
untrust	trust	u2t2	20
untrust	trust	u2t3	80

Number of policy: 2

show security policies unknown-source-identity

Syntax	show security policies unknown-source-identity
Release Information	Command introduced in Junos OS Release 12.1X45-D10.
Description	<p>Display a list of any user or role that is referenced in a policy as a source-identity, but is not yet included in the role provisioning table.</p> <p>The role provisioning table is created from the local authentication table, UAC authentication tables, and firewall authentication tables. The UAC and firewall authentication tables are dynamic and contain only those users currently authenticated. Because of this, a role can be listed as unknown because no user associated with the role has authenticated yet. There is no consequence if a role remains unknown.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Security Policies Overview on page 43
List of Sample Output	show security policies unknown-source-identity on page 334
Output Fields	Table 38 on page 334 lists the output fields for the show security policies unknown-source-identity command. Output fields are listed in the approximate order in which they appear.

Table 38: show security policies unknown-source-identity Output Fields

Field Name	Field Description
From zone	Part of the zone pair that identifies the source of the traffic to which a policy applies. Affected policies are grouped by their zone pair.
To zone	Part of the zone pair that identifies the destination of the traffic to which a policy applies. Affected policies are grouped by their zone pair.
Policy	The name of the policy that contains the unknown source identity.
Unknown source identities	A list of user names and roles specified in the source-identity field of the named policy that are unknown.

Sample Output

show security policies unknown-source-identity

In the following sample output, policy p1 which controls traffic from the untrust zone to the trust zone specifies two roles, r1 and r3, that are not yet provisioned. Similarly, policy p2 affecting traffic from the trust zone to the trust zone also contains two roles that are not provisioned, role1 and abc.

```
user@host> show security policies unknown-source-identity
```

```
From zone: untrust, To zone: trust
Policy: p1
Unknown source identities: r1, r3
From zone: trust, To zone: trust
Policy: p2
Unknown source identities: role1, abc
```

show security shadow-policies logical-system

Syntax	<code>show security shadow-policies logical-system <i>lsys-name</i> [from-zone <i>from-zone-name</i> to-zone <i>to-zone-name</i> policy <i>policy-name</i> reverse global policy <i>policy-name</i> reverse]</code>
Release Information	Command introduced in Junos OS Release 12.1X44-D10.
Description	Display the shadowing and shadowed policies in a policy list.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show security policies on page 323
List of Sample Output	show security shadow-policies from-zone zone-a to-zone zone-b on page 336 show security shadow-policies from-zone zone-a to-zone zone-b policy P1 on page 336 show security shadow-policies from-zone zone-a to-zone zone-b policy P4 reverse on page 336
Output Fields	Table 39 on page 336 lists the output fields for the show security shadow-policies logical-system command. Output fields are listed in the approximate order in which they appear.

Table 39: show security shadow-policies logical-system Output Fields

Field Name	Field Description
Policies	The policies shadowing one or more policies in the policy list.
Shadowed policies	The policies shadowed by one or more policies in the policy list.

Sample Output

show security shadow-policies from-zone zone-a to-zone zone-b

```
root@host> show security shadow-policies from-zone zone-a to-zone zone-b
Policies          Shadowed policies
P1                P3
P1                P4
P2                P5
```

show security shadow-policies from-zone zone-a to-zone zone-b policy P1

```
root@host> show security shadow-policies from-zone zone-a to-zone zone-b policy P1
Policies          Shadowed policies
P1                P3
P1                P4
```

show security shadow-policies from-zone zone-a to-zone zone-b policy P4 reverse

```
root@host> show security shadow-policies from-zone zone-a to-zone zone-b policy P4 reverse
Policies          Shadowed policies
P1                P4
```


show security user-identification local-authentication-table

Syntax	show security user-identification local-authentication-table [(all [brief extensive]) ip-address <i>ip-address</i> role <i>role-name</i> start <i>value</i> count <i>value</i> user <i>user-name</i>]
Release Information	Command introduced in Junos OS Release 12.1.
Description	<p>This command displays the content of the local authentication table by IP address.</p> <p>all—(Optional) All entries displayed from the beginning of the table or from the specified starting entry.</p> <p>brief—(Default) Uses a tabular format and truncates longer entries: username—displays up to 13 characters, roles—displays up to 32 characters.</p> <p>extensive—(Optional) Displays the full names and all items.</p> <p>count <i>value</i>—(Optional) The total number of entries to display.</p> <p>ip-address <i>ip-address</i>—(Optional) The IP address of the entry to display.</p> <p>role <i>role-name</i>—(Optional) The role name of the entries to display.</p> <p>start <i>value</i>—(Optional) The first entry to display.</p> <p>user <i>user-name</i>—(Optional) The username of the entry to display.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • request security user-identification local-authorization-table add on page 302 • Understanding the User Identification Table on page 88
List of Sample Output	show security user-identification local-authentication-table all on page 339 show security user-identification local-authentication-table ip-address on page 339 show security user-identification local-authentication-table start on page 339 show security user-identification local-authentication-table role on page 339
Output Fields	Table 40 on page 338 lists the output fields for the show security user-identification local-authentication-table command. Output fields are listed in the approximate order in which they appear.

Table 40: show security user-identification local-authentication-table Output Fields

Field Name	Field Description
Total entries	The number of entries in the table.
IP address	IP address of the associated user. NOTE: Only one user can be associated with an IP address.
Username	User associated with the specified IP address.

Table 40: show security user-identification local-authentication-table Output Fields (*continued*)

Field Name	Field Description
Roles	A comma-separated list of all roles associated with this IP address and user.

Sample Output

show security user-identification local-authentication-table all

```
user@host> show security user-identification local-authentication-table all
Total entries: 3
Source IP      Username      Roles
192.0.2.1      user1         role1
203.0.113.2    user1         role2
198.51.100.3   user3         role1, role2
```

show security user-identification local-authentication-table ip-address

```
user@host> show security user-identification local-authentication-table ip-address 203.0.113.2
Ip-address: 203.0.113.2
Username: user2
Roles: role2, role3, role1
```

show security user-identification local-authentication-table start

```
user@host> show security user-identification local-authentication-table start 2 count 2
Total entries: 2
Ip-address: 203.0.113.2
Username: user2
Roles: role2, role3, role1

Ip-address: 198.51.100.3   Username: user3
Roles: role2, role3
```

show security user-identification local-authentication-table role

```
user@host> show security user-identification local-authentication-table role qa3456
Total entries: 3
Ip-address: 203.0.113.2
Username: dev-grp-3
Roles: qa432, qa3456, qa84, qa794

Ip-address: 198.51.100.3
Username: dev-qa
Roles: qa3456, qa3985, qa23

Ip-address: 203.0.113.2
Username: brandall
Roles: qa3456
```

show security user-identification role-provision all

Syntax	show security user-identification role-provision all
Release Information	Command introduced in Junos OS Release 12.1.
Description	Display all the available user roles for policy provisioning. The output combines user roles from all available UITs.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show security user-identification user-provision all on page 342• show security user-identification source-identity-provision all on page 341
List of Sample Output	show security user-identification role-provision all on page 340
Output Fields	Table 41 on page 340 lists the output fields for the show security user-identification role-provision all command. Output fields are listed in the approximate order in which they appear.

Table 41: show security user-identification role-provision all Output Fields

Field Name	Field Description
Roles	A comma-separated list of all user roles available for provisioning in user role policies. This list combines user roles from both the local authentication table and any UAC authentication tables that have been configured.

Sample Output

show security user-identification role-provision all

```
user@host> show security user-identification role-provision all
Roles: role1, role2, role3, role4, role_0_1, role_1_1
```

show security user-identification source-identity-provision all

Syntax	show security user-identification source-identity-provision all
Release Information	Command introduced in Junos OS Release 12.1X44-D10.
Description	Display the available source identities for policy provisioning. The output combines users and user roles from all available UITs.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show security user-identification role-provision all on page 340 • show security user-identification user-provision all on page 342
List of Sample Output	show security user-identification source-identity-provision all on page 341
Output Fields	Table 42 on page 341 lists the output fields for the show security user-identification source-identity-provision all command. Output fields are listed in the approximate order in which they appear.

Table 42: show security user-identification source-identity-provision all Output Fields

Field Name	Field Description
Source identities	A comma-separated list of all users and user roles available for policy provisioning. This list combines users and user roles from both the local authentication table and any UAC authentication tables that have been configured.

Sample Output

show security user-identification source-identity-provision all

```
user@host> show security user-identification source-identity-provision all
Source identities: ariana, ben, guest5, role1, role2, role3, role4, role_0_1,
role_1_1,u1, user2
```

show security user-identification user-provision all

Syntax	show security user-identification user-provision all
Release Information	Command introduced in Release Junos OS 12.1X44-D10.
Description	Display the available user names for policy provisioning. The output combines users from all available UITs.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show security user-identification role-provision all on page 340• show security user-identification source-identity-provision all on page 341
List of Sample Output	show security user-identification user-provision all on page 342
Output Fields	Table 43 on page 342 lists the output fields for the show security user-identification user-provision all command. Output fields are listed in the approximate order in which they appear.

Table 43: show security user-identification user-provision all Output Fields

Field Name	Field Description
Users	A comma-separated list of all users available for policy provisioning. This list combines users from both the local authentication table and any UAC authentication tables that have been configured.

Sample Output

show security user-identification user-provision all

```
user@host> show security user-identification user-provision all
Users: ariana, ben, guest5, u1 user2, ...
```

show security zones

Syntax	<code>show security zones</code> <code><detail terse></code> <code>< zone-name ></code>
Release Information	Command introduced in Junos OS Release 8.5. The Description output field added in Junos OS Release 12.1.
Description	Display information about security zones.
Options	<ul style="list-style-type: none"> • none—Display information about all zones. • detail terse—(Optional) Display the specified level of output. • zone-name —(Optional) Display information about the specified zone.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Security Zones and Interfaces Overview on page 7 • Supported System Services for Host Inbound Traffic on page 19 • security-zone on page 255
List of Sample Output	show security zones on page 344 show security zones abc on page 344 show security zones abc detail on page 344 show security zones terse on page 345
Output Fields	Table 44 on page 343 lists the output fields for the show security zones command. Output fields are listed in the approximate order in which they appear.

Table 44: show security zones Output Fields

Field Name	Field Description
Security zone	Name of the security zone.
Description	Description of the security zone.
Policy configurable	Whether the policy can be configured or not.
Interfaces bound	Number of interfaces in the zone.
Interfaces	List of the interfaces in the zone.
Zone	Name of the zone.
Type	Type of the zone.

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
```

Sample Output

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
```

Sample Output

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
```

Sample Output

show security zones terse

```
user@host> show security zones terse
Zone           Type
my-internal    Security
my-external    Security
dmz            Security
```

show security zones type

Syntax	show security zones type (functional security) <detail terse>
Release Information	Command introduced in Junos OS Release 8.5. The Description output field added in Junos OS Release 12.1.
Description	Display information about security zones of the specified type.
Options	<ul style="list-style-type: none"> • functional—Display functional zones. • security—Display security zones. • detail terse—(Optional) Display the specified level of output.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Security Zones and Interfaces Overview on page 7 • Supported System Services for Host Inbound Traffic on page 19 • security-zone on page 255
List of Sample Output	show security zones type functional on page 347 show security zones type security on page 347 show security zones type security terse on page 347 show security zones type security detail on page 347
Output Fields	Table 45 on page 346 lists the output fields for the show security zones type command. Output fields are listed in the approximate order in which they appear.

Table 45: show security zones type Output Fields

Field Name	Field Description
Security zone	Zone name.
Description	Description of the security zone.
Policy configurable	Whether the policy can be configured or not.
Interfaces bound	Number of interfaces in the zone.
Interfaces	List of the interfaces in the zone.
Zone	Name of the zone.
Type	Type of the zone.

Sample Output

show security zones type functional

```
user@host> show security zones type functional
Functional zone: management
  Description: management zone
  Policy configurable: No
  Interfaces bound: 0
  Interfaces:
```

Sample Output

show security zones type security

```
user@host> show security zones type security
Security zone: trust
  Description: trust zone
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 1
  Interfaces:
    ge-0/0/0.0
Security zone: untrust
  Description: untrust zone
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 1
  Interfaces:
    ge-0/0/1.0
Security zone: junos-host
  Description: junos-host zone
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 0
  Interfaces:
```

Sample Output

show security zones type security terse

```
user@host> show security zones type security terse
Zone           Type
trust          Security
untrust        Security
junos-host     Security
```

Sample Output

show security zones type security detail

```
user@host> show security zones type security detail
Security zone: trust
  Description: trust zone
  Send reset for non-SYN session TCP packets: Off
  Policy configurable: Yes
  Interfaces bound: 1
  Interfaces:
    ge-0/0/0.0
```

Security zone: untrust
Description: untrust zone
Send reset for non-SYN session TCP packets: Off
Policy configurable: Yes
Interfaces bound: 1
Interfaces:
ge-0/0/1.0
Security zone: junos-host
Description: junos-host zone
Send reset for non-SYN session TCP packets: Off
Policy configurable: Yes
Interfaces bound: 0
Interfaces:

show system services dns dns-proxy

Syntax	show system services dns dns-proxy
Release Information	Command introduced in Junos OS Release 12.1X44-D10.
Description	Display domain name system (DNS) proxy information.
Options	<ul style="list-style-type: none"> • none—Display DNS proxy statistics information. • cache—(Optional) Display the DNS proxy cache. • statistics—(Optional) Display the DNS proxy statistics.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear system services dns dns-proxy on page 301 • dns-proxy on page 205
List of Sample Output	show system services dns-proxy statistics on page 350 show system services dns-proxy cache on page 350 show system services dns-proxy cache <viewname V1> on page 350
Output Fields	Table 46 on page 349 lists the output fields for the show system services dns-proxy command. Output fields are listed in the approximate order in which they appear.

Table 46: show system services dns-proxy

Field Name	Field Description
DNS proxy statistics	Display information about the DNS proxy. <ul style="list-style-type: none"> • Status—State of the proxy server as Enabled or disabled. • Queries received—Number of DNS queries received by the DNS proxy. • Responses sent—Number of DNS responses sent by the DNS proxy. • Queries forwarded—Number of DNS queries forwarded by the DNS proxy. • Negative responses—Number of negative responses the DNS proxy sent to the DNS client. • Retry requests—Number of retries the DNS proxy received from the DNS client. • Pending requests—Number of pending queries the DNS proxy has yet to send the DNS client a response for. • Server failures—Number of DNS proxy server failures.
Hostname	Hostname of the host that has been cached.
IP address	IP address of the host.

Table 46: show system services dns-proxy (continued)

Field Name	Field Description
Time-to-live	Length of time before an entry is purged from the DNS cache.
Type	Type of DNS Resource Record. For example, A records refer to IPv4 host addresses.
Class	Class of DNS. A parameter used to define a DNS Resource Record. For example, IN class is used for Internet domain names.

Sample Output

show system services dns-proxy statistics

```

user@host> show system services dns-proxy statistics
DNS proxy statistics      :
  DNS proxy statistics    :
    Status                 : enabled
    IPV4 Queries received  : 30
    IPV6 Queries received  : 0
    Responses sent         : 30
    Queries forwarded      : 13
    Negative responses     : 23
    Positive responses     : 23
    Retry requests         : 0
    Pending requests       : 0
    Server failures        : 0
    Interfaces              : fe-0/0/0.0, fe-1/0/1.0

```

show system services dns-proxy cache

```

user@host>show system services dns-proxy cache
Hostname                Time-to-live   Type   Class   IP address/Hostname
device1.example.com     408           A      IN      207.17.137.229
device2.example.com     408           A      IN      192.0.2.50
device3.example.com     408           A      IN      192.0.2.11
device4.example.com     408           A      IN      10.209.194.131
device5.example.com     408           A      IN      10.10.4.202
device6.example.com     408           A      IN      10.16.0.11
device7.example.com     408           A      IN      192.0.2.100
a.l.example.com         408           A      IN      203.0.113.9
b.l.example.com         408           A      IN      198.51.100.9
maps.l.example.com     408           A      IN      198.51.100.104
c.l.example.com         408           A      IN      198.51.100.91
d.l.example.com         408           A      IN      198.51.100.89
e.l.example.com         408           A      IN      198.51.100.39
g.l.example.com         408           A      IN      198.51.100.69
device8.example.com.   408           A      IN      192.0.2.123
mail.example.com.      408           CNAME  IN
device8.example.com.

```

show system services dns-proxy cache <viewname V1>

```

user@host>show system services dns-proxy cache <viewname V1>
Hostname                Time-to-live   Type   Class   IP address/Hostname
device1.example.com.   495           A      IN      198.51.100.123

```

mail.example.com.	495	CNAME	IN	device1.example.com.
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show system services dynamic-dns

Syntax	show system services dynamic-dns
Release Information	Command introduced in Junos OS Release 12.1X44-D10.
Description	Display information about dynamic DNS clients.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> dynamic-dns on page 206
List of Sample Output	show system services dynamic-dns client on page 352 show system services dynamic-dns client detail on page 352
Output Fields	Table 47 on page 352 lists the output fields for the show system services dynamic-dns command. Output fields are listed in the approximate order in which they appear.

Table 47: show system services dynamic-dns

Field Name	Field Description
Hostname	Hostname of the registered client
Server	DDNS server name
Agent	Name of the DDNS agent
Last response	Status of the last response
Last update	Date and time of the last update
Interface	Name of the interface

Sample Output

show system services dynamic-dns client

```

user@host> show system services dynamic-dns client
Internal hostname      Server      Last response
device1.example.com    example.org success
device2.example.com.   example.org failure

```

show system services dynamic-dns client detail

```

user@host> show system services dynamic-dns client detail
Hostname      : device1.example.com
Server        : example.org
Agent         : branch-0.1
Last response: success

```

Last update : 2006-08-29 04:02:52 PDT
Interface : fe-0/0/0.0

Hostname : device2.example.com
Server : example.org
Agent : Branch-0.1
Last response: failure
Last update : 2006-08-29 04:03:03 PDT
Interface : fe-0/0/0.0

