



Junos[®] OS for EX Series Ethernet Switches

System Services on EX Series Switches

Release
12.3



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Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

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Junos® OS for EX Series Ethernet Switches System Services on EX Series Switches

Release 12.3

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About the Documentation

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Supported Platforms

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

- EX 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 the CLI User Guide.

Documentation Conventions

Table 1 on page xv 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.

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active

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

Convention	Description	Examples
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies book 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 System Basics Configuration 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)	Enclose 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 <i>(string1 string2 string3)</i>
# (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)	Enclose a variable for which you can substitute one or more values.	community name members [community-ids]
Indentation and braces ({ })	Identify 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.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web 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.
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select Protocols>Ospf .

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- Document or topic name
- URL or page number
- Software release version (if applicable)

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- 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.

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- 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: <https://www.juniper.net/alerts/>

- Join and participate in the Juniper Networks Community Forum:
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- 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

- [Software Overview on page 3](#)
- [DHCP Overview on page 7](#)
- [Public Key Cryptography Overview on page 15](#)
- [Self-Signed Certificates Overview on page 17](#)
- [Protocol Redirect Mechanism Overview on page 19](#)

CHAPTER 1

Software Overview

- [Understanding Software Infrastructure and Processes on page 3](#)

Understanding Software Infrastructure and Processes

Each switch runs the Juniper Networks Junos operating system (Junos OS) for Juniper Networks EX Series Ethernet Switches on its general-purpose processors. Junos OS includes processes for Internet Protocol (IP) routing and for managing interfaces, networks, and the chassis.

The Junos OS runs on the Routing Engine. The Routing Engine kernel coordinates communication among the Junos OS processes and provides a link to the Packet Forwarding Engine.

With the J-Web interface and the command-line interface (CLI) to the Junos OS, you configure switching features and routing protocols and set the properties of network interfaces on your switch. After activating a software configuration, use either the J-Web or CLI user interface to monitor the switch, manage operations, and diagnose protocol and network connectivity problems.

- [Routing Engine and Packet Forwarding Engine on page 3](#)
- [Junos OS Processes on page 4](#)

Routing Engine and Packet Forwarding Engine

A switch has two primary software processing components:

- **Packet Forwarding Engine**—Processes packets; applies filters, routing policies, and other features; and forwards packets to the next hop along the route to their final destination.
- **Routing Engine**—Provides three main functions:
 - Creates the packet forwarding switch fabric for the switch, providing route lookup, filtering, and switching on incoming data packets, then directing outbound packets to the appropriate interface for transmission to the network
 - Maintains the routing tables used by the switch and controls the routing protocols that run on the switch.

- Provides control and monitoring functions for the switch, including controlling power and monitoring system status.

Junos OS Processes

The Junos OS running on the Routing Engine and Packet Forwarding Engine consists of multiple processes that are responsible for individual functions.

The separation of functions provides operational stability, because each process accesses its own protected memory space. In addition, because each process is a separate software package, you can selectively upgrade all or part of the Junos OS, for added flexibility.

[Table 3 on page 4](#) describes the primary Junos OS processes.

Table 3: Junos OS Processes

Process	Name	Description
Chassis process	chassisd	<p>Detects hardware on the system that is used to configure network interfaces.</p> <p>Monitors the physical status of hardware components and field-replaceable units (FRUs), detecting when environment sensors such as temperature sensors are triggered.</p> <p>Relays signals and interrupts—for example, when devices are taken offline, so that the system can close sessions and shut down gracefully.</p>
Ethernet switching process	eswd	<p>Handles Layer 2 switching functionality such as MAC address learning, Spanning Tree protocol and access port security. The process is also responsible for managing Ethernet switching interfaces, VLANs, and VLAN interfaces.</p> <p>Manages Ethernet switching interfaces, VLANs, and VLAN interfaces.</p>
Forwarding process	pfem	<p>Defines how routing protocols operate on the switch. The overall performance of the switch is largely determined by the effectiveness of the forwarding process.</p>
Interface process	dcd	<p>Configures and monitors network interfaces by defining physical characteristics such as link encapsulation, hold times, and keepalive timers.</p>
Management process	mgd	<p>Provides communication between the other processes and an interface to the configuration database.</p> <p>Populates the configuration database with configuration information and retrieves the information when queried by other processes to ensure that the system operates as configured.</p> <p>Interacts with the other processes when commands are issued through one of the user interfaces on the switch.</p> <p>If a process terminates or fails to start when called, the management process attempts to restart it a limited number of times to prevent thrashing and logs any failure information for further investigation.</p>
Routing protocol process	rpd	<p>Defines how routing protocols such as RIP, OSPF, and BGP operate on the device, including selecting routes and maintaining forwarding tables.</p>

- Related Documentation**
- For more information about processes, see *Junos OS Network Operations Guide*
 - For more information about basic system parameters, supported protocols, and software processes, see *Junos OS System Basics Configuration Guide*

CHAPTER 2

DHCP Overview

- [Understanding DHCP Services for Switches on page 7](#)
- [DHCP/BOOTP Relay for Switches Overview on page 11](#)
- [Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12](#)

Understanding DHCP Services for Switches

A Dynamic Host Configuration Protocol (DHCP) server on a Juniper Networks EX Series Ethernet Switch can provide many valuable TCP/IP network services. For example, DHCP can dynamically allocate the four required IP parameters to each computer on the LAN: IP address, network mask, router or switch address, and name server address. Additionally, DHCP on the switch can automatically upgrade software on client systems.

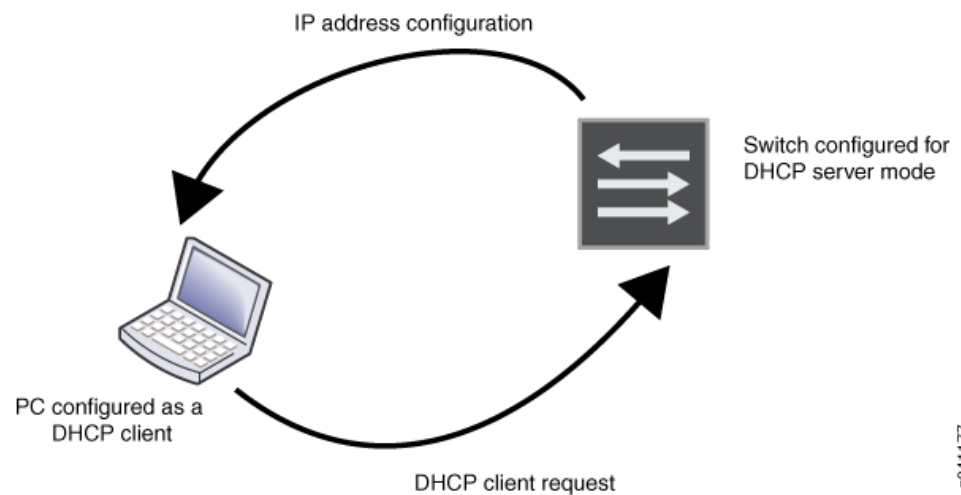
This topic describes:

- [DHCP Client/Server Model on page 7](#)
- [Using DHCP on page 8](#)
- [DHCP Relay Servers and DHCP Servers on page 8](#)
- [Legacy DHCP and Extended DHCP for Server Versions on page 9](#)
- [Configuring DHCP on a Switch on page 10](#)
- [How DHCP Works on page 10](#)

DHCP Client/Server Model

DHCP IP address allocation works on a client/server model in which the server, in this case a switch, assigns the client reusable IP information from an address pool. A DHCP client might receive offer messages from multiple DHCP servers and can accept any one of the offers; however, the client usually accepts the first offer it receives. See [Figure 1 on page 8](#).

Figure 1: DHCP Client/Server Model



Using DHCP

DHCP automates network-parameter assignment to network devices. Even in small networks, DHCP is useful because it makes it easy to add new machines to the network.

DHCP access service minimizes the overhead required to add clients to the network by providing a centralized, server-based setup, which means that you do not have to manually create and maintain IP address assignments for clients. In addition, when you use DHCP to manage a pool of IP addresses among hosts, you reduce the number of IP addresses needed on the network. DHCP does this by leasing an IP address to a host for a limited period of time, allowing the DHCP server to share a limited number of IP addresses. DHCP also provides a central database of devices that are connected to the network and eliminates duplicate resource assignments. In addition to IP addresses for clients, DHCP provides other configuration information, particularly the IP addresses of local caching Domain Name System (DNS) resolvers, network boot servers, or other service hosts.

Another valuable DHCP feature is automatic software download for installation of software packages on switches. DHCP clients configured for automatic software download receive messages as part of the DHCP message exchange process—when the software package name in the DHCP server message is different from that of the software package that booted the DHCP client switch, the new software is downloaded and installed. See [Upgrading Software Using Automatic Software Download](#).

DHCP Relay Servers and DHCP Servers

You can configure a switch either as a DHCP server or as a DHCP relay server, but not both. Whereas a DHCP server replies to a client with an IP address, a DHCP relay server relays DHCP messages to and from the configured DHCP server, even if the client and server are on different IP networks.

Configure a switch to be a DHCP relay agent if you have locally attached hosts and a remote DHCP server. For directions on configuring a DHCP relay server, see [“DHCP/BOOTP Relay for Switches Overview” on page 11](#).

Legacy DHCP and Extended DHCP for Server Versions

Two versions of both DHCP server and DHCP relay agent are available on EX Series switches and on the QFX Series. The original legacy DHCP server and legacy DHCP relay agent can be used in the same network as the extended DHCP servers and extended DHCP relay agent—extended DHCP is also referred to as virtual router (VR) aware DHCP.

You cannot configure legacy DHCP and extended DHCP versions on the same switch. Because the newer extended DHCP server version has more features, we recommend that you configure the extended DHCP server if it is supported by the switch. See EX Series Switch Software Features Overview for a list of switches that support the extended DHCP server.

The extended DHCP server version has the following added features:

- Graceful Routing Engine switchover (GRES), which provides mirroring support for clients. For details, see High Availability Features for EX Series Switches Overview.
- Virtual routing and forwarding (VRF), which allows multiple instances of a routing table to simultaneously coexist on the same switch. For details, see Understanding Virtual Routing Instances on EX Series Switches .



NOTE: Legacy DHCP supports the circuit ID and the remote ID fields for the relay agent option (option 82). Extended DHCP for the relay agent option supports only circuit ID. See EX Series Switch Software Features Overview for a list of switches that support extended DHCP (VR-aware DHCP).

Legacy DHCP and extended DHCP servers can be configured at the hierarchy levels shown in [Table 4 on page 9](#):

Table 4: Legacy DHCP and Extended DHCP Server Hierarchy Levels

DHCP Service	Hierarchy
Extended DHCP server	<code>edit system services dhcp-local-server</code>
Extended DHCP address pool	<code>edit access address-assignment pool</code>
Legacy DHCP server	<code>edit system services dhcp</code>
Legacy DHCP relay	<code>edit forwarding-options helpers bootp</code>
Extended DHCP relay	<code>edit forwarding-options dhcp-relay</code>
Legacy DHCP address pool	<code>edit system services dhcp pool</code>

DHCP clients on a switch are always configured at the hierarchy level `[edit interfaces interface-name family dhcp]`.

Configuring DHCP on a Switch

A DHCP configuration consists of two parts: the configuration for a DHCP server and the configuration for DHCP clients. The DHCP server configuration is simple if you accept the default configurations.

When you configure a legacy DHCP server, you only need to define the DHCP server name and the interface on the switch. You can use the default configuration for the rest of the settings. When you configure an extended DHCP server, you need to only define a DHCP pool, indicate IP addresses for the pool, and create a server group. You can use the default configuration for the rest of the settings.

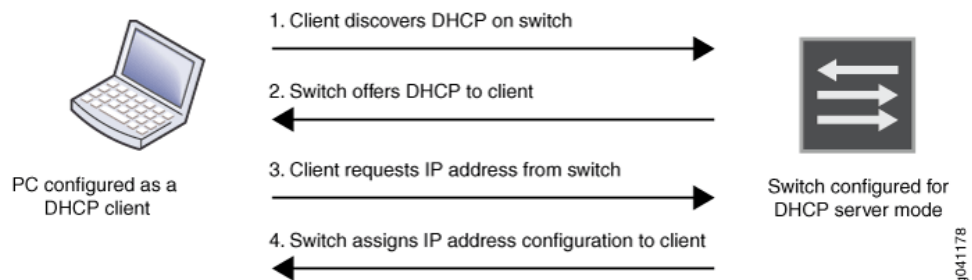
For directions for configuring either a legacy DHCP server or an extended DHCP server, see [“Configuring a DHCP Server on Switches \(CLI Procedure\)” on page 28](#).

To configure a DHCP client, set the client’s DHCP interface address in the **[edit interfaces interface-name unit 0 family inet dhcp]** hierarchy. For directions for configuring a DHCP client on a switch, see [“Configuring a DHCP Client \(CLI Procedure\)” on page 27](#).

How DHCP Works

DHCP consists of a four-step transfer process beginning with a broadcast DHCP discovery message from the client. As the second step, the client receives a DHCP offer message from the server. This message includes the IP address and mask, and some other specific parameters. The client then sends a DHCP request message to accept the IP address and other parameters that it received from the server in the previous step. The DHCP server sends a DHCP response message and removes the now-allocated address from the DHCP address pool. See [Figure 2 on page 10](#).

Figure 2: DHCP Four-Step Transfer



NOTE: Because the DHCP discovery message from the client is a broadcast message and because broadcast messages cross other segments only when they are explicitly routed, you might have to configure a DHCP relay agent on the switch interface so that all DHCP discovery messages from the clients are forwarded to one DHCP server.

Related Documentation

- [Configuring a DHCP Client \(CLI Procedure\) on page 27](#)
- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)

- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)
- [Configuring a DHCP SIP Server \(CLI Procedure\) on page 26](#)
- [Upgrading Software Using Automatic Software Download](#)
- [Monitoring DHCP Services on page 193](#)

DHCP/BOOTP Relay for Switches Overview

You can configure the switch to act as a Dynamic Host Configuration Protocol (DHCP) or Bootstrap Protocol (BOOTP) relay agent. This means that a locally attached host can issue a DHCP or BOOTP request as a broadcast message. After the switch receives this broadcast message, it relays the message to a specified DHCP or BOOTP server. You must configure the switch to be a DHCP or BOOTP relay agent if you have locally attached hosts and a remote DHCP or BOOTP server.

For detailed information about configuring a DHCP or BOOTP relay agent, see the [Junos OS Policy Framework Configuration Guide](#).

You can configure a switch to use the gateway IP address (`giaddr`) as the source IP address of the switch for relayed DHCP packets when the switch is used as the DHCP relay agent. For information about configuring this option, see the [source-address-giaddr](#) configuration statement.



NOTE: Because DHCP and BOOTP messages are broadcast and are not directed to a specific server, switch, or router, EX Series switches and the QFX Series cannot function as both a DHCP server and a DHCP or BOOTP relay agent at the same time. The Juniper Networks Junos operating system (Junos OS) generates a commit error if both options are configured at the same time, and the commit operation does not succeed until one of the options is removed.



NOTE: DHCP relay across routing instances is not supported on EX Series switches or on the QFX Series.

Related Documentation

- [For information about configuring the switch as a DHCP/BOOTP relay agent, see Junos OS Policy Framework Configuration Guide.](#)
- [Understanding DHCP Services for Switches on page 7](#)

Understanding the Extended DHCP Relay Agent for EX Series Switches

You can configure a Juniper Networks EX Series Ethernet switch to act as an extended DHCP relay agent. This means that a locally attached host can issue a DHCP request as a broadcast message and the switch configured for DHCP relay relays the message to a specified DHCP server. Configure a switch to be an extended DHCP relay agent if you have locally attached hosts and a remote DHCP server.

You can use DHCP relay in carrier edge applications such as video/IPTV to obtain configuration parameters, including an IP address, for your subscribers.

DHCP relay supports the attachment of dynamic profiles. You can attach dynamic profiles on a global basis or for a specific group of interfaces.

EX Series switches also support the DHCPv6 relay agent.

This topic covers:

- [Extended DHCP Relay and Legacy DHCP/BOOTP Relay on page 12](#)
- [Interaction Among the DHCP Relay Agent, DHCP Client, and DHCP Servers on page 12](#)

Extended DHCP Relay and Legacy DHCP/BOOTP Relay

The extended DHCP relay agent options configured with the **dhcp-relay** statement are incompatible with the DHCP/BOOTP relay agent options configured with the **bootp** statement. Therefore, you cannot enable both the extended DHCP relay agent and the legacy DHCP/BOOTP relay agent on a switch at the same time.

For information about the legacy DHCP/BOOTP relay agent, see “[DHCP/BOOTP Relay for Switches Overview](#)” on page 11.

Interaction Among the DHCP Relay Agent, DHCP Client, and DHCP Servers

The following steps describe, at a high level, how the DHCP client, DHCP relay agent, and DHCP server interact in a configuration that includes two DHCP servers:

1. The DHCP client sends a discover packet to find a DHCP server in the network from which to obtain configuration parameters, including an IP address, for the subscriber.
2. The DHCP relay agent receives the discover packet and forwards copies of the discover packets to each of the two DHCP servers. The DHCP relay agent then creates an entry in its internal client table to keep track of the client's state.
3. In response to receiving the discover packet, each DHCP server sends an offer packet to the client. The DHCP relay agent receives the offer packets and forwards them to the DHCP client.
4. On receiving the offer packets, the DHCP client selects the DHCP server from which to obtain configuration information. Typically, the client selects the server that offers the longest lease time on the IP address.
5. The DHCP client sends a request packet that specifies the DHCP server from which to obtain configuration information.

6. The DHCP relay agent receives the request packet and forwards copies of this packet to each of the two DHCP servers.
7. The DHCP server requested by the client sends an acknowledgement (ack) packet that contains the client's configuration parameters.
8. The DHCP relay agent receives the ack packet and forwards it to the client.
9. The DHCP client receives the ack packet and stores the configuration information.
10. If configured to do so, the DHCP relay agent installs a host route and Address Resolution Protocol (ARP) entry for this client.
11. After establishing the initial lease on the IP address, the DHCP client and the DHCP server use unicast transmission to negotiate lease renewal or release. The DHCP relay agent snoops all of the packets unicast between the client and the server that pass through the relay agent to determine when the lease has expired or been released. This process is referred to as *lease shadowing* or *passive snooping*.

**Related
Documentation**

- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)
- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)

CHAPTER 3

Public Key Cryptography Overview

- [Understanding Public Key Cryptography on Switches on page 15](#)

Understanding Public Key Cryptography on Switches

Cryptography describes the techniques related to the following aspects of information security:

- Privacy or confidentiality
- Integrity of data
- Authentication
- Nonrepudiation or nonrepudiation of origin—Nonrepudiation of origin means that signers cannot claim that they did not sign a message while claiming that their private key remains secret. In some nonrepudiation schemes used in digital signatures, a timestamp is attached to the digital signature, so that even if the private key is exposed, the signature remains valid. Public and private keys are described in the following text.

In practice, cryptographic methods protect the data transferred from one system to another over public networks by encrypting the data using an encryption key. Public key cryptography (PKC), which is used on Juniper Networks EX Series Ethernet Switches, uses a pair of encryption keys: a public key and a private key. The public and private keys are created simultaneously using the same encryption algorithm. The private key is held by a user secretly and the public key is published. Data encrypted with a public key can be decrypted only with the corresponding private key and vice versa. When you generate a public/private key pair, the switch automatically saves the key pair in a file in the certificate store, from which it is subsequently used in certificate request commands. The generated key pair is saved as *certificate-id.priv*.



NOTE: The default RSA and DSA key size is 1024 bits. If you are using the Simple Certificate Enrollment Protocol (SCEP), Juniper Networks Junos operating system (Junos OS) supports RSA only.

This topic describes:

- [Public Key Infrastructure \(PKI\) and Digital Certificates on page 16](#)

Public Key Infrastructure (PKI) and Digital Certificates

Public key infrastructure (PKI) allows the distribution and use of the public keys in public key cryptography with security and integrity. PKI manages the public keys by using digital certificates. A digital certificate provides an electronic means of verifying the identity of an individual, an organization, or a directory service that can store digital certificates.

A PKI typically consists of a Registration Authority (RA) that verifies the identities of entities, authorizes their certificate requests, and generates unique asymmetric key pairs (unless the users' certificate requests already contain public keys); and a Certificate Authority (CA) that issues corresponding digital certificates for the requesting entities. Optionally, you can use a Certificate Repository that stores and distributes certificates and a certificate revocation list (CRL) identifying the certificates that are no longer valid. Each entity possessing the authentic public key of a CA can verify the certificates issued by that CA.

Digital signatures exploit the public key cryptographic system as follows:

1. A sender digitally signs data by applying a cryptographic operation, involving its private key, on a digest of the data.
2. The resulting signature is attached to the data and sent to the receiver.
3. The receiver obtains the digital certificate of the sender, which provides the sender's public key and confirmation of the link between its identity and the public key. The sender's certificate is often attached to the signed data.
4. The receiver either trusts this certificate or attempts to verify it. The receiver verifies the signature on the data by using the public key contained in the certificate. This verification ensures the authenticity and integrity of the received data.

As an alternative to using a PKI, an entity can distribute its public key directly to all potential signature verifiers, so long as the key's integrity is protected. The switch does it by using a self-signed certificate as a container for the public key and the corresponding entity's identity.

Related Documentation

- [Understanding Self-Signed Certificates on EX Series Switches on page 17](#)

Self-Signed Certificates Overview

- [Understanding Self-Signed Certificates on EX Series Switches on page 17](#)

Understanding Self-Signed Certificates on EX Series Switches

When you initialize a Juniper Networks EX Series Ethernet Switch with the factory default configuration, the switch generates a self-signed certificate, allowing secure access to the switch through the Secure Sockets Layer (SSL) protocol. Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS) and XML Network Management over Secure Sockets Layer (XNM-SSL) are the two services that can make use of the self-signed certificates.



NOTE: Self-signed certificates do not provide additional security as do those generated by Certificate Authorities (CAs). This is because a client cannot verify that the server he or she has connected to is the one advertised in the certificate.

The switches provide two methods for generating a self-signed certificate:

- Automatic generation

In this case, the creator of the certificate is the switch. An automatically generated (also called “system-generated”) self-signed certificate is configured on the switch by default.

After the switch is initialized, it checks for the presence of an automatically generated self-signed certificate. If it does not find one, the switch generates one and saves it in the file system.

A self-signed certificate that is automatically generated by the switch is similar to an SSH host key. It is stored in the file system, not as part of the configuration. It persists when the switch is rebooted, and it is preserved when a **request system snapshot** command is issued.

The switch uses the following distinguished name for the automatically generated certificate:

“CN=<device serial number>, CN=system generated, CN=self-signed”

If you delete the system-generated self-signed certificate on the switch, the switch generates a self-signed certificate automatically.

- Manual generation

In this case, you create the self-signed certificate for the switch. At any time, you can use the CLI to generate a self-signed certificate. Manually generated self-signed certificates are stored in the file system, not as part of the configuration.

Self-signed certificates are valid for five years from the time they are generated. When the validity of an automatically generated self-signed certificate expires, you can delete it from the switch so that the switch generates a new self-signed certificate.

System-generated self-signed certificates and manually generated self-signed certificates can coexist on the switch.

**Related
Documentation**

- [Understanding Public Key Cryptography on Switches on page 15](#)
- [Manually Generating Self-Signed Certificates on Switches \(CLI Procedure\) on page 32](#)

CHAPTER 5

Protocol Redirect Mechanism Overview

- [Understanding the Protocol Redirect Mechanism on EX Series Switches on page 19](#)

Understanding the Protocol Redirect Mechanism on EX Series Switches

Internet Control Message Protocol (ICMP) redirect, also known as protocol redirect, is a mechanism used by switches and routers to convey routing information to hosts. ICMP redirect messages are used by switches and routers to notify the hosts on the same data link of the best route available for a given destination. All EX series switches support sending ICMP redirect messages for both IPv4 and IPv6 traffic.



NOTE: EX series switches do not send ICMP redirect messages if the data packet contains routing information.

The ICMP redirect messages inform a host to update its routing information and to send packets on an alternate route. Suppose a host tries to send a data packet through a switch (say, S1) and S1 sends the data packet to another switch (say, S2). Also, suppose that a direct path from the host to S2 is available (that is, the host and S2 are on the same Ethernet segment). S1 then sends a protocol redirect message to inform the host that the best route for the destination is the direct route to S2. The host should then send packets directly to S2 instead of sending them through S1. S2 still sends the original packet that it received from S1 to the intended destination. Refer to RFC-1122 and RFC-4861 for more details on ICMP redirecting.

By default, the switch sends protocol redirect messages. For security reasons, you might want to disable the switch from sending protocol redirect messages.

Related Documentation

- [Configuring the Junos OS to Disable Sending Protocol Redirect Messages on EX-Series Switches \(CLI Procedure\) on page 33](#)

PART 2

Configuration

- [Configuration Tasks on page 23](#)
- [Configuration Statements on page 35](#)

CHAPTER 6

Configuration Tasks

- [Configuring DHCP Services \(J-Web Procedure\) on page 23](#)
- [Configuring a DHCP SIP Server \(CLI Procedure\) on page 26](#)
- [Configuring a DHCP Client \(CLI Procedure\) on page 27](#)
- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)
- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)
- [Enabling HTTPS and XNM-SSL Services on Switches Using Self-Signed Certificates \(CLI Procedure\) on page 31](#)
- [Manually Generating Self-Signed Certificates on Switches \(CLI Procedure\) on page 32](#)
- [Deleting Self-Signed Certificates \(CLI Procedure\) on page 33](#)
- [Configuring Junos OS to Disable Sending Protocol Redirect Messages on EX Series Switches \(CLI Procedure\) on page 33](#)

Configuring DHCP Services (J-Web Procedure)

Use the J-Web DHCP Configuration pages to configure DHCP pools for subnets and static bindings for DHCP clients on an ACX Series Converged Access Gateway router or EX Series switch. If DHCP pools or static bindings are already configured, use the Configure Global DHCP Parameters Configuration page to add settings for these pools and static bindings. Settings that have been previously configured for DHCP pools or static bindings are not overridden when you use the Configure Global DHCP Parameters Configuration page.

To configure the DHCP server:

1. Select **Configure > Services > DHCP**.
2. Access a DHCP Configuration page:
 - To configure a DHCP pool for a subnet, click **Add** in the DHCP Pools box.
 - To configure a static binding for a DHCP client, click **Add** in the DHCP Static Binding box.
 - To globally configure settings for existing DHCP pools and static bindings, click **Configure Global DHCP Parameters**.

3. Enter information into the DHCP Configuration pages as described in [Table 5 on page 24](#).
4. To apply the configuration, click **Apply**.



NOTE: After you make changes to the configuration in this page, you must commit the changes for them to take effect. To commit all changes to the active configuration, select **Commit Options > Commit**. See [Using the Commit Options to Commit Configuration Changes](#) for details about all commit options.

Table 5: DHCP Server Configuration Pages Summary

Field	Function	Your Action
DHCP Pool Information		
DHCP Subnet (required)	Specifies the subnet on which DHCP is configured.	Type an IP address prefix.
Address Range (Low) (required)	Specifies the lowest address in the IP address pool range.	Type an IP address that is part of the subnet specified in DHCP Subnet.
Address Range (High) (required)	Specifies the highest address in the IP address pool range.	Type an IP address that is part of the subnet specified in DHCP Subnet. This address must be greater than the address specified in Address Range (Low).
Exclude Addresses	Specifies addresses to exclude from the IP address pool.	<ul style="list-style-type: none"> To add an excluded address, type the address next to the Add button, and click Add. To delete an excluded address, select the address in the Exclude Addresses box, and click Delete.
Lease Time		
Maximum Lease Time (Seconds)	Specifies the maximum length of time a client can hold a lease. (Dynamic BOOTP lease lengths can exceed this maximum time.)	Type a number from 60 through 4,294,967,295 (seconds). You can also type infinite to specify a lease that never expires.
Default Lease Time (Seconds)	Specifies the length of time a client can hold a lease for clients that do not request a specific lease length.	Type a number from 60 through 2,147,483,647 (seconds). You can also type infinite to specify a lease that never expires.
Server Information		
Server Identifier	Specifies the IP address of the DHCP server reported to a client.	Type the IP address of the server. If you do not specify a server identifier, the primary address of the interface on which the DHCP exchange occurs is used.
Domain Name	Specifies the domain name that clients must use to resolve hostnames.	Type the name of the domain.

Table 5: DHCP Server Configuration Pages Summary (*continued*)

Field	Function	Your Action
Domain Search	Specifies the order—from top to bottom—in which clients must append domain names when resolving hostnames using DNS.	<ul style="list-style-type: none"> To add a domain name, type the name next to the Add button, and click Add. To delete a domain name, select the name in the Domain Search box, and click Delete.
DNS Name Servers	Defines a list of DNS servers the client can use, in the specified order—from top to bottom.	<ul style="list-style-type: none"> To add a DNS server, type an IP address next to the Add button, and click Add. To remove a DNS server, select the IP address in the DNS Name Servers box, and click Delete.
Gateway Routers	Defines a list of relay agents on the subnet, in the specified order—from top to bottom.	<ul style="list-style-type: none"> To add a relay agent, type an IP address next to the Add button, and click Add. To remove a relay agent, select the IP address in the Gateway Routers box, and click Delete.
WINS Servers	Defines a list of NetBIOS name servers, in the specified order—from top to bottom.	<ul style="list-style-type: none"> To add a NetBIOS name server, type an IP address next to the Add button, and click Add. To remove a NetBIOS name server, select the IP address in the WINS Servers box, and click Delete.
Boot Options		
Boot File	Specifies the path and filename of the initial boot file to be used by the client.	Type a path and filename.
Boot Server	Specifies the TFTP server that provides the initial boot file to the client.	Type the IP address or hostname of the TFTP server.
DHCP Static Binding Information		
DHCP MAC Address (required)	Specifies the MAC address of the client to be permanently assigned a static IP address.	Type the hexadecimal MAC address of the client.
Fixed IP Addresses (required)	Defines a list of IP addresses permanently assigned to the client. A static binding must have at least one fixed address assigned to it, but multiple addresses are also allowed.	<ul style="list-style-type: none"> To add an IP address, type it next to the Add button, and click Add. To remove an IP address, select it in the Fixed IP Addresses box, and click Delete.
Host Name	Specifies the name of the client used in DHCP messages exchanged between the server and the client. The name must be unique to the client within the subnet on which the client resides.	Type a client hostname.
Client Identifier	Specifies the name of the client used by the DHCP server to index its database of address bindings. The name must be unique to the client within the subnet on which the client resides.	Type a client identifier in string form.

Table 5: DHCP Server Configuration Pages Summary (*continued*)

Field	Function	Your Action
Hexadecimal Client Identifier	Specifies the name of the client, in hexadecimal form, used by the DHCP server to index its database of address bindings. The name must be unique to the client within the subnet on which the client resides.	Type a client identifier in hexadecimal form.

- Related Documentation**
- [Understanding DHCP Services for Switches on page 7](#)
 - [Monitoring DHCP Services on page 193](#)

Configuring a DHCP SIP Server (CLI Procedure)

You can use the **sip-server** statement on the EX Series switch to configure option 120 on a DHCP server. The DHCP server sends configured option values—Session Initiation Protocol (SIP) server addresses or names—to DHCP clients when they request them. Previously, you were only allowed to specify a SIP server by address using **[edit system services dhcp option 120]**. You specify either an IPv4 address or a fully qualified domain name to be used by SIP clients to locate a SIP server. You cannot specify both an address and name in the same statement.

To configure a SIP server using the **address** option:

```
[edit system services dhcp]
user@switch# set sip-server address
```

For example, to configure one address:

```
[edit system services dhcp]
user@switch set sip-server 172.168.0.11
```

To configure a SIP server using the **name** option:

```
[edit system services dhcp]
user@switch# set sip-server name
```

For example, to configure a name:

```
[edit system services dhcp]
user@switch set sip-server abc.example.com
```

- Related Documentation**
- [Configuring a DHCP Client \(CLI Procedure\) on page 27](#)
 - [Understanding DHCP Services for Switches on page 7](#)

Configuring a DHCP Client (CLI Procedure)

A Dynamic Host Configuration Protocol (DHCP) server can provide many valuable TCP/IP network services. DHCP can dynamically allocate IP parameters, such as an IP address, to clients, and it can also deliver software upgrades to clients.

DHCP configuration consists of two components, configuration of DHCP clients and configuration of a DHCP server. Client configuration determines how clients send a message requesting an IP address, whereas a DHCP server configuration enables the server to send an IP address configuration back to the client. This topic describes configuring a DHCP client. For directions for configuring a DHCP server, see [“Configuring a DHCP Server on Switches \(CLI Procedure\)” on page 28](#).

You can change DHCP client configurations from the switch, using client identifiers to indicate which clients you want to configure.

To configure a DHCP client, you configure an interface to belong to the DHCP family and specify additional attributes, as desired:

```
[edit]
user@switch# set interfaces interface-name unit number family inet dhcp
configuration-statement
```

The options that you can configure are listed in [Table 6 on page 27](#). Replace the variable *configuration-statement* with one or more of the statements listed in this table. If you do not explicitly configure these options, the switch uses default values for them.

Table 6: DHCP Client Settings

Configuration Statement	Description
client-identifier	Unique client ID—By default this consists of the hardware type (01 for Ethernet) and the MAC address (a.b.c.d). For this example, the value would be 01abcd.
lease-time	Time in seconds that a client holds the lease for an IP address assigned by a DHCP server. If a client does not request a specific lease time, then the server sends the default lease time. The default lease time on a Junos OS DHCP server is 1 day.
retransmission-attempt	Number of times the client attempts to retransmit a DHCP packet.
retransmission-interval	Time between transmission attempts.
server-address	IP address of the server that the client queries for an IP address.
update-server	TCP/IP settings learned from an external DHCP server to the DHCP server running on the switch are propagated.
vendor-option	Vendor class ID (CPU's manufacturer ID string) for the DHCP client.

- Related Documentation**
- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)
 - [Understanding DHCP Services for Switches on page 7](#)

Configuring a DHCP Server on Switches (CLI Procedure)

A Dynamic Host Configuration Protocol (DHCP) server can provide two valuable TCP/IP network services. DHCP can dynamically allocate IP parameters, such as an IP address, to clients and it can also deliver software upgrades to clients.

DHCP configuration consists of two components, optional reconfiguration of default settings on DHCP clients and configuration of a DHCP server. This topic covers configuration of the DHCP server. For directions for reconfiguring a DHCP client, see [“Configuring a DHCP Client \(CLI Procedure\)” on page 27](#).

You can configure either of two versions of a DHCP server on a switch—either the extended server version or the legacy server version. We recommend that you use the extended server configuration unless you need to keep your DHCP server configuration backward-compatible with the legacy server version.

This topic includes the following tasks:

1. [Configuring an Extended DHCP Server on a Switch on page 28](#)
2. [Configuring a Legacy DHCP Server on a Switch \(CLI Procedure\) on page 29](#)

Configuring an Extended DHCP Server on a Switch

To configure an extended DHCP server, you must configure a DHCP pool, indicate IP addresses for the pool, and create a server group. Additional configurations are optional.

Do not assign addresses that are already in use in the network to address pools. The extended DHCP server does not check whether addresses are already in use before assigning them to clients.

1. Create an address pool for DHCP IP addresses:

```
[edit]
user@switch# set access address-pool address-pool
```

2. Configure addresses for DHCP dynamic assignment:

```
[edit access address-assignment]
user@switch# set pool address-pool-name
```

3. Create a server group on the switch, providing a group name and an interface for DHCP:

```
[edit system services dhcp-local-server]
user@switch# set group group-name interface interface-name
```

4. Optionally, process the information protocol data units (PDUs):

```
[edit system services dhcp-local-server]
user@switch# set overrides process-inform
```

5. Optionally, redefine the order of attribute matching for pool selection:

```
[edit system services dhcp-local-server]
user@switch# set pool-match-order ip-address-first
```

6. Optionally, enable dynamic reconfiguration triggered by the DHCP extended server of all DHCP clients or only the DHCP clients serviced by the specified group of interfaces:

```
[edit system services dhcp-local-server]
user@switch# set reconfigure
```

```
[edit system services dhcp-local-server group group-name]
user@switch# set reconfigure
```

Configuring a Legacy DHCP Server on a Switch (CLI Procedure)

To configure a legacy DHCP server, you must configure a pool of IP addresses for dynamic assignment. You only need to supply a series of network addresses. Additional configurations are optional.

1. Configure a pool of IP addresses for dynamic assignment:

```
[edit system services dhcp]
user@switch# set pool (Legacy DHCP) network-range
```



NOTE: Step 2 through step 15 assign global values at the [edit system services dhcp] hierarchy level. You can also assign the same values to a specific pool using those same commands at the [edit system services dhcp pool *network-range*] hierarchy level.

2. Optionally, change the domain search list used to resolve hostnames:

```
[edit system services dhcp]
user@switch# set domain-search [ domain-list ]
```

3. Optionally, change the domain name server (DNS) name that the DHCP server advertises to clients:

```
[edit system services dhcp]
user@switch# set name-server address
```

4. Optionally, change the DHCP options:

```
[edit system services dhcp]
user@switch# set option id-number
```

5. Optionally, change the devices advertised to clients:

```
[edit system services dhcp]
user@switch# set router address
```

6. Optionally, change the SIP server:

```
[edit system services dhcp]
user@switch# set sip-server addresses-or-names
```

For more information, see “[Configuring a DHCP SIP Server \(CLI Procedure\)](#)” on page 26.

7. Optionally, change the DHCP client's hardware address:

```
[edit system services dhcp]
user@switch# set static-binding mac-address
```

8. Optionally, change the NetBIOS name server:

```
[edit system services dhcp]
user@switch# set wins-server address
```

Related Documentation

- [Configuring a DHCP Client \(CLI Procedure\) on page 27](#)
- [Configuring a DHCP SIP Server \(CLI Procedure\) on page 26](#)
- [Understanding DHCP Services for Switches on page 7](#)

Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure)

You can configure an EX Series switch to act as an extended DHCP relay agent. This means that a locally attached host can issue a DHCP request as a broadcast message and the switch configured for DHCP relay relays the message to a specified DHCP server. Configure a switch to be a DHCP relay agent if you have locally attached hosts and a remote DHCP server.

Before you begin:

- Ensure that the switch can connect to the DHCP server.

To configure a switch to act as an extended DHCP relay agent server:

1. Create at least one DHCP server group, which is a group of 1 through 5 DHCP server IP addresses:

```
[edit forwarding-options dhcp-relay]
user@switch# set server-group server-group-name ip-address
```

2. Set the global active DHCP server group. The DHCP relay server relays DHCP client requests to the DHCP servers defined in the active server group:

```
[edit forwarding-options dhcp-relay]
user@switch# set active-server-group server-group-name
```

3. Create a DHCP relay group that includes at least one interface. DHCP relay runs on the interfaces defined in DHCP groups:

```
[edit forwarding-options dhcp-relay]
user@switch# set group group-name interface interface-name
```

4. (Optional) Configure overrides of default DHCP relay behaviors, at the global level. See the override options in the [overrides](#) statement.

```
[edit forwarding-options dhcp-relay]
user@switch# set overrides
```

5. (Optional) Configure DHCP relay to use the DHCP vendor class identifier option (option 60) in DHCP client packets, at the global level:

```
[edit forwarding-options dhcp-relay]
user@switch# set relay-option option-number 60
```

6. (Optional) Configure settings for a DHCP relay group that override the settings at the global level, using these statements:


```
[edit forwarding-options dhcp-relay group group-name]
user@switch# set active-server-group server-group-name
user@switch# set overrides
user@switch# set relay-option option-number 60
```

7. (Optional) Configure settings for a DHCP relay group interface that override the settings at the global and **group** levels, using these statements:

```
[edit forwarding-options dhcp-relay group group-name interface interface-name]
user@switch# exclude
user@switch# set overrides
user@switch# set trace
user@switch# set upto upto-interface-name
```

Related Documentation

- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)
- [Configuring a DHCP Client \(CLI Procedure\) on page 27](#)
- [Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12](#)

Enabling HTTPS and XNM-SSL Services on Switches Using Self-Signed Certificates (CLI Procedure)

You can use the system-generated self-signed certificate or a manually generated self-signed certificate to enable Web management HTTPS and XNM-SSL services.

- To enable HTTPS services using the automatically generated self-signed certificate:

```
[edit]
user@switch# set system services web-management https system-generated-certificate
```

- To enable HTTPS services using a manually generated self-signed certificate:

```
[edit]
user@switch# set system services web-management https pki-local-certificate
certificate-id-name
```



NOTE: The value of the *certificate-id-name* must match the name you specified when you generated the self-signed certificate manually.

- To enable XNM-SSL services using a manually generated self-signed certificate:

```
[edit]
user@switch# set system services xnm-ssl local-certificate certificate-id-name
```



NOTE: The value of the *certificate-id-name* must match the name you specified when you generated the self-signed certificate manually.

Related Documentation

- [Manually Generating Self-Signed Certificates on Switches \(CLI Procedure\) on page 32](#)
- [Understanding Self-Signed Certificates on EX Series Switches on page 17](#)

Manually Generating Self-Signed Certificates on Switches (CLI Procedure)

EX Series switches allow you to generate custom self-signed certificates and store them in the file system. The certificate you generate manually can coexist with the automatically generated self-signed certificate on the switch. To enable secure access to the switch over SSL, you can use either the system-generated self-signed certificate or a certificate you have generated manually.

To generate self-signed certificates manually, you must complete the following tasks:

- [Generating a Public-Private Key Pair on Switches on page 32](#)
- [Generating Self-Signed Certificates on Switches on page 32](#)

Generating a Public-Private Key Pair on Switches

A digital certificate has an associated cryptographic key pair that is used to sign the certificate digitally. The cryptographic key pair comprises a public key and a private key. When you generate a self-signed certificate, you must provide a public-private key pair that can be used to sign the self-signed certificate. Therefore, you must generate a public-private key pair before you can generate a self-signed certificate.

To generate a public-private key pair:

```
user@switch> request security pki generate-key-pair certificate-id certificate-id-name
```



NOTE: Optionally, you can specify the encryption algorithm and the size of the encryption key. If you do not specify the encryption algorithm and encryption key size, default values are used. The default encryption algorithm is RSA, and the default encryption key size is 1024 bits.

After the public-private key pair is generated, the switch displays the following:

```
generated key pair certificate-id-name, key size 1024 bits
```

Generating Self-Signed Certificates on Switches

To generate the self-signed certificate manually, include the certificate ID name, the subject of the distinguished name (DN), the domain name, the IP address of the switch, and the e-mail address of the certificate holder:

```
user@switch> request security pki local-certificate generate-self-signed certificate-id  
certificate-id-name domain-name domain-name email email-address ip-address switch-ip-address  
subject subject-of-distinguished-name
```

The certificate you have generated is stored in the switch's file system. The certificate ID you have specified while generating the certificate is a unique identifier that you can use to enable the HTTPS or XNM-SSL services.

To verify that the certificate was generated and loaded properly, enter the **show security pki local-certificate** operational command.

- Related Documentation**
- [Enabling HTTPS Service on Switches Using Self-Signed Certificates \(CLI Procedure\) on page 31](#)
 - [Understanding Self-Signed Certificates on EX Series Switches on page 17](#)

Deleting Self-Signed Certificates (CLI Procedure)

You can delete a self-signed certificate that is automatically or manually generated from the EX Series switch. When you delete the automatically generated self-signed certificate, the switch generates a new self-signed certificate and stores it in the file system.

- To delete the automatically generated certificate and its associated key pair from the switch:

```
user@switch> clear security pki local-certificate system-generated
```
- To delete a manually generated certificate and its associated key pair from the switch:

```
user@switch> clear security pki local-certificate certificate-id certificate-id-name
```
- To delete all manually generated certificates and their associated key pairs from the switch:

```
user@switch> clear security pki local-certificate all
```

- Related Documentation**
- [Manually Generating Self-Signed Certificates on Switches \(CLI Procedure\) on page 32](#)
 - [Understanding Self-Signed Certificates on EX Series Switches on page 17](#)

Configuring Junos OS to Disable Sending Protocol Redirect Messages on EX Series Switches (CLI Procedure)

EX series switches support sending ICMP redirect messages for both IPv4 and IPv6 traffic. By default, the switch sends protocol redirect messages. For security reasons, you may want to disable the switch from sending protocol redirect messages.

To disable the sending of redirect messages by the switch:

- Disable sending protocol redirect messages for the entire switch:

For IPv4 traffic:

```
[edit system]
user@switch# set no-redirects
```

For IPv6 traffic:

```
[edit system]
user@switch# set no-redirects-ipv6
```

- Disable sending the protocol redirect messages on a specific interface:

For IPv4 traffic:

```
[edit interfaces interface-name unit logical-unit-number family family]
user@switch# set no-redirects
```

For IPv6 traffic:

```
[edit interfaces interface-name unit logical-unit-number family family]  
user@switch# set no-redirects-ipv6
```

To re-enable the sending of redirect messages on the switch, delete the **no-redirects** statement (for IPv4 traffic) or the **no-redirects-ipv6** statement (for IPv6 traffic) from the configuration.

**Related
Documentation**

- [Understanding the Protocol Redirect Mechanism on EX Series Switches on page 19](#)
- [Junos® OS Network Interfaces](#)

CHAPTER 7

Configuration Statements

- [\[edit system\] Configuration Statement Hierarchy on EX Series Switches on page 35](#)

[\[edit system\] Configuration Statement Hierarchy on EX Series Switches](#)

This topic lists supported and unsupported configuration statements in the **[edit system]** hierarchy level on EX Series switches.

- *Supported* statements are those that you can use to configure some aspect of a software feature on the switch.
- *Unsupported* statements are those that appear in the command-line interface (CLI) on the switch, but that have no effect on switch operation if you configure them.
- Not all features are supported on all switch platforms. For detailed information about feature support on specific EX Series switch platforms, see EX Series Switch Software Features Overview.

This topic lists:

- [Supported Statements in the \[edit system\] Hierarchy Level on page 35](#)
- [Unsupported Statements in the \[edit system\] Hierarchy Level on page 48](#)

Supported Statements in the **[edit system]** Hierarchy Level

The following hierarchy shows the **[edit system]** configuration statements supported on EX Series switches.

```
system {
  accounting {
    destination {
      radius {
        server {
          server-address {
            accounting-port port-number;
            port port-number;
            retry number;
            secret password;
            source-address address;
            timeout seconds;
          }
        }
      }
    }
  }
}
```

```
}
tacplus {
  server {
    server-address {
      port port-number;
      secret password;
      single-connection;
      timeout seconds;
    }
  }
}
events
traceoptions {
  file;
  flag;
  no-remote-trace;
}
}
allow-v4-mapped-packets;
archival {
  configuration {
    archive-sites {
      ftp://<username>:<password>@<host>:<port>/<url-path>;
      scp://<username>:<password>@<host>:<port>/<url-path>;
    }
    transfer-interval interval;
    transfer-on-commit;
  }
}
arp {
  aging-timer minutes;
  gratuitous-arp-delay;
  gratuitous-arp-on-ifup;
  interfaces interface-name {
    aging-timer minutes;
  }
  passive-learning;
  purging;
}
authentication-order [ authentication-methods ];
autoinstallation {
  configuration-servers {
    server-url <password password>;
  }
  interfaces {
    interface-name {
      bootp;
      rarp;
    }
  }
}
}
backup-router address <destination [ destination-addresses ]>;
commit {
  synchronize (and-quit | force);
}
```

```

(compress-configuration-files | no-compress-configuration-files);
default-address-selection;
domain-name domain-name;
domain-search [ domain-list ];
extensions {
  providers {
    provider-id {
      license-type license deployment-scope [ deployments ];
    }
  }
  resource-limits {
    package package-name {
      resources {
        cpu {
          priority number;
          time seconds;
        }
        file {
          core-size bytes;
          open number;
          size bytes;
        }
        memory {
          data-size bytes;
          locked-in bytes;
          resident-set-size bytes;
          socket-buffers bytes;
          stack-size bytes;
        }
      }
    }
  }
  process process-ui-name {
    resources {
      cpu {
        priority number;
        time seconds;
      }
      file {
        core-size bytes;
        open number;
        size bytes;
      }
      memory {
        data-size bytes;
        locked-in bytes;
        resident-set-size bytes;
        socket-buffers bytes;
        stack-size bytes;
      }
    }
  }
}
internet-options {
  (gre-path-mtu-discovery | no-gre-path-mtu-discovery);
  icmpv4-rate-limit bucket-size number packet-rate rate;
}

```

```

icmpv6-rate-limit bucket-size number packet-rate rate;
(ipip-path-mtu-discovery | no-ipip-path-mtu-discovery);
ipv6-duplicate-addr-detection-transmits;
(ipv6-path-mtu-discovery | noipv6-path-mtu-discovery);
ipv6-path-mtu-discovery-timeout;
ipv6-reject-zero-hop-limit | no-ipv6-reject-zero-hop-limit;
no-tcp-reset;
no-tcp-rfc1323-paws;
no-tcp-rfc1323;
(path-mtu-discovery | no-path-mtu-discovery);
source-port upper-limit port-number;
(source-quench | no-source-quench);
tcp-drop-synfin-set;
}
kernel-replication;
license {
  autoupdate {
    url url{
      password password;
    }
  }
  renew {
    before-expiration days;
    interval hours;
  }
  traceoptions {
    file <filename> <files number> <size maximum-file-size> <world-readable |
      no-world-readable>;
    flag flag;
    no-remote-trace;
  }
}
location {
  altitude feet;
  building name;
  country-code code;
  floor number;
  hcoord horizontal-coordinate;
  lata service-area;
  latitude degrees;
  longitude degrees;
  npa-nxx number;
  postal-code postal-code;
  rack number;
  vcoord vertical-coordinate;
}
login {
  announcement "text";
  class class-name {
    access-end "hh<:mm:<ss>>";
    access-start "hh<:mm:<ss>>";
    allow-commands "regular-expression";
    allow-configuration-regexps "regular-expression";
    allowed-days [ sunday monday tuesday wednesday thursday friday saturday ];
    deny-commands "regular-expression";
    deny-configuration-regexps "regular-expression";
  }
}

```



```

    idle-timeout minutes;
    login-alarms;
    login-script script-name;
    login-tip;
    permissions [ permissions ];
    security-role;
}
deny-sources {
    address;
}
message "text";
password {
    change-type (character-sets | set-transitions);
    format (des | md5 | sha1);
    maximum-length number;
    minimum-changes number;
    minimum-length number;
}
retry-options {
    backoff-factor number;
    backoff-threshold number;
    lockout-period number;
    maximum-time number;
    minimum-time number;
    tries-before-disconnect number;
}
user username {
    authentication {
        (encrypted-password "password" | plain-text-password);
        load-key-file filename;
        ssh-dsa "public-key" <from hostname>;
        ssh-rsa "public-key" <from hostname>;
    }
    class class-name;
    full-name "complete-name";
    uid uid-value;
}
}
max-configurations-on-flash number;
name-server {
    address;
}
nd-maxmcast-solicit;
nd-retransmit-timer;
no-multicast-echo;
no-neighbor-learn;
no-ping-record-route;
no-ping-time-stamp;
}
ntp {
    authentication-key key-number type md5 value password;
    boot-server address;
    broadcast <address> <key key-number> <ttl value> <version value>;
    broadcast-client;
    multicast-client <address>;
    peer address <key key-number> <prefer> <version value>;
}

```

```
server address <key key-number> <prefer> <version value>;
source-address source-address;
trusted-key [ key-numbers ];
}
ports {
  auxiliary {
    disable;
    insecure;
    port-type (mini-usb | rj45);
    type (ansi | small-xterm | vt100 | xterm);
  }
  console {
    disable;
    insecure;
    log-out-on-disconnect;
    type (ansi | small-xterm | vt100 | xterm);
  }
}
radius-options {
  attributes {
    nas-ip-address address;
  }
  password-protocol mschap-v2;
}
radius-server {
  server-address {
    accounting-port port-number;
    port port-number;
    retry number;
    secret password;
    source-address source-address;
    timeout seconds;
  }
}
root-authentication {
  (encrypted-password "password" | plain-text-password);
  load-key-file filename;
  ssh-dsa "public-key" <from hostname>;
  ssh-rsa "public-key" <from hostname>;
}
(saved-core-context | no-saved-core-context);
saved-core-files number;
scripts {
  commit {
    allow-transients;
    direct-access;
    file filename.xsl {
      checksum (md5 | sha-256 | sha2) hash;
      optional;
      refresh;
      refresh-from url;
      source url;
    }
    refresh;
    refresh-from url;
    traceoptions {
```

```

    file <filename> <files number> <size maximum-file-size> <world-readable |
      no-world-readable>;
    flag flag;
    no-remote-trace;
  }
}
load-scripts-from-flash;
op {
  file filename.xml {
    arguments {
      argument-name {
        description descriptive-text;
      }
    }
    checksum (md5 | sha-256 | sha2) hash;
    command filename-alias;
    description descriptive-text;
    refresh;
    refresh-from url;
    source url;
  }
  no-allow-url;
  refresh;
  refresh-from url;
  traceoptions {
    file <filename> <files number> <size maximum-file-size> <world-readable |
      no-world-readable>;
    flag flag;
    no-remote-trace;
  }
}
}
services {
  database-replication {
    traceoptions {
      file <filename> <files number> <match regular-expression>
        <size maximum-file-size> <world-readable | no-world-readable>;
      flag flag;
      no-remote-trace;
    }
  }
}
dhcp {
  boot-file filename;
  boot-server (address | hostname);
  default-lease-time (seconds | infinite);
  domain-name domain-name;
  domain-search {
    domain-suffix;
  }
  maximum-lease-time (seconds | infinite);
  name-server {
    address;
  }
  next-server address;
  option option-index (array type-name [ type-values ] | byte 8-bit-value | flag (false |
    off | on | true) | integer signed-32-bit-value | ip-address address |

```

```

    short signed-16-bit-value | string text-string | unsigned-integer 32-bit-value |
    unsigned-short 16-bit-value);
pool ip-prefix/prefix-length {
    address-range low address high address;
    boot-file filename;
    boot-server (address | hostname);
    default-lease-time (seconds | infinite);
    domain-name domain-name;
    domain-search {
        domain-suffix;
    }
    exclude-address {
        ipv4-address;
    }
    maximum-lease-time (seconds | infinite);
    name-server {
        address;
    }
    next-server address;
    option option-index (array type-name type-values ] | byte 8-bit-value | flag (false |
        off | on | true) | integer signed-32-bit-value | ip-address address |
        short signed-16-bit-value | string text-string | unsigned-integer 32-bit-value |
        unsigned-short 16-bit-value);
    propagate-settings interface-name;
    router {
        address;
    }
    server-identifier identifier;
    sip-server {
        address {
            address;
        }
        name {
            name;
        }
    }
    wins-server {
        address;
    }
}
router {
    address;
}
server-identifier identifier;
sip-server {
    address {
        address;
    }
    name {
        name;
    }
}
static-binding mac-address {
    boot-file filename;
    boot-server (address | hostname);
    client-identifier (ascii ascii-text | hexadecimal hexadecimal-value);

```

```

domain-name domain-name;
domain-search {
    domain-suffix;
}
fixed-address {
    ipv4-address;
}
host-name hostname;
name-server {
    address;
}
next-server address;
option option-index (array type-name type-values ] | byte 8-bit-value | flag (false |
    off | on | true) | integer signed-32-bit-value | ip-address address |
    short signed-16-bit-value | string text-string | unsigned-integer 32-bit-value |
    unsigned-short 16-bit-value);
router {
    address;
}
server-identifier identifier;
sip-server {
    address {
        address;
    }
    name {
        name;
    }
}
wins-server {
    address;
}
}
traceoptions {
    file <filename> <files number> <match regular-expression>
        <size maximum-file-size> <world-readable | no-world-readable>;
    flag flag;
    level severity;
    no-remote-trace;
}
wins-server {
    address;
}
}
dhcp-local-server {
    group group-name {
        interface interface-name {
            exclude;
            overrides {
                client-discover-match <option60-and-option82>;
                interface-client-limit number;
                no-arp;
                process-inform {
                    pool pool-name;
                }
            }
        }
        trace;
    }
}

```

```

        upto upto-interface-name;
    }
    overrides {
        client-discover-match <option60-and-option82>;
        interface-client-limit number;
        no-arp;
        process-inform {
            pool pool-name;
        }
    }
    reconfigure {
        attempts attempt-count;
        clear-on-abort;
        timeout timeout-value;
        token token-value;
        trigger {
            radius-disconnect;
        }
    }
}
interface-traceoptions {
    file <filename> <files number> <match regular-expression> <size size>
        <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
}
overrides {
    client-discover-match <option60-and-option82>;
    interface-client-limit number;
    no-arp;
    process-inform {
        pool pool-name;
    }
}
pool-match-order {
    external-authority;
    ip-address-first;
    option-82;
}
reconfigure {
    attempts attempt-count;
    clear-on-abort;
    timeout timeout-value;
    token token-value;
    trigger {
        radius-disconnect;
    }
}
traceoptions {
    file <filename> <files number> <match regular-expression>
        <size maximum-file-size> <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
}
}
finger {

```

```

    connection-limit limit;
    rate-limit limit;
}
ftp {
    connection-limit limit;
    rate-limit limit;
}
netconf {
    ssh {
        connection-limit limit;
        port number;
        rate-limit limit;
    }
}
outbound-ssh {
    client client-id {
        address {
            port port-number;
            retry number;
            timeout seconds;
        }
        device-id device-id;
        keep-alive {
            retry number;
            timeout seconds;
        }
        reconnect-strategy (in-order | sticky);
        secret secret;
        services netconf;
    }
    traceoptions {
        file <filename> <files number> <match regular-expression>
            <size maximum-file-size> <world-readable | no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}
service-deployment {
    local-certificate certificate-name;
    servers {
        server-address {
            port port-number;
            security-options {
                (ssl3 | tls);
            }
            user username;
        }
    }
    source-address source-address;
    traceoptions {
        file <filename> <files number> <match regular-expression>
            <size maximum-file-size> <world-readable | no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}

```

```
ssh {
  ciphers;
  connection-limit limit;
  hostkey-algorithm {
    ssh-dss | no-ssh-dss;
    ssh-ecdsa | no-ssh-ecdsa;
    ssh-rsa | no-ssh-rsh;
  }
  key-exchange;
  macs;
  protocol-version [ v1 v2 ];
  rate-limit limit;
  root-login (allow | deny | deny-password);
}
subscriber-management {
  gres-route-flush-delay;
  maintain-subscriber {
    interface-delete;
  }
  traceoptions {
    file filename <files number> <match regular-expression> <size maximum-file-size>
      <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
  }
}
telnet {
  connection-limit limit;
  rate-limit limit;
}
web-management {
  control {
    max-threads number;
  }
  http {
    interface [ interface-names ];
    port port-number;
  }
  https {
    interface [ interface-names ];
    (local-certificate certificate-name | pki-local-certificate certificate-name |
      system-generated-certificate);
    port port-number;
  }
  management-url url;
  session {
    idle-timeout minutes;
    session-limit number;
  }
}
xnm-clear-text {
  connection-limit limit;
  rate-limit limit;
}
xnm-ssl {
  connection-limit limit;
```



```

        local-certificate certificate-name;
        rate-limit limit;
    }
}
static-host-mapping {
    hostname {
        alias [ aliases ];
        inet [ addresses ];
        inet6 [ addresses ];
        sysid system-identifier;
    }
}
syslog {
    allow-duplicates;
    archive <files number> <size size> <world-readable | no-world-readable>;
    console {
        facility severity;
    }
    file filename {
        allow-duplicates;
        facility severity;
        archive <archive-sites {ftp-url <password password>}> <files number> <size size>
            <start-time "YYYY-MM-DD.hh:mm"> <transfer-interval minutes> <world-readable |
            no-world-readable>;
        explicit-priority;
        match "regular-expression";
        structured-data {
            brief;
        }
    }
}
host (hostname | other-routing-engine) {
    facility severity;
    explicit-priority;
    facility-override facility;
    log-prefix string;
    match "regular-expression";
}
log-rotate-frequency;
time-format (year | millisecond | year millisecond);
user (username | *) {
    facility severity;
    explicit-priority;
    match "regular-expression";
}
}
tacplus-options {
    (exclude-cmd-attribute | no-cmd-attribute-value);
    service-name service-name;
}
tacplus-server {
    server-address {
        port port-number;
        secret password;
        single-connection;
        source-address source-address;
        timeout seconds;
    }
}

```

```
    }  
  }  
  time-zone (GMT | GMT+hour-offset | GMT-hour-offset | zone-name);  
  tracing destination-override syslog host address;  
  use-imported-time-zones;  
}
```

Unsupported Statements in the [edit system] Hierarchy Level

All statements in the **[edit system]** hierarchy level that are displayed in the command-line interface (CLI) on the switch are supported on the switch and operate as documented with the following exceptions:

Table 7: Unsupported [edit system] Configuration Statements on EX Series Switches

Statement	Hierarchy
NOTE: Variables, such as <i>interface-name</i> , are not shown in the statements or hierarchies.	
mirror-flash-on-disk	[edit system]
processes	[edit system]

- Related Documentation**
- Configuration File Management on EX Series Switches
 - EX Series Switches Hardware and CLI Terminology Mapping

active-server-group

Syntax	<code>active-server-group <i>server-group-name</i>;</code>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay group <i>group-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> dhcpv6], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6], [edit logical-systems <i>logical-system-name</i> forwarding-options group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options group <i>group-name</i> dhcpv6], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> dhcpv6], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay] [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Apply a DHCP relay agent configuration to the named group of DHCP server addresses. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>A group-specific configuration overrides a global option.</p>
Options	server-group-name —Name of the group of DHCP or DHCPv6 server addresses to which the DHCP or DHCPv6 relay agent configuration applies.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Extended DHCP Relay Agent Overview Configuring Active Server Groups Group-Specific DHCP Relay Options dhcp-relay dhcp-relay (EX Series Switches only) on page 80 Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\)](#) on page 30

address-assignment (Address-Assignment Pools)

Syntax

```
address-assignment {
  abated-utilization percentage;
  abated-utilization-v6 percentage;
  high-utilization percentage;
  high-utilization-v6 percentage;
  neighbor-discovery-router-advertisement ndra-pool-name;
  pool pool-name {
    family family {
      dhcp-attributes {
        protocol-specific attributes;
      }
      host hostname {
        hardware-address mac-address;
        ip-address ip-address;
      }
      network ip-prefix / <prefix-length>;
      prefix ipv6-prefix;
      range range-name {
        high upper-limit;
        low lower-limit;
        prefix-length prefix-length;
      }
    }
    link pool-name;
  }
}
```

Hierarchy Level [edit access]

Release Information Statement introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Configure address-assignment pools that can be used by different client applications.



NOTE: Subordinate statement support depends on the platform. See individual statement topics for more detailed support information.

Options *pool-name*—Name assigned to an address-assignment pool.

The remaining statements are explained separately.

Required Privilege Level admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- Address-Assignment Pools Overview
- Configuring Address-Assignment Pools

- [Configuring an Address-Assignment Pool for L2TP LNS with Inline Services](#)
- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)

address-pool

Syntax	<code>address-pool <i>address-pool-name</i>;</code>
Hierarchy Level	[edit access address-assignment]
Release Information	Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Allocate IP addresses for extended DHCP clients.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

aggregate-clients (DHCP Relay Agent)

Syntax	<code>aggregate-clients (merge replace);</code>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 9.3.</p> <p>Options merge and replace introduced in Junos OS Release 9.5.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Specify that the router merge (chain) client attributes such as firewall filters and CoS attributes or replace them when multiple client sessions exist on the same underlying VLAN. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>EX Series switches do not support DHCPv6.</p> <p>Not supported for IP demux subscriber interfaces.</p>
Options	<p>merge—Aggregate multiple client attributes for the same subscriber (logical interface)</p> <p>replace—Replace the entire logical interface whenever a new client logs in to the network using the same VLAN logical interface</p>

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">• dhcp-relay• dhcp-relay (EX Series Switches only) on page 80• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30• Attaching Dynamic Profiles to DHCP Subscriber Interfaces• Group-Specific DHCP Relay Options

always-write-giaddr

Syntax	<code>always-write-giaddr;</code>
Hierarchy Level	<code>[edit forwarding-options dhcp-relay overrides],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i> overrides],</code> <code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay overrides],</code> <code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code> <code>forwarding-options dhcp-relay overrides],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code> <code>forwarding-options dhcp-relay group <i>group-name</i> overrides],</code> <code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides],</code> <code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group</code> <code><i>group-name</i> overrides],</code> <code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group</code> <code><i>group-name</i> interface <i>interface-name</i> overrides]</code>
Release Information	Statement introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Overwrite the gateway IP address (giaddr) of every DHCP packet with the giaddr of the DHCP relay agent before forwarding the packet to the DHCP server.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Extended DHCP Relay Agent Overview• dhcp-relay• dhcp-relay (EX Series Switches only) on page 80• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

authentication (DHCP Local Server)

Syntax	<pre> authentication { password <i>password-string</i>; username-include { circuit-type; client-id; delimiter <i>delimiter-character</i>; domain-name <i>domain-name-string</i>; interface-name ; logical-system-name; mac-address; option-60; option-82 <circuit-id> <remote-id>; relay-agent-interface-id; relay-agent-remote-id; relay-agent-subscriber-id; routing-instance-name; user-prefix <i>user-prefix-string</i>; } }</pre>
Hierarchy Level	<pre> [edit system services dhcp-local-server], [edit system services dhcp-local-server dhcpv6], [edit system services dhcp-local-server dhcpv6 group group-name], [edit system services dhcp-local-server group group-name], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server ...], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server ...], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server ...]</pre>
Release Information	Statement introduced in Junos OS Release 9.1.
Description	<p>Configure the parameters the router sends to the external AAA server. A group configuration takes precedence over a global DHCP relay or DHCP local server configuration.</p> <p>The remaining statements are explained separately.</p>
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"> Using External AAA Authentication Services with DHCP

authentication (DHCP Relay Agent)

Syntax	<pre> authentication { password <i>password-string</i>; username-include { circuit-type; client-id; delimiter <i>delimiter-character</i>; domain-name <i>domain-name-string</i>; interface-name; logical-system-name; mac-address; option-60; option-82 [circuit-id] [remote-id]; relay-agent-interface-id; relay-agent-remote-id; relay-agent-subscriber-id; routing-instance-name; user-prefix <i>user-prefix-string</i>; } } </pre>
Hierarchy Level	<pre> [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] </pre>
Release Information	<p>Statement introduced in Junos OS Release 9.1.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p>
Description	<p>Configure the parameters the router sends to the external AAA server. A group configuration takes precedence over a global DHCP relay configuration. Use the statement at the [edit...dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> dhcp-relay Using External AAA Authentication Services with DHCP

boot-file

Syntax	<code>boot-file <i>filename</i>;</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Set the boot file advertised to DHCP clients. After the client receives an IP address and the boot file location from the DHCP server, the client uses the boot image stored in the boot file to complete DHCP setup.
Options	<i>filename</i> —The location of the boot file on the boot server. The filename can include a pathname.
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"> Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers boot-server on page 58

boot-server (DHCP)

Syntax	<code>boot-server (address hostname);</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Configure the name of the boot server advertised to DHCP clients. The client uses a boot file located on the boot server to complete DHCP setup.
Options	<ul style="list-style-type: none">• address—IP address of a DHCP boot server.• hostname—Hostname of a DHCP boot server.
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">• Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers• boot-file on page 57

bootp

Syntax	<pre> bootp { client-response-ttl <i>number</i>; description <i>text-description</i>; apply-secondary-as-giaddr <i>text-description</i>; (QFX platforms only) interface (<i>interface-name</i> <i>interface-group</i>) { client-response-ttl <i>number</i>; description <i>text-description</i>; maximum-hop-count <i>number</i>; minimum-wait-time <i>seconds</i>; no-listen; server <i>address</i> { logical-system <i>logical-system-name</i> <routing-instance [<default> <i>routing-instance-names</i>]>; routing-instance [<default> <i>routing-instance-names</i>]; } smart-relay-agent (QFX platforms only) } maximum-hop-count <i>number</i>; minimum-wait-time <i>seconds</i>; relay-agent-option; server <i>address</i> { <logical-system <i>logical-system-name</i>> <routing-instance [<i>routing-instance-names</i>]>; } } </pre>
Hierarchy Level	[edit forwarding-options helpers]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for QFX Series switches.</p>
Description	<p>Configures a router, switch, or interface to act as a Dynamic Host Configuration Protocol (DHCP) or bootstrap protocol (BOOTP) relay agent.</p> <p>DHCP relaying is disabled.</p>
Options	The remaining statements are explained separately.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents Setting Up DHCP Option 82 with the Switch as a Relay Agent Between Clients and DHCP Server (CLI Procedure)

ca-name

Syntax	<code>ca-name <i>ca-identity</i>;</code>
Hierarchy Level	[edit security certificates certification-authority]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Specify the certificate authority (CA) identity to use in the certificate request.
Options	<i>ca-identity</i> —CA identity to use in the certificate request.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PIC

cache-size

Syntax	<code>cache-size <i>bytes</i>;</code>
Hierarchy Level	[edit security certificates]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Configure the cache size for digital certificates.
Options	<i>bytes</i> —Cache size for digital certificates. Range: 64 through 4,294,967,295 Default: 2 megabytes (MB)



NOTE: We recommend that you limit your cache size to 4 MB.

Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PIC

cache-timeout-negative

Syntax	cache-timeout-negative <i>seconds</i> ;
Hierarchy Level	[edit security certificates]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Configure a negative cache for digital certificates.
Options	seconds —Negative time to cache digital certificates, in seconds. Range: 10 through 4,294,967,295 Default: 20



CAUTION: Configuring a large negative cache value can lead to a denial-of-service attack.

Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration
Related Documentation	<ul style="list-style-type: none"> Configuring Digital Certificates for an ES PIC

certificates

Syntax	<pre>certificates { cache-size bytes; cache-timeout-negative seconds; certification-authority ca-profile-name { ca-name ca-identity; crt file-name; encoding (binary pem); enrollment-url url-name; file certificate-filename; ldap-url url-name; } enrollment-retry attempts; local certificate-name { certificate-key-string; load-key-file URL filename; } maximum-certificates number; path-length certificate-path-length; }</pre>
Hierarchy Level	[edit security]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Configure the digital certificates for IPsec. The remaining statements are explained separately.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PIC

certification-authority

Syntax	<pre>certification-authority <i>ca-profile-name</i> { <i>ca-name</i> <i>ca-identity</i>; <i>crl</i> <i>file-name</i>; <i>encoding</i> (binary pem); <i>enrollment-url</i> <i>url-name</i>; <i>file</i> <i>certificate-filename</i>; <i>ldap-url</i> <i>url-name</i>; }</pre>
Hierarchy Level	[edit security certificates]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	<p>(Encryption interface on M Series and T Series routers and EX Series switches only)</p> <p>Configure a certificate authority profile name.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration</p>
Related Documentation	<ul style="list-style-type: none"> Configuring Digital Certificates for an ES PIC

circuit-id (DHCP Relay Agent)

Syntax	<pre>circuit-id { prefix <i>prefix</i>; use-interface-description (logical device); }</pre>
Hierarchy Level	<pre>[edit forwarding-options dhcp-relay <i>relay-option-82</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> <i>relay-option-82</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <i>relay-option-82</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <i>relay-option-82</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <i>relay-option-82</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <i>relay-option-82</i>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <i>relay-option-82</i>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <i>relay-option-82</i>]</pre>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	<p>Specify the Agent Circuit ID suboption (suboption 1) of the DHCP relay agent information option (option 82) to include in DHCP packets destined for a DHCP server. Optionally specify that the suboption includes a prefix or textual description, or both, instead of circuit-id.</p> <p>The format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces that do not use virtual LANs (VLANs) or stacked VLANs (S-VLANs) is as follows:</p> <pre>(fe ge)-fpc/pic/port</pre> <p>The format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces that use VLANs is as follows:</p> <pre>(fe ge)-fpc/pic/port:vlan-id</pre> <p>The format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces that use S-VLANs is as follows:</p> <pre>(fe ge)-fpc/pic/port:svlan-id-vlan-id</pre> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Enabling and Disabling Insertion of Option 82 Information Configuring Agent Circuit ID Information

client-identifier

Syntax	<code>client-identifier (ascii <i>client-id</i> hexadecimal <i>client-id</i>);</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Configure the client's unique identifier. This identifier is used by the DHCP server to index its database of address bindings. Either a client identifier or the client's MAC address is required to uniquely identify the client on the network.
Options	<i>client-id</i> —A name or number that uniquely identifies the client on the network. The client identifier can be an ASCII string or hexadecimal digits.
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"> Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers Configuring a DHCP Server on Switches (CLI Procedure) on page 28

client-identifier (DHCP Client)

Syntax	client-identifier (ascii <i>ascii</i> hexadecimal <i>hexadecimal</i>);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet dhcp]
Release Information	Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Specify an ASCII or hexadecimal identifier for the Dynamic Host Configuration Protocol (DHCP) client. The DHCP server identifies a client by a client-identifier value, which must be unique for each client.
Default	If you do not include client-identifier in the configuration, the DHCP server uses the client hardware type and MAC address to identify the client.
Options	ascii <i>ascii</i> —Identifier consisting of ASCII characters, such as a fully qualified domain name. hexadecimal <i>hexadecimal</i> —Identifier consisting of hexadecimal numbers (0-9, a-f, A-F). Do not use colons.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring a DHCP Client (CLI Procedure) on page 27

connection-limit

Syntax	<code>connection-limit <i>limit</i>;</code>
Hierarchy Level	<code>[edit system services finger],</code> <code>[edit system services ftp],</code> <code>[edit system services netconf ssh],</code> <code>[edit system services ssh],</code> <code>[edit system services telnet],</code> <code>[edit system services xnm-clear-text],</code> <code>[edit system services xnm-ssl]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	Configure the maximum number of connections sessions for each type of system services (finger, ftp, ssh, telnet, xnm-clear-text, or xnm-ssl) per protocol (either IPv6 or IPv4).
Options	<p><i>limit</i>—(Optional) Maximum number of established connections per protocol (either IPv6 or IPv4).</p> <p>Range: 1 through 250</p> <p>Default: 75</p>



NOTE: The actual number of maximum connections depends on the availability of system resources, and might be fewer than the configured `connection-limit` value if the system resources are limited.

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"> • Configuring clear-text or SSL Service for Junos XML Protocol Client Applications • Configuring DTCP-over-SSH Service for the Flow-Tap Application • Configuring Finger Service for Remote Access to the Router • Configuring FTP Service for Remote Access to the Router or Switch • Configuring SSH Service for Remote Access to the Router or Switch • Configuring Telnet Service for Remote Access to a Router or Switch

crl (Encryption Interface)

Syntax	<code>crl <i>file-name</i>;</code>
Hierarchy Level	[edit security certificates]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Configure the certificate revocation list (CRL). A CRL is a time-stamped list identifying revoked certificates, which is signed by a CA and made available to the participating IPsec peers on a regular periodic basis.
Options	<i>file-name</i> —Specify the file from which to read the CRL.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PIC

default-lease-time

Syntax	<code>default-lease-time <i>seconds</i>;</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Specify the length of time in seconds that a client holds the lease for an IP address assigned by a DHCP server. This setting is used if a lease time is not requested by the client.
Options	<i>seconds</i> —Number of seconds the lease can be held. Default: 86400 (1day)
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">Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routersmaximum-lease-time on page 129

default-local-server-group

Syntax	<code>default-local-server-group <i>local-server-group-name</i>;</code>
Hierarchy Level	[edit forwarding-options dhcp-relay relay-option-60 vendor-option], [edit forwarding-options dhcp-relay group group-name relay-option-60 vendor-option]
Release Information	Statement introduced before Junos OS Release 12.1 for EX Series switches.
Description	Forward DHCP client packets to a default group of extended DHCP local servers when you use the DHCP vendor class identifier option (option 60) in DHCP packets to forward client traffic to specific DHCP servers.
Options	<i>local-server-group-name</i> —Name of the default extended DHCP local server group.
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"> • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30 • Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

default-relay-server-group

Syntax	<code>default-relay-server-group <i>server-group-name</i>;</code>
Hierarchy Level	[edit forwarding-options dhcp-relay relay-option-60 relay-option-60 vendor-option], [edit forwarding-options dhcp-relay group group-name relay-option-60 vendor-option]
Description	<p>Relay DHCP client packets to a default group of extended DHCP relay servers when you use the DHCP vendor class identifier option (option 60) in DHCP packets to forward client traffic to specific DHCP servers.</p> <p>If the option 60 string received in the DHCP client packet does not match the ASCII or hexadecimal match string and match criteria that you specify (exact match or partial match), the extended DHCP relay agent relays the client packets to the specified default group of servers configured with the server-group statement at the [edit forwarding-options dhcp-relay] hierarchy level.</p>
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"> • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30 • Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

description (Forwarding Options)

Syntax	<code>description <i>text-description</i>;</code>
Hierarchy Level	<code>[edit forwarding-options helpers bootp],</code> <code>[edit forwarding-options helpers bootpinterface (<i>interface-name</i> <i>interface-group</i>)],</code> <code>[edit forwarding-options helpers domain],</code> <code>[edit forwarding-options helpers domain interface <i>interface-name</i>],</code> <code>[edit forwarding-options helpers tftp],</code> <code>[edit forwarding-options helpers tftpinterface <i>interface-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.3 for QFX Series switches.
Description	Describe a BOOTP, DHCP, Domain Name System (DNS), or Trivial File Transfer Protocol (TFTP) service, or an interface that is configured for the service.
Required Privilege Level	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring DNS and TFTP Packet ForwardingConfiguring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents

dhcp

```
Syntax  dhcp {
        boot-file filename;
        boot-server (address | hostname);
        default-lease-time seconds;
        domain-name domain-name;
        domain-search [domain-list];
        maximum-lease-time seconds;
        name-server {
            address;
        }
        next-server next-server
        option option-identifier-code ;
        pool address/prefix-length {
            address-range {
                low address;
                high address;
            }
            exclude-address {
                address;
            }
        }
        router {
            address;
        }
        static-binding mac-address {
            fixed-address {
                address;
            }
            host-name hostname;
            client-identifier (ascii client-id | hexadecimal client-id);
        }
        wins-server {
            address;
        }
    }
```

Hierarchy Level [edit system services]

Release Information Statement introduced before Junos OS Release 7.4.

Description For J Series Services Routers only. Configure a router, switch, or interface as a DHCP server. A DHCP server can allocate network addresses and deliver configuration information to client hosts on a TCP/IP network.

The remaining statements are explained separately.

Required Privilege Level system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers
- System Management Configuration Statements

dhcp (DHCP Client)

Syntax dhcp {
 client-identifier (ascii *ascii* | hexadecimal *hexadecimal*);
 lease-time (*seconds* | infinite);
 retransmission-attempt *number*;
 retransmission-interval *seconds*;
 server-address *ip-address*;
 update-server;
 vendor-id *vendor-id*;
 }

Hierarchy Level [edit [interfaces](#) *interface-name* unit *logical-unit-number* [family](#) inet]

Release Information Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Configure a DHCP client for an IPv4 interface.

 The remaining statements are described separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation • [Configuring a DHCP Client \(CLI Procedure\) on page 27](#)

dhcp (DHCP Server)

```
Syntax  dhcp {
        domain-search [domain-list];
        name-server {
            address;
        }
        option option-identifier-code ;
        pool subnet-address/prefix-length {
            address-range {
                low address;
                high address;
            }
            exclude-address {
                address;
            }
        }
        router {
            address;
        }
        sip-server [address | name]
        static-binding mac-address {
            fixed-address {
                address;
            }
            host-name hostname;
            client-identifier (ascii client-id | hexadecimal client-id);
        }
        wins-server {
            address;
        }
    }
```

Hierarchy Level [edit system services]

Release Information Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Configure a switch to use the legacy version of DHCP. A DHCP server allocates network addresses and delivers configuration information to client hosts on a TCP/IP network.

The remaining statements are explained separately.

Required Privilege Level system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)

dhcp-attributes (Address-Assignment Pools)

Syntax	<pre>dhcp-attributes { boot-file <i>filename</i>; boot-server (<i>address</i> <i>hostname</i>); dns-server [<i>ipv6-address</i>]; domain-name <i>domain-name</i>; grace-period <i>seconds</i>; maximum-lease-time <i>seconds</i>; name-server [<i>server-list</i>]; netbios-node-type <i>node-type</i>; option { [(<i>id-number</i> <i>option-type</i> <i>option-value</i>) (<i>id-number</i> <i>array</i> <i>option-type</i> <i>option-value</i>)]; } option-match { option-82 { circuit-id <i>value</i> <i>range</i> <i>named-range</i>; remote-id <i>value</i> <i>range</i> <i>named-range</i>; } } router [<i>router-address</i>]; server-identifier <i>ip4-address</i>; sip-server-address [<i>ipv6-address</i>]; sip-server-domain-name <i>domain-name</i>; tftp-server <i>address</i>; wins-server [<i>servers</i>]; }</pre>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family <i>family</i>]
Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.3 for EX Series switches.
Description	Configure address pools that can be used by different client applications. The remaining statements are explained separately.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Address-Assignment Pools Overview• Configuring Address-Assignment Pools• Configuring DHCP Client-Specific Attributes• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

dhcp-local-server

```

Syntax  dhcp-local-server {
        authentication {
            password password-string;
            username-include {
                circuit-type;
                delimiter delimiter-character;
                domain-name domain-name-string;
                interface-name;
                logical-system-name;
                mac-address;
                option-60;
                option-82 <circuit-id> <remote-id>;
                routing-instance-name;
                user-prefix user-prefix-string;
            }
        }
        dhcpv6 {
            authentication {
                ...
            }
            group group-name {
                authentication {
                    ...
                }
                interface interface-name {
                    exclude;
                    liveness-detection {
                        failure-action (clear-binding | clear-binding-if-interface-up | log-only);
                        method {
                            bfd {
                                version (0 | 1 | automatic);
                                minimum-interval milliseconds;
                                minimum-receive-interval milliseconds;
                                multiplier number;
                                no-adaptation;
                                transmit-interval {
                                    minimum-interval milliseconds;
                                    threshold milliseconds;
                                }
                                detection-time {
                                    threshold milliseconds;
                                }
                            }
                            session-mode (automatic | multihop | singlehop);
                            holddown-interval milliseconds;
                        }
                    }
                }
            }
            overrides {
                interface-client-limit number;
                process-inform {
                    pool pool-name;
                }
            }
        }
    }

```

```
        rapid-commit;
    }
    service-profile dynamic-profile-name;
    trace;
    upto upto-interface-name;
}
overrides {
    delegated-pool;
    interface-client-limit number;
    process-inform {
        pool pool-name;
    }
    rapid-commit;
}
service-profile dynamic-profile-name;
}
liveness-detection {
    failure-action (clear-binding | clear-binding-if-interface-up | log-only);
    method {
        bfd {
            version (0 | 1 | automatic);
            minimum-interval milliseconds;
            minimum-receive-interval milliseconds;
            multiplier number;
            no-adaptation;
            transmit-interval {
                minimum-interval milliseconds;
                threshold milliseconds;
            }
            detection-time {
                threshold milliseconds;
            }
            session-mode (automatic | multihop | singlehop);
            holddown-interval milliseconds;
        }
    }
}
overrides {
    delegated-pool;
    interface-client-limit number;
    process-inform {
        pool pool-name;
    }
    rapid-commit;
}
reconfigure {
    attempts attempt-count;
    clear-on-abort;
    strict;
    timeout timeout-value;
    token token-value;
    trigger {
        radius-disconnect;
    }
}
service-profile dynamic-profile-name;
```

```

}
duplicate-clients-on-interface;
dynamic-profile profile-name <aggregate-clients (merge | replace) | use-primary
  primary-profile-name>;
forward-snooped-clients (all-interfaces | configured-interfaces |
  non-configured-interfaces);
group group-name {
  authentication {
    ...
  }
  dynamic-profile profile-name <aggregate-clients (merge | replace) | use-primary
    primary-profile-name>;
  interface interface-name {
    exclude;
    liveness-detection {
      failure-action (clear-binding | clear-binding-if-interface-up | log-only);
      method {
        bfd {
          version (0 | 1 | automatic);
          minimum-interval milliseconds;
          minimum-receive-interval milliseconds;
          multiplier number;
          no-adaptation;
          transmit-interval {
            minimum-interval milliseconds;
            threshold milliseconds;
          }
          detection-time {
            threshold milliseconds;
          }
          session-mode (automatic | multihop | singlehop);
          holddown-interval milliseconds;
        }
      }
    }
  }
  overrides {
    client-discover-match <option60-and-option82>;
    interface-client-limit number;
    no-arp;
    process-inform {
      pool pool-name;
    }
  }
  service-profile dynamic-profile-name;
  trace;
  upto upto-interface-name;
}
overrides {
  client-discover-match <option60-and-option82>;
  interface-client-limit number;
  no-arp;
  process-inform {
    pool pool-name;
  }
}
service-profile dynamic-profile-name;


```

```

}
liveness-detection {
  failure-action (clear-binding | clear-binding-if-interface-up | log-only);
  method {
    bfd {
      version (0 | 1 | automatic);
      minimum-interval milliseconds;
      minimum-receive-interval milliseconds;
      multiplier number;
      no-adaptation;
      transmit-interval {
        minimum-interval milliseconds;
        threshold milliseconds;
      }
      detection-time {
        threshold milliseconds;
      }
      session-mode (automatic | multihop | singlehop);
      holddown-interval milliseconds;
    }
  }
}
overrides {
  client-discover-match <option60-and-option82>;
  interface-client-limit number;
  no-arp;
  process-inform {
    pool pool-name;
  }
}
pool-match-order {
  external-authority;
  ip-address-first;
  option-82;
}
reconfigure {
  attempts attempt-count;
  clear-on-abort;
  strict;
  timeout timeout-value;
  token token-value;
  trigger {
    radius-disconnect;
  }
}
service-profile dynamic-profile-name;
}

```

Hierarchy Level [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services],
 [edit logical-systems *logical-system-name* system services],
 [edit routing-instances *routing-instance-name* system services],
 [edit system services]

Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	<p>Configure Dynamic Host Configuration Protocol (DHCP) local server options on the router or switch and enable the router or switch to function as an extended DHCP local server. The DHCP local server receives DHCP request and reply packets from DHCP clients and then responds with an IP address and other optional configuration information to the client.</p> <p>The extended DHCP local server is incompatible with the DHCP server on J Series routers and so is not supported on J Series routers. Also, the DHCP local server and the DHCP/BOOTP relay server, which are configured under the [edit forwarding-options helpers] hierarchy level, cannot both be enabled on the router or switch at the same time. The extended DHCP local server is fully compatible with the extended DHCP relay feature.</p> <p>The dhcpv6 stanza configures the router or switch to support Dynamic Host Configuration Protocol for IPv6 (DHCPv6). The DHCPv6 local server is fully compatible with the extended DHCP local server and the extended DHCP relay feature.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;">  <p>NOTE: When you configure the dhcp-local-server statement at the routing instance hierarchy level, you must use a routing instance type of virtual-router.</p> </div> <p>The remaining statements are explained separately.</p>
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"> Extended DHCP Local Server Overview DHCPv6 Local Server Overview Configuring a DHCP Server on Switches (CLI Procedure) on page 28

dhcp-relay (EX Series Switches only)

```
Syntax  dhcp-relay {
        group group-name {
            interface interface-name {
                overrides {
                    always-write-giaddr;
                    always-write-option-82;
                    client-discover-match <option60-and-option82>;
                    interface-client-limit number;
                    layer2-unicast-replies;
                    no-arp;
                    trust-option-82;
                }
            }
            exclude {
                overrides {
                    ...
                }
                trace;
                upto upto-interface-name;
            }
            overrides {
                ...
            }
            relay-option {
                ...
            }
        }
        relay-option-82 {
            circuit-id {
                prefix prefix;
                use-interface-description (logical | device);
            }
        }
        server-group {
            server-group-name {
                server-ip-address;
            }
        }
    }
```

Hierarchy Level [edit forwarding-options],
[edit routing-instances *routing-instance-name* forwarding-options]

Release Information Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Configure extended DHCP relay options on the switch and enable the switch to function as a DHCP relay agent. A DHCP relay agent forwards DHCP request and reply packets between a DHCP client and a DHCP server.

The extended DHCP relay agent options configured with the **dhcp-relay** statement are incompatible with the DHCP/BOOTP relay agent options configured with the **bootp** statement. As a result, the extended DHCP relay agent and the DHCP/BOOTP relay agent cannot both be enabled on the switch at the same time. See [“DHCP/BOOTP Relay for](#)

[Switches Overview](#)” on page 11 for more information about the DHCP/BOOTP relay agent.

The remaining statements are explained separately.

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30
	• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

dhcpv6 (DHCP Local Server)

```
Syntax  dhcpv6 {
    authentication {
        password password-string;
        username-include {
            circuit-type;
            client-id;
            delimiter delimiter-character;
            domain-name domain-name-string;
            logical-system-name;
            relay-agent-interface-id;
            relay-agent-remote-id;
            relay-agent-subscriber-id;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    }
    group group-name {
        authentication {
            ...
        }
        interface interface-name {
            exclude;
            liveness-detection {
                failure-action (clear-binding | clear-binding-if-interface-up | log-only);
                method {
                    bfd {
                        version (0 | 1 | automatic);
                        minimum-interval milliseconds;
                        minimum-receive-interval milliseconds;
                        multiplier number;
                        no-adaptation;
                        transmit-interval {
                            minimum-interval milliseconds;
                            threshold milliseconds;
                        }
                        detection-time {
                            threshold milliseconds;
                        }
                    }
                    session-mode (automatic | multihop | singlehop);
                    holddown-interval milliseconds;
                }
            }
        }
    }
    overrides {
        interface-client-limit number;
        process-inform {
            pool pool-name;
        }
        rapid-commit;
    }
    service-profile dynamic-profile-name;
    trace;
    upto upto-interface-name;
```

```

}
overrides {
  delegated-pool;
  interface-client-limit number;
  process-inform {
    pool pool-name;
  }
  rapid-commit;
}
service-profile dynamic-profile-name;
}
liveness-detection {
  failure-action (clear-binding | clear-binding-if-interface-up | log-only);
  method {
    bfd {
      version (0 | 1 | automatic);
      minimum-interval milliseconds;
      minimum-receive-interval milliseconds;
      multiplier number;
      no-adaptation;
      transmit-interval {
        minimum-interval milliseconds;
        threshold milliseconds;
      }
      detection-time {
        threshold milliseconds;
      }
      session-mode (automatic | multihop | singlehop);
      holddown-interval milliseconds;
    }
  }
}
overrides {
  delegated-pool;
  interface-client-limit number;
  process-inform {
    pool pool-name;
  }
  rapid-commit;
  reconfigure {
    attempts attempt-count;
    clear-on-abort;
    strict;
    timeout timeout-value;
    token token-value;
    trigger {
      radius-disconnect;
    }
  }
}
reconfigure {
  attempts attempt-count;
  clear-on-abort;
  strict;
  timeout timeout-value;
  token token-value;

```

```
        trigger {  
            radius-disconnect;  
        }  
    }  
    service-profile dynamic-profile-name;  
}
```

Hierarchy Level [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services [dhcp-local-server](#)],
[edit logical-systems *logical-system-name* system services [dhcp-local-server](#)],
[edit routing-instances *routing-instance-name* system services [dhcp-local-server](#)],
[edit system services [dhcp-local-server](#)]

Release Information Statement introduced in Junos OS Release 9.6.
Statement introduced in Junos OS Release 12.3 for EX Series switches.

Description Configure DHCPv6 local server options on the router or switch and enable the router or switch to function as a server for the DHCP protocol for IP version 6 (IPv6). The DHCPv6 local server sends and receives packets using the IPv6 protocol and informs IPv6 of the routing requirements of router clients. The local server works together with the AAA service framework to control subscriber access and accounting.

The DHCPv6 local server is fully compatible with the extended DHCP local server and DHCP relay agent.

The remaining statements are explained separately.

Required Privilege Level system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- DHCPv6 Local Server Overview

dhcpv6 (DHCP Relay Agent)

```
Syntax  dhcpv6 {
    active-server-group server-group-name;
    authentication {
        password password-string;
        username-include {
            circuit-type;
            client-id;
            delimiter delimiter-character;
            domain-name domain-name-string;
            logical-system-name;
            relay-agent-interface-id;
            relay-agent-remote-id;
            relay-agent-subscriber-id;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    }
    dynamic-profile profile-name {
        aggregate-clients (merge | replace);
        use-primary primary-profile-name;
    }
    group group-name {
        active-server-group server-group-name;
        authentication {
            ...
        }
        dynamic-profile profile-name {
            ...
        }
    }
    interface interface-name {
        exclude;
        liveness-detection {
            failure-action (clear-binding | clear-binding-if-interface-up | log-only);
            method {
                bfd {
                    version (0 | 1 | automatic);
                    minimum-interval milliseconds;
                    minimum-receive-interval milliseconds;
                    multiplier number;
                    no-adaptation;
                    transmit-interval {
                        minimum-interval milliseconds;
                        threshold milliseconds;
                    }
                }
                detection-time {
                    threshold milliseconds;
                }
            }
            session-mode (automatic | multihop | singlehop);
            holddown-interval milliseconds;
        }
    }
}
```

```
    overrides {
        ...
    }
    service-profile dynamic-profile-name;
    trace;
    upto upto-interface-name;
}
}
overrides {
    ...
}
relay-agent-interface-id {
    ...
}
relay-option {
    ...
}
service-profile dynamic-profile-name;
}
liveness-detection {
    ...
}
overrides {
    allow-snooped-clients;
    interface-client-limit number;
    no-allow-snooped-clients;
    no-bind-on-request;
    send-release-on-delete;
}
relay-agent-interface-id {
    prefix prefix;
    use-interface-description (logical | device);
}
relay-option {
    option-number option-number;
    default-action {
        drop;
        forward-only;
        relay-server-group relay-server-group;
    }
    equals (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        relay-server-group relay-server-group;
    }
    starts-with (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        relay-server-group relay-server-group;
    }
}
}
server-group {
    server-group-name {
        server-ip-address;
    }
}
```



```

    service-profile dynamic-profile-name;
}

```

Hierarchy Level	[edit forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay]
Release Information	Statement introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.3 for EX Series switches.
Description	<p>Configure DHCPv6 relay options on the router or switch and enable the router or switch to function as a DHCPv6 relay agent. A DHCPv6 relay agent forwards DHCPv6 request and reply packets between a DHCPv6 client and a DHCPv6 server.</p> <p>The DHCPv6 relay agent server is fully compatible with the extended DHCP local server and DHCP relay agent. However, the options configured with the dhcpv6 statement are incompatible with the DHCP/BOOTP relay agent options configured with the bootp statement. As a result, the DHCPv6 relay agent and the DHCP/BOOTP relay agent cannot be enabled on the router or switch at the same time.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • dhcp-relay • dhcp-relay (EX Series Switches only) on page 80 • DHCPv6 Relay Agent Overview • Using External AAA Authentication Services with DHCP

domain

Syntax	<pre>domain { description <i>text-description</i>; interface <i>interface-name</i> { broadcast; description <i>text-description</i>; no-listen; server <i>address</i> <logical-system <i>logical-system-name</i>> <routing-instance <i>routing-instance-name</i>>; } server <i>address</i> <logical-system <i>logical-system-name</i>> <routing-instance <i>routing-instance-name</i>>; }</pre>
Hierarchy Level	[edit forwarding-options helpers]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Enable DNS request packet forwarding. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring DNS and TFTP Packet Forwarding

domain-name (DHCP)

Syntax	<code>domain-name <i>domain-name</i>;</code>
Hierarchy Level	[edit system services dhcp [edit system services dhcp , [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Configure the name of the domain in which clients search for a DHCP server host. This is the default domain name that is appended to hostnames that are not fully qualified.
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">Configuring the Router or Interface to Act as a DHCP Server on J Series Services RoutersConfiguring a DHCP Server on Switches (CLI Procedure) on page 28

domain-search

Syntax	domain-search [<i>domain-list</i>];
Hierarchy Level	[edit system], [edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure a list of domains to be searched.
Options	<i>domain-list</i> —A list of domain names to search. The list can contain up to six domain names, with a total of up to 256 characters.
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">Configuring the Domains to Search When a Router or Switch Is Included in Multiple DomainsConfiguring the Router or Interface to Act as a DHCP Server on J Series Services RoutersConfiguring a DHCP Server on Switches (CLI Procedure) on page 28

drop

Syntax	drop;
Hierarchy Level	[edit forwarding-options dhcp-relay relay-option-60]
Release Information	Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Drop (discard) DHCP client packets when you use relay option 60 (relay-option-60 is enabled) in DHCP packets to forward client traffic to specific DHCP servers.
Default	Relay Option 60 is disabled.
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">Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

dynamic-profile (DHCP Relay Agent)

Syntax	<pre>dynamic-profile <i>profile-name</i> { aggregate-clients (merge replace); use-primary <i>primary-profile-name</i>; }</pre>
Hierarchy Level	<pre>[edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i>], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</pre>
Release Information	<p>Statement introduced in Junos OS Release 9.2.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	Specify the dynamic profile that is attached to all interfaces, to a named group of interfaces, or to a specific interface.
Options	<p><i>profile-name</i>—Name of the dynamic profile.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • dhcp-relay • dhcp-relay (EX Series Switches only) on page 80 • Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12 • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30 • Attaching Dynamic Profiles to DHCP Subscriber Interfaces • Grouping Interfaces with Common DHCP Configurations • Configuring a Default Subscriber Service

encoding

Syntax	encoding (binary pem);
Hierarchy Level	[edit security ike policy <i>ike-peer-address</i>], [edit security certificates certification-authority <i>ca-profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Specify the file format used for the local-certificate and local-key-pair statements.
Options	binary —Binary file format. pem —Privacy-enhanced mail (PEM), an ASCII base 64 encoded format. Default: binary
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PICConfiguring an IKE Policy for Digital Certificates for an ES PIC

enrollment-retry

Syntax	enrollment-retry <i>attempts</i> ;
Hierarchy Level	[edit security certificates]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Specify how many times a router or switch can resend a digital certificate request.
Options	attempts —Number of enrollment retries. Range: 0 through 100 Default: 0
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PIC

enrollment-url

Syntax	<code>enrollment-url <i>url-name</i>;</code>
Hierarchy Level	[edit security certificates certification-authority <i>ca-profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Specify where your router or switch sends Simple Certificate Enrollment Protocol-based (SCEP-based) certificate enrollment requests (certificate authority URL).
Options	<i>url-name</i> —Certificate authority URL.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring Digital Certificates for an ES PIC

family (for EX Series switches)

Syntax	family ccc on page 94 family ethernet-switching on page 94 family inet on page 94 family inet6 on page 95 family iso on page 95 family mpls on page 95
family ccc	family ccc;
family ethernet-switching	family ethernet-switching { filter [input output] <i>filter-name</i> ; native-vlan-id <i>vlan-id</i> ; port-mode <i>mode</i> ; vlan (802.1Q Tagging) { members [(all <i>names</i> <i>vlan-ids</i>)]; } }
family inet	family inet { address <i>address</i> { arp <i>ip-address</i> (mac multicast-mac) <i>mac-address</i> <publish>; broadcast; preferred; primary; vrrp-group <i>group-id</i> { advertise-interval <i>milliseconds</i> ; preempt no-preempt { hold-time <i>seconds</i> ; } priority <i>number</i> ; virtual-address [<i>addresses</i>]; virtual-link-local-address <i>ip-address</i> ; } } dhcp { client-identifier (ascii <i>ascii</i> hexadecimal <i>hexadecimal</i>); lease-time (<i>seconds</i> infinite); retransmission-attempt <i>number</i> ; retransmission-interval <i>seconds</i> ; server-address <i>ip-address</i> ; update-server; vendor-id <i>vendor-id</i> ; } filter { input <i>filter-name</i> ; output <i>filter-name</i> ; } mtu <i>bytes</i> ; no-redirects; no-neighbor-learn; primary; rpf-check;

	<pre> targeted-broadcast; } </pre>
family inet6	<pre> family inet6 { address <i>address</i> { eui-64; nd6-stale-time <i>seconds</i>; ndp <i>ip-address</i> (mac multicast-mac) <i>mac-address</i> <publish>; preferred; primary; vrrp-inet6-group <i>group-id</i> { inet6-advertise-interval <i>milliseconds</i>; preempt preempt { hold-time <i>seconds</i>; } priority <i>number</i>; virtual-inet6-address [<i>addresses</i>]; virtual-link-local-address <i>ipv6-address</i>; } } (dad-disable no-dad-disable); filter { input <i>filter-name</i>; output <i>filter-name</i>; } mtu <i>bytes</i>; no-neighbor-learn rpf-check; } </pre>
family iso	<pre> family iso { address <i>interface-address</i>; mtu <i>bytes</i>; } </pre>
family mpls	<pre> family mpls { mtu <i>bytes</i>; } </pre>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces interface-range <i>name</i> unit <i>logical-unit-number</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 9.0 for EX Series switches, including options ethernet-switching, inet, and iso. Option inet6 introduced in Junos OS Release 9.3 for EX Series switches. Options ccc and mpls introduced in Junos OS Release 9.5 for EX Series switches.</p>
Description	<p>Configure protocol family information for the logical interface on the switch.</p> <p>You must configure a logical interface to be able to use the physical device.</p>

Default Interfaces on EX2200, EX3200, EX3300, EX4200, and EX4500 switches are set to **family ethernet-switching** by the default factory configuration. Before you can change the family setting for an interface to another family type, you must delete this default setting or any user-configured family setting. EX6200 and EX8200 switch interfaces do not have a default family setting.

Options See [Table 8 on page 96](#) for protocol families available on the switch interfaces. Different protocol families support different subsets of the interface types on the switch. Interface types on the switch are:

- Aggregated Ethernet (**ae**)
- Gigabit Ethernet (**ge**)
- Interface-range configuration (**interface-range**)
- Loopback (**lo0**)
- Management Ethernet (**me0**)
- Routed VLAN interface (RVI) (**vlan**)
- Virtual management Ethernet (**vme**)
- 10-Gigabit Ethernet (**xe**)

If you are using an interface range, the supported protocol families are the ones supported by the interface types that compose the range.

Not all interface types support all **family** substatements. Check your switch CLI for supported substatements for a particular protocol family configuration.

Table 8: Protocol Families and Supported Interface Types

Family	Description	Supported Interface Types						
		ae	ge	lo0	me0	vlan	vme	xe
ccc	Circuit cross-connect protocol family	✓*	✓					✓
ethernet-switching	Ethernet switching protocol family	✓	✓		✓			✓
inet	IPv4 protocol family	✓	✓	✓	✓	✓	✓	✓
inet6	IPv6 protocol family	✓	✓	✓	✓	✓	✓	✓
iso	Junos OS protocol family for IS-IS traffic	✓	✓	✓	✓	✓	✓	✓
mpls	MPLS protocol family	✓	✓	✓	✓		✓	✓

*Supported on EX8200 switches only

The remaining statements are explained separately.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring a DHCP Server on Switches (CLI Procedure) on page 28• Example: Configuring MPLS on EX Series Switches• Configuring Gigabit Ethernet Interfaces (CLI Procedure)• Configuring Aggregated Ethernet Links (CLI Procedure)• Configuring Routed VLAN Interfaces (CLI Procedure)

file

Syntax	<code>file <i>certificate-filename</i>;</code>
Hierarchy Level	[edit security certificates certification-authority <i>ca-profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Specify the file from which to read the digital certificate.
Options	<i>certificate-filename</i> —File from which to read the digital certificate.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Digital Certificates for an ES PIC

ftp

Syntax	<pre>ftp { connection-limit <i>limit</i>; rate-limit <i>limit</i>; }</pre>
Hierarchy Level	[edit system services]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Allow FTP requests from remote systems to the local router or switch.
Options	The remaining statements are explained separately.
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">• Configuring FTP Service for Remote Access to the Router or Switch

group (DHCP Local Server)

```
Syntax  group group-name {
    authentication {
        password password-string;
        username-include {
            circuit-type;
            client-id;
            delimiter delimiter-character;
            domain-name domain-name-string;
            logical-system-name;
            mac-address;
            option-60;
            option-82 <circuit-id> <remote-id>;
            relay-agent-interface-id
            relay-agent-remote-id;
            relay-agent-subscriber-id;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    }
    dynamic-profile profile-name <aggregate-clients (merge | replace) | use-primary
        primary-profile-name>;
    interface interface-name {
        exclude;
        overrides {
            client-discover-match <option60-and-option82>;
            interface-client-limit number;
            no-arp;
            process-inform {
                pool pool-name;
            }
            rapid-commit;
        }
        service-profile dynamic-profile-name;
        trace;
        upto upto-interface-name;
    }
    liveness-detection {
        failure-action (clear-binding | clear-binding-if-interface-up | log-only);
        method {
            bfd {
                version (0 | 1 | automatic);
                minimum-interval milliseconds;
                minimum-receive-interval milliseconds;
                multiplier number;
                no-adaptation;
                transmit-interval {
                    minimum-interval milliseconds;
                    threshold milliseconds;
                }
            }
            detection-time {
                threshold milliseconds;
            }
        }
    }
}
```

```

        session-mode(automatic | multihop | singlehop);
        holddown-interval milliseconds;
    }
}
}
overrides {
    client-discover-match <option60-and-option82>;
    delegated-pool;
    interface-client-limit number;
    no-arp;
    process-inform {
        pool pool-name;
    }
    rapid-commit;
}
reconfigure {
    attempts attempt-count;
    clear-on-abort;
    strict;
    timeout timeout-value;
    token token-value;
    trigger {
        radius-disconnect;
    }
}
}
service-profile dynamic-profile-name;
}

```

Hierarchy Level	[edit system services dhcp-local-server], [edit system services dhcp-local-server dhcpv6], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server ...], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server ...], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server ...]
Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Configure a group of interfaces that have a common configuration, such as authentication parameters. A group must contain at least one interface.
Options	<p><i>group-name</i>—Name of the group.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.

**Related
Documentation**

- Extended DHCP Local Server Overview
- Grouping Interfaces with Common DHCP Configurations
- Using External AAA Authentication Services with DHCP
- Attaching Dynamic Profiles to DHCP Subscriber Interfaces
- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)

group (DHCP Relay Agent)

```
Syntax  group group-name {
        active-server-group server-group-name;
        authentication {
            password password-string;
            username-include {
                circuit-type;
                client-id;
                delimiter delimiter-character;
                domain-name domain-name-string;
                logical-system-name;
                mac-address;
                option-60;
                option-82 [circuit-id] [remote-id];
                relay-agent-interface-id;
                relay-agent-remote-id;
                relay-agent-subscriber-id;
                routing-instance-name;
                user-prefix user-prefix-string;
            }
        }
        dynamic-profile profile-name {
            aggregate-clients (merge | replace);
            use-primary primary-profile-name;
        }
        interface interface-name {
            exclude;
            liveness-detection {
                failure-action (clear-binding | clear-binding-if-interface-up | log-only);
                method {
                    bfd {
                        version (0 | 1 | automatic);
                        minimum-interval milliseconds;
                        minimum-receive-interval milliseconds;
                        multiplier number;
                        no-adaptation;
                        transmit-interval {
                            minimum-interval milliseconds;
                            threshold milliseconds;
                        }
                    }
                    detection-time {
                        threshold milliseconds;
                    }
                }
                session-mode (automatic | multihop | singlehop);
                holddown-interval milliseconds;
            }
        }
        overrides {
            ...
        }
        service-profile dynamic-profile-name;
        trace;
```



```

    upto upto-interface-name;
}
overrides {
    allow-snooped-clients;
    always-write-giaddr;
    always-write-option-82;
    client-discover-match <option60-and-option82>;
    disable-relay;
    interface-client-limit number;
    layer2-unicast-replies;
    no-allow-snooped-clients;
    no-arp;
    no-bind-on-request;
    proxy-mode;
    replace-ip-source-with;
    send-release-on-delete;
    trust-option-82;
}
relay-agent-interface-id {
    prefix prefix;
    use-interface-description (logical | device);
}
relay-option {
    option-number option-number;
    default-action {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }
    equals (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }
    starts-with (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }
}
relay-option-82 {
    circuit-id {
        prefix prefix;
        use-interface-description (logical | device);
    }
}
service-profile dynamic-profile-name;
}

```

Hierarchy Level	[edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]
Release Information	Statement introduced in Junos OS Release 8.3. Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Specify the name of a group of interfaces that have a common DHCP or DHCPv6 relay agent configuration. A group must contain at least one interface. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.
Options	group-name —Name of a group of interfaces that have a common DHCP or DHCPv6 relay agent configuration. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• dhcp-relay• dhcp-relay (EX Series Switches only) on page 80• Extended DHCP Relay Agent Overview• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30• Group-Specific DHCP Relay Options• Grouping Interfaces with Common DHCP Configurations• Using External AAA Authentication Services with DHCP• Attaching Dynamic Profiles to DHCP Subscriber Interfaces

helpers

```
Syntax  helpers {
    bootp {
        client-response-ttl number;
        description text-description;
        interface interface-group {
            client-response-ttl number;
            description text-description;
            maximum-hop-count number;
            minimum-wait-time seconds;
            no-listen;
            server address {
                logical-system logical-system-name <routing-instance [ <default>
                    routing-instance-names ]>;
                routing-instance [ <default> routing-instance-names ];
            }
        }
        maximum-hop-count number;
        minimum-wait-time seconds;
        relay-agent-option;
        server address {
            logical-system logical-system-name <routing-instance [ <default>
                routing-instance-names ]>;
            routing-instance [ <default> routing-instance-names ];
        }
    }
    domain {
        description text-description;
        interface interface-name {
            broadcast;
            description text-description;
            no-listen;
            server address <logical-system logical-system-name> <routing-instance
                routing-instance-name>;
        }
        server address <logical-system logical-system-name> <routing-instance
            routing-instance-name>;
    }
    port (Packet Forwarding) port-number {
        description text-description;
        interface interface-name {
            broadcast;
            description text-description;
            no-listen;
            server address <logical-system logical-system-name> <routing-instance
                routing-instance-name>;
        }
        server address <logical-system logical-system-name> <routing-instance
            routing-instance-name>;
    }
    tftp {
        description text-description;
        interface interface-name {
```

```

        broadcast;
        description text-description;
        no-listen;
        server address <logical-system logical-system-name> <routing-instance
            routing-instance-name>;
    }
    server address <logical-system logical-system-name> <routing-instance
        routing-instance-name>;
}
traceoptions {
    file filename <files number> <match regular-expression> <size bytes> <world-readable |
        no-world-readable>;
    flag flag;
    level level;
    no-remote-trace level;
}
}

```

Hierarchy Level [edit forwarding-options]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Enable TFTP or DNS request packet forwarding, or configure the router, switch, or interface to act as a DHCP/BOOTP relay agent. Use only one server address per interface or global configuration.

In addition to TFTP and DNS, you can use the helpers statement to enable LAN-Broadcast forwarding. To do this, you must manually define which UDP port is forwarded, as shown here:

```

user@ host# show forwarding-options
helpers {
  port 3000 {
    interface {
      fe-0/0/1.0 {
        server 111.0.0.2;
      }
    }
  }
  port 3001 {
    interface {
      fe-0/0/0.0 {
        server 100.0.0.2;
      }
    }
  }
}

```

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

- Related Documentation**
- Configuring DNS and TFTP Packet Forwarding
 - Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents

http

Syntax	<pre>http { interfaces [<i>interface-names</i>]; port <i>port</i>; }</pre>
Hierarchy Level	[edit system services web-management]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Configure the port and interfaces for HTTP service, which is unencrypted.
Options	<p>interfaces [<i>interface-names</i>]—Name of one or more interfaces on which to allow the HTTP service. By default, HTTP access is allowed through built-in Fast Ethernet or Gigabit Ethernet interfaces only.</p> <p>The remaining statement is explained separately.</p>
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"> • Configuring Management Access for the EX Series Switch (J-Web Procedure) • <i>J-Web Interface User Guide</i> • https on page 108 • port on page 147 • web-management on page 189

https

Syntax	<pre>https { interfaces [<i>interface-names</i>]; local-certificate <i>name</i>; port <i>port</i>; }</pre>
Hierarchy Level	[edit system services web-management]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the secure version of HTTP (HTTPS) service, which is encrypted.
Options	<p>interfaces [<i>interface-names</i>]—Name of one or more interfaces on which to allow the HTTPS service. By default, HTTPS access is allowed through any ingress interface, but HTTP access is allowed through built-in Fast Ethernet or Gigabit Ethernet interfaces only.</p> <p>local-certificate <i>name</i>—Name of the X.509 certificate for a Secure Sockets Layer (SSL) connection. An SSL connection is configured at the [edit security certificates local] hierarchy.</p> <p>The remaining statements are explained separately.</p>
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">• Configuring Management Access for the EX Series Switch (J-Web Procedure)• J-Web Interface User Guide• http on page 107• port on page 147• web-management on page 189

interface (BOOTP)

Syntax	<pre> interface (<i>interface-name</i> <i>interface-group</i>) { broadcast; client-response-ttl <i>number</i>; description <i>text-description</i>; maximum-hop-count <i>number</i>; minimum-wait-time <i>seconds</i>; no-listen; server <i>address</i> { logical-system <i>logical-system-name</i> <routing-instance [<default> <i>routing-instance-names</i>]>; routing-instance [<default> <i>routing-instance-names</i>]; } apply-secondary-as-giaddr (QFX platforms only) }</pre>
Hierarchy Level	[edit forwarding-options helpers bootp]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for QFX Series switches.</p>
Description	Specify the interface for a DHCP and BOOTP relay agent.
Options	<p><i>interface-group</i>—Sets a logical interface or group of logical interfaces with a specific DHCP relay configuration.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents Setting Up DHCP Option 82 with the Switch as a Relay Agent Between Clients and DHCP Server (CLI Procedure)

interface (DHCP Relay Agent)

Syntax	<pre> interface <i>interface-name</i> { exclude; overrides { allow-snooped-clients; always-write-giaddr; always-write-option-82; client-discover-match <option60-and-option82>; disable-relay; interface-client-limit <i>number</i>; layer2-unicast-replies; no-allow-snooped-clients; no-arp; proxy-mode; replace-ip-source-with; send-release-on-delete; trust-option-82; } service-profile <i>dynamic-profile-name</i>; trace; upto <i>upto-interface-name</i>; } </pre>
Hierarchy Level	<pre> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] </pre>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Options upto and exclude introduced in Junos OS Release 9.1.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Specify one or more interfaces, or a range of interfaces, that are within a specified group on which the DHCP or DHCPv6 relay agent is enabled. You can repeat the interface <i>interface-name</i> statement to specify multiple interfaces within a group, but you cannot specify the same interface in more than one group. Also, you cannot use an interface that is being used by the DHCP local server. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>EX Series switches do not support DHCPv6.</p>



NOTE: DHCP values are supported in Integrated Routing and Bridging (IRB) configurations. When you configure an IRB interface in a network that is using DHCP, the DHCP information (for example, authentication, address assignment, and so on) is propagated in the associated bridge domain. This enables the DHCP server to configure client IP addresses residing within the bridge domain. IRB currently only supports static DHCP configurations. For

additional information about how to configure IRB, see the JUNOS® MX Series 3D Universal Edge Routers Solutions, Release 12.3.

Options **exclude**—Exclude an interface or a range of interfaces from the group. This option and the **overrides** option are mutually exclusive.

interface-name—Name of the interface. You can repeat this option multiple times.

overrides—Override the specified default configuration settings for the interface. The **overrides** statement is described separately.

upto-interface-name—Upper end of the range of interfaces; the lower end of the range is the interface-name entry. The interface device name of the **upto-interface-name** must be the same as the device name of the **interface-name**.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- Extended DHCP Relay Agent Overview
- dhcp-relay
- [dhcp-relay \(EX Series Switches only\) on page 80](#)
- [Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12](#)
- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)
- Grouping Interfaces with Common DHCP Configurations
- Using External AAA Authentication Services with DHCP

interface (DNS and TFTP Packet Forwarding or Relay Agent)

Syntax	<pre>interface <i>interface-name</i> { broadcast; description <i>text-description</i>; no-listen; server <i>address</i> <logical-system <i>logical-system-name</i>> <routing-instance <i>routing-instance-name</i>>; }</pre>
Hierarchy Level	[edit forwarding-options helpers domain], [edit forwarding-options helpers tftp]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Specify the interface for monitoring and forwarding DNS or TFTP requests.
Options	<i>interface-name</i> —Name of the interface. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring DNS and TFTP Packet Forwarding

interface-client-limit (DHCP Extended Server)

Syntax	<pre>interface-client-limit <i>number</i>;</pre>
Hierarchy Level	[edit system services dhcp-local-server overrides]
Release Information	Statement introduced in Junos OS Release 12.1.
Description	Set the maximum number of DHCP subscribers per interface allowed for a specific group or for all groups using the extended version of DHCP on switches. A group specification takes precedence over a global specification for the members of that group.
Default	No limit.
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">• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

interface-client-limit (DHCP Relay Agent)

Syntax	<code>interface-client-limit <i>number</i>;</code>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay dhcpv6 overrides], [edit forwarding-options dhcp-relay overrides], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> overrides], [edit forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 overrides], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay overrides], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> overrides], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 overrides], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> overrides], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> overrides]</p>
Release Information	<p>Statement introduced in Junos OS Release 9.2. Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Set the maximum number of DHCP (or DHCPv6) subscribers per interface allowed for a specific group or for all groups. A group specification takes precedence over a global specification for the members of that group. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p>
Default	No limit
Options	<p><i>number</i>—Maximum number of clients allowed. Range: 1 through 500,000</p>
Required Privilege Level	<p>interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> dhcp-relay dhcp-relay (EX Series Switches only) on page 80

- Extended DHCP Relay Agent Overview
- [Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12](#)
- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)
- Group-Specific DHCP Relay Options
- Overriding the Default DHCP Relay Configuration Settings

interfaces (for EX Series switches)

Syntax [interfaces ae on page 115](#)
[interfaces ge on page 115](#)
[interfaces interface-range on page 117](#)
[interfaces lo0 on page 117](#)
[interfaces me0 on page 118](#)
[interfaces traceoptions on page 118](#)
[interfaces vlan on page 118](#)
[interfaces vme on page 119](#)
[interfaces xe on page 120](#)

```

interfaces ae  aex {
    accounting-profile name;
    aggregated-ether-options {
        (flow-control | no-flow-control);
        lacp {
            (active | passive);
            admin-key key;
            periodic interval;
            system-id mac-address;
        }
        (link-protection | no-link-protection);
        link-speed speed;
        (loopback | no-loopback);
        minimum-links number;
    }
    description text;
    disable;
    (gratuitous-arp-reply | no-gratuitous-arp-reply);
    mtu bytes;
    no-gratuitous-arp-request;
    traceoptions {
        flag flag;
    }
    (traps | no-traps);
    unit logical-unit-number {
        accounting-profile name;
        bandwidth rate;
        description text;
        disable;
        family family-name {...}
        proxy-arp (restricted | unrestricted);
        (traps | no-traps);
        vlan-id vlan-id-number;
    }
    vlan-tagging;
}

```

```

interfaces ge  ge-fpc/pic/port {
    accounting-profile name;
    description text;
    disable;
    ether-options {
        802.3ad {

```

```
    aex;
    (backup | primary);
    lacp {
        force-up;
    }
}
(auto-negotiation | no-auto-negotiation);
(flow-control | no-flow-control);
ieee-802-3az-eee;
link-mode mode;
(loopback | no-loopback);
speed (auto-negotiation | speed);
}
(gratuitous-arp-reply | no-gratuitous-arp-reply);
hold-time up milliseconds down milliseconds;
media-type;
mtu bytes;
no-gratuitous-arp-request;
traceoptions {
    flag flag;
}
(traps | no-traps);
unit logical-unit-number {
    accounting-profile name;
    bandwidth rate;
    description text;
    disable;
    family family-name {...}
    proxy-arp (restricted | unrestricted);
    (traps | no-traps);
    vlan-id vlan-id-number;
}
vlan-tagging;
}
```

```

interfaces interface-range name {
interface-range   accounting-profile name;
                   description text;
                   disable;
                   ether-options {
                     802.3ad {
                       aex;
                       (backup | primary);
                       lacp {
                         force-up;
                       }
                     }
                     (auto-negotiation | no-auto-negotiation);
                     (flow-control | no-flow-control);
                     ieee-802-3az-eee;
                     link-mode mode;
                     (loopback | no-loopback);
                     speed (auto-negotiation | speed);
                   }
                   (gratuitous-arp-reply | no-gratuitous-arp-reply);
                   hold-time up milliseconds down milliseconds;
                   member interface-name;
                   member-range starting-interface name to ending-interface name;
                   mtu bytes;
                   unit logical-unit-number {
                     accounting-profile name;
                     bandwidth rate;
                     description text;
                     disable;
                     family family-name {...}
                     proxy-arp (restricted | unrestricted);
                     (traps | no-traps);
                     vlan-id vlan-id-number;
                   }
                   vlan-tagging;
                 }

interfaces lo0 lo0 {
                  accounting-profile name;
                  description text;
                  disable;
                  hold-time up milliseconds down milliseconds;
                  traceoptions {
                    flag flag;
                  }
                  (traps | no-traps);
                  unit logical-unit-number {
                    accounting-profile name;
                    bandwidth rate;
                    description text;
                    disable;
                    family family-name {...}
                    (traps | no-traps);
                  }
                }

```

```

interfaces me0 me0 {
    accounting-profile name;
    description text;
    disable;
    (gratuitous-arp-reply | no-gratuitous-arp-reply);
    hold-time up milliseconds down milliseconds;
    no-gratuitous-arp-request;
    traceoptions {
        flag flag;
    }
    (traps | no-traps);
    unit logical-unit-number {
        accounting-profile name;
        bandwidth rate;
        description text;
        disable;
        family family-name {...}
        (traps | no-traps);
        vlan-id vlan-id-number;
    }
    vlan-tagging;
}

interfaces traceoptions traceoptions {
    file <filename> <files number> <match regular-expression> <size size> <world-readable |
        no-world-readable>;
    flag flag <disable>;
    no-remote-trace;
}

interfaces vlan vlan {
    accounting-profile name;
    description text;
    disable;
    (gratuitous-arp-reply | no-gratuitous-arp-reply);
    hold-time up milliseconds down milliseconds;
    mtu bytes;
    no-gratuitous-arp-request;
    traceoptions {
        flag flag;
    }
    (traps | no-traps);
    unit logical-unit-number {
        accounting-profile name;
        bandwidth rate;
        description text;
        disable;
        family family-name {...}
        proxy-arp (restricted | unrestricted);
        (traps | no-traps);
    }
}

```



```
interfaces vme    vme {
    accounting-profile name;
    description text;
    disable;
    (gratuitous-arp-reply | no-gratuitous-arp-reply);
    hold-time up milliseconds down milliseconds;
    mtu bytes;
    no-gratuitous-arp-request;
    traceoptions {
        flag flag;
    }
    (traps | no-traps);
    unit logical-unit-number {
        accounting-profile name;
        bandwidth rate;
        description text;
        disable;
        family family-name {...}
        (traps | no-traps);
        vlan-id vlan-id-number;
    }
    vlan-tagging;
}
```

```
interfaces xe xe-fpc/pic/port {
    accounting-profile name;
    description text;
    disable;
    ether-options {
        802.3ad {
            aex;
            (backup | primary);
            lacp {
                force-up;
            }
        }
        (flow-control | no-flow-control);
        link-mode mode;
        (loopback | no-loopback);
    }
    (gratuitous-arp-reply | no-gratuitous-arp-reply);
    hold-time up milliseconds down milliseconds;
    mtu bytes;
    no-gratuitous-arp-request;
    traceoptions {
        flag flag;
    }
    (traps | no-traps);
    unit logical-unit-number {
        accounting-profile name;
        bandwidth rate;
        description text;
        disable;
        family family-name {...}
        proxy-arp (restricted | unrestricted);
        (traps | no-traps);
        vlan-id vlan-id-number;
    }
    vlan-tagging;
}
```

Hierarchy Level [edit]

Release Information Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Configure interfaces on EX Series switches.

Options See [Table 9 on page 121](#) for the interface types and protocol-family options supported on the switch. Different protocol families support different subsets of the interface types on the switch. See the [family](#) statement for syntax of the protocol families supported for switch interfaces.

Not all interface types support all **family** substatements. Check your switch CLI for supported substatements for a particular protocol family configuration.

Table 9: Interface Types and Their Supported Protocol Families

Interface Type	Description	Supported Protocol Families					
		ccc	ethernet-switching	inet	inet6	iso	mpls
ae	Aggregated Ethernet interface (also referred to as a link aggregation group [LAG])	✓*	✓	✓	✓	✓	✓
ge	Gigabit Ethernet interface	✓	✓	✓	✓	✓	✓
interface-range	Interface-range configuration	Supported protocol families are the ones supported by the interface types that compose the range.					
lo0	Loopback interface			✓	✓	✓	✓
me0	Management Ethernet interface		✓	✓	✓	✓	✓
vlan	Routed VLAN interface (RVI)			✓	✓	✓	
vme	Virtual management Ethernet interface			✓	✓	✓	✓
xe	10-Gigabit Ethernet interface	✓	✓	✓	✓	✓	✓
*Supported on EX8200 switches only							

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation	<ul style="list-style-type: none">• Configuring Gigabit Ethernet Interfaces (CLI Procedure)• Configuring Aggregated Ethernet Links (CLI Procedure)• Configuring a Layer 3 Subinterface (CLI Procedure)• Configuring Routed VLAN Interfaces (CLI Procedure)• Configuring the Virtual Management Ethernet Interface for Global Management of an EX Series Virtual Chassis (CLI Procedure)• EX Series Switches Interfaces Overview• Junos OS Interfaces Fundamentals Configuration Guide• Junos OS Ethernet Interfaces Configuration Guide
------------------------------	--

ip-address-first

Syntax	<code>ip-address-first;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server pool-match-order],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server pool-match-order],</code> <code>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server pool-match-order],</code> <code>[edit system services dhcp-local-server pool-match-order]</code>
Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
Description	Configure the extended DHCP local server to use the IP address method to determine which address-assignment pool to use. The local server uses the IP address in the gateway IP address if one is present in the DHCP client PDU. If no gateway IP address is present, the local server uses the IP address of the receiving interface to find the address-assignment pool. The DHCP local server uses this method by default when no method is explicitly specified.
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">• Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use• Extended DHCP Local Server Overview• Address-Assignment Pools Overview• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

layer2-unicast-replies

Syntax	layer2-unicast-replies;
Hierarchy Level	<p>[edit forwarding-options dhcp-relay overrides],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> overrides]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	Override the setting of the broadcast bit in DHCP request packets and instead use the Layer 2 unicast transmission method to transmit DHCP Offer reply packets and DHCP ACK reply packets from the DHCP server to DHCP clients during the discovery process.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Extended DHCP Relay Agent Overview dhcp-relay dhcp-relay (EX Series Switches only) on page 80 Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12 Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

ldap-url

Syntax	<ldap-url <i>url-name</i> >;
Hierarchy Level	[edit security certificates certification-authority <i>ca-profile-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) (Optional) Specify the Lightweight Directory Access Protocol (LDAP) URL for digital certificates.
Options	<i>url-name</i> —Name of the LDAP URL.
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">Configuring Digital Certificates for an ES PIC

lease-time

Syntax	lease-time (<i>seconds</i> <i>infinite</i>);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet dhcp]
Release Information	Statement introduced in Junos OS Release 8.5 for J Series devices. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 9.2 for SRX Series devices.
Description	Request a specific lease time for the IP address. The lease time is the length of time in seconds that a client holds the lease for an IP address assigned by a DHCP server.
Default	If no lease time is requested by client, then the server sends the lease time. The default lease time on a JUNOS OS DHCP server is one day.
Options	<i>seconds</i> —Request a lease time of a specific duration. Range: 60 through 2147483647 seconds <i>infinite</i> —Request that the lease never expire.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring a DHCP Client (CLI Procedure) on page 27 • Example: Configuring the Device as a DHCP Client • interfaces on page 115 • unit • family on page 94

load-key-file

Syntax	load-key-file <i>URL filename</i> ;
Hierarchy Level	[edit system root-authentication], [edit system login user <i>username</i> authentication]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Load RSA (SSH version 1 and SSH version 2) and DSA or ECDSA (SSH version 2) public keys from a previously-generated named file at a specified URL location. The file contains one or more SSH keys that are copied into the configuration when the command is issued.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the Root Password• Configuring the Root Password• Configuring Junos OS User Accounts• Configuring Junos OS User Accounts

local

Syntax	<pre>local <i>certificate-name</i> { <i>certificate-key-string</i>; load-key-file <i>URL filename</i>; }</pre>
Hierarchy Level	[edit security certificates]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	Import a paired X.509 private key and authentication certificate, to enable Junos XML protocol client applications to establish Secure Sockets Layer (SSL) connections to the router or switch.
Options	<p><i>certificate-key-string</i>—String of alphanumeric characters that constitute the private key and certificate.</p> <p><i>certificate-name</i>—Name that uniquely identifies the certificate.</p> <p><i>load-key-file URL filename</i>—File that contains the private key and certificate. It can be one of two types of values:</p> <ul style="list-style-type: none"> • Pathname of a file on the local disk (assuming you have already used another method to copy the certificate file to the router's or switch's local disk) • URL to the certificate file location (for instance, on the computer where the Junos XML protocol client application runs)
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"> • Importing SSL Certificates for Junos XML Protocol Support

local-certificate

Syntax	local-certificate;
Hierarchy Level	[edit system services service-deployment], [edit system services web-management https], [edit system services xnm-ssl]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Import or reference an SSL certificate.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring clear-text or SSL Service for Junos XML Protocol Client Applications• Generating SSL Certificates to Be Used for Secure Web Access• Importing SSL Certificates for Junos XML Protocol Support

maximum-certificates

Syntax	maximum-certificates <i>number</i> ;
Hierarchy Level	[edit security certificates]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Configure the maximum number of peer digital certificates to be cached.
Options	<i>number</i> —Maximum number of peer digital certificates to be cached. Range: 64 through 4,294,967,295 peer certificates Default: 1024 peer certificates
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">• Configuring Digital Certificates for an ES PIC

maximum-hop-count

Syntax	<code>maximum-hop-count <i>number</i>;</code>
Hierarchy Level	[edit forwarding-options helpers bootp], [edit forwarding-options helpers bootpinterface (<i>interface-name</i> <i>interface-group</i>)]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.3 for QFX Series switches.
Description	Specify the maximum number of hops allowed.
Options	<i>number</i> —Maximum number of hops. Default: 4 hops
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents

maximum-lease-time (DHCP)

Syntax	<code>maximum-lease-time <i>seconds</i>;</code>
Hierarchy Level	[edit system services dhcp],
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Specify the maximum length of time in seconds for which a client can request and hold a lease on a DHCP server. An exception is that the dynamic BOOTP lease length can exceed the maximum lease length specified.
Options	<i>seconds</i> —The maximum number of seconds the lease can be held.
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"> Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers default-lease-time on page 68

minimum-wait-time

Syntax	<code>minimum-wait-time <i>seconds</i>;</code>
Hierarchy Level	[edit forwarding-options helpers bootp], [edit forwarding-options helpers bootpinterface (<i>interface-name</i> <i>interface-group</i>)]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.3 for QFX Series switches.
Description	Specify the minimum time allowed.
Options	<i>seconds</i> —Minimum time. Default: 0 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents

name-server

Syntax	<code>name-server { <i>address</i>; }</code>
Hierarchy Level	[edit system], [edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure one or more Domain Name System (DNS) name servers.
Options	<i>address</i> —Address of the name server. To configure multiple name servers, include multiple <i>address</i> options.
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">Configuring a DNS Name Server for Resolving a Hostname into AddressesConfiguring the Router or Interface to Act as a DHCP Server on J Series Services RoutersConfiguring a DHCP Server on Switches (CLI Procedure) on page 28

no-arp (DHCP Local Server)

Syntax	no-arp;
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit system services dhcp-local-server overrides],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> overrides]</p> <p>[edit system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i> overrides]</p>
Release Information	<p>Statement introduced in Junos OS Release 9.3.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	Turn off ARP table population in a distrusted environment.
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"> • Configuring a DHCP Server on Switches (CLI Procedure) on page 28

no-arp (DHCP Relay Agent)

Syntax	no-arp;
Hierarchy Level	<p>[edit forwarding-options dhcp-relay overrides], [edit forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay overrides], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> overrides], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> overrides]</p>
Release Information	<p>Statement introduced in Junos OS Release 9.3.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	Turn off ARP table population in a distrusted environment.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Extended DHCP Relay Agent Overview• Overriding the Default DHCP Relay Configuration Settings• dhcp-relay (EX Series Switches only) on page 80• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

no-listen

Syntax	no-listen;
Hierarchy Level	[edit forwarding-options helpers bootp interface (<i>interface-name</i> <i>interface-group</i>)], [edit forwarding-options helpers domain interface <i>interface-name</i>], [edit forwarding-options helpers tftp interface <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.3 for QFX Series switches.
Description	Disable recognition of DNS requests or stop packets from being forwarded on a logical interface, a group of logical interfaces, a router, or a switch.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring DNS and TFTP Packet Forwarding Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents

no-redirects (IPv4 Traffic)

Syntax	no-redirects;
Hierarchy Level	[edit system], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 12.3 for EX Series switches.
Description	<p>Stop protocol redirect messages for IPv4 traffic from being sent on the entire switch or on an interface on the router or switch.</p> <p>To disable the sending of protocol redirect messages for the entire router or switch, include the no-redirects statement at the [edit system] hierarchy level.</p> <p>To disable the sending of protocol redirect messages on a specific interface, include the no-redirects statement at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>] hierarchy level.</p>
Default	The router or switch sends redirect messages.
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">• Configuring the Junos OS to Disable Protocol Redirect Messages on the Router or Switch• Understanding the Protocol Redirect Mechanism on EX Series Switches on page 19• Configuring the Junos OS to Disable Sending Protocol Redirect Messages on EX-Series Switches (CLI Procedure) on page 33• Junos® OS Network Interfaces

no-redirects-ipv6

Syntax	no-redirects-ipv6;
Hierarchy Level	[edit system], [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>]
Release Information	Statement introduced in Junos OS Release 12.3 for EX Series switches.
Description	<p>Stop protocol redirect messages for IPv6 traffic from being sent on the entire switch or on an interface on the switch.</p> <p>To disable the sending of protocol redirect messages for the entire switch, include the no-redirects-ipv6 statement at the [edit system] hierarchy level.</p> <p>To disable the sending of protocol redirect messages on a specific interface, include the no-redirects-ipv6 statement at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>] hierarchy level.</p>
Default	The switch sends redirect messages.
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"> • Understanding the Protocol Redirect Mechanism on EX Series Switches on page 19 • Configuring the Junos OS to Disable Sending Protocol Redirect Messages on EX-Series Switches (CLI Procedure) on page 33

option-number (DHCP Relay Agent Option)

Syntax	<code>option-number <i>option-number</i>;</code>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay relay-option], [edit forwarding-options dhcp-relay dhcpv6 relay-option], [edit forwarding-options dhcp-relay group group-name relay-option], [edit forwarding-options dhcp-relay dhcpv6 group group-name relay-option], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</p>
Release Information	<p>Statement introduced in Junos OS Release 12.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	<p>Specify the DHCP option DHCP relay agent uses for selective processing of client traffic. You can configure support globally or for a named group of interfaces. You can also configure support for the extended DHCP relay agent on a per logical system and per routing instance basis.</p> <p>Use the [edit forwarding-options dhcp-relay dhcpv6] hierarchy level to configure the DHCPv6 relay agent support.</p>
Options	<p><i>option-number</i>—The DHCP or DHCPv6 option in the incoming traffic.</p> <ul style="list-style-type: none"> • 15 (DHCPv6 only)—Use DHCPv6 option 15 (User Class Option) in packets • 16 (DHCPv6 only)—Use DHCPv6 option 16 (Vendor Class Option) in packets • 60 (DHCPv4 only)—(MX Series routers and EX Series switches only) Use DHCP option 60 (Vendor Class Identifier) in DHCP packets • 77 (DHCPv4 only)—Use DHCP option 77 (User Class Identifier) in packets
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Using DHCP Option Information to Selectively Process DHCP Client Traffic • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

outbound-ssh

Syntax	<pre> [edit system services] outbound-ssh { client <i>client-id</i> { address { port <i>port-number</i>; retry <i>number</i>; timeout <i>seconds</i>; } device-id <i>device-id</i>; keep-alive { retry <i>number</i>; timeout <i>seconds</i>; } reconnect-strategy (in-order sticky); secret <i>password</i>; services netconf; } traceoptions { file filename <files <i>number</i>> <match <i>regex</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i>; no-remote-trace; } } </pre>
Hierarchy Level	[edit system services]
Release Information	<p>Statement introduced in Junos OS Release 8.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Configure a router or switch running the Junos OS behind a firewall to communicate with client management applications on the other side of the firewall.
Default	To configure transmission of the router's or switch's device ID to the application, include the device-id statement at the [edit system services] hierarchy level.
Options	<p>client-id—Identifies the outbound-ssh configuration stanza on the router or switch. Each outbound-ssh stanza represents a single outbound SSH connection. This attribute is not sent to the client.</p> <p>device-id—Identifies the router or switch to the client during the initiation sequence.</p> <p>keep-alive—(Optional) When configured, specifies that the router or switch send keepalive messages to the management server. To configure the keepalive message, you must set both the timeout and retry attributes.</p> <p>reconnect-strategy—(Optional) Specify the method the router or switch uses to reestablish a disconnected outbound SSH connection. Two methods are available:</p>

- **in-order**—Specify that the router or switch first attempt to establish an outbound SSH session based on the management server address list. The router or switch attempts to establish a session with the first server on the list. If this connection is not available, the router or switch attempts to establish a session with the next server, and so on down the list until a connection is established.
- **sticky**—Specify that the router or switch first attempt to reconnect to the management server that it was last connected to. If the connection is unavailable, it attempts to establish a connection with the next client on the list and so forth until a connection is made.

retry—Number of keepalive messages the router or switch sends without receiving a response from the client before the current SSH connection is disconnected. The default is three messages.

secret—(Optional) Router's or switch's public SSH host key. If added to the **outbound-ssh** statement, during the initialization of the outbound SSH service, the router or switch passes its public key to the management server. This is the recommended method of maintaining a current copy of the router's or switch's public key.

timeout—Length of time that the Junos server waits for data before sending a keep alive signal. The default is 15 seconds.

When reconnecting to a client, the router or switch attempts to reconnect to the client based on the **retry** and **timeout** values for each client listed.

address—Hostname or the IPv4 address of the NSM application server. You can list multiple clients by adding each client's IP address or hostname along with the following connection parameters:

- **port**—Outbound SSH port for the client. The default is port 22.
- **retry**—Number of times the router or switch attempts to establish an outbound SSH connection before giving up. The default is three tries.
- **timeout**—Length of time that the router or switch attempts to establish an outbound SSH connection before giving up. The default is fifteen seconds.

filename—(Optional) By default, the filename of the log file used to record the trace options is the name of the traced process (for example, **mib2d** or **snmpd**). Use this option to override the default value.

files—(Optional) Maximum number of trace files generated. By default, the maximum number of trace files is 10. Use this option to override the default value.

When a trace file reaches its maximum size, the system archives the file and starts a new file. The system archives trace files by appending a number to the filename in sequential order from 1 to the maximum value (specified by the default value or the options value set here). Once the maximum value is reached, the numbering sequence is restarted at 1, overwriting the older file.

size—(Optional) Maximum size of the trace file in kilobytes (KB). Once the maximum file size is reached, the system archives the file. The default value is 1000 KB. Use this option to override the default value.

match—(Optional) When used, the system only adds lines to the trace file that match the regular expression specified. For example, if the match value is set to **=error**, the system only records lines to the trace file that include the string **error**.

services—Services available for the session. Currently, NETCONF is the only service available.

world-readable | no-world-readable—(Optional) Whether the files are accessible by the originator of the trace operation only or by any user. By default, log files are only accessible by the user that started the trace operation (**no-world-readable**).

all | configuration | connectivity—(Optional) Type of tracing operation to perform.

all—Log all events.

configuration—Log all events pertaining to the configuration of the router or switch.

connectivity—Log all events pertaining to the establishment of a connection between the client server and the router or switch.

no-remote-trace—(Optional) Disable remote tracing.

Required Privilege Level	interface —To view this statement in the configuration.
	interface-control —To add this statement to the configuration.
Related Documentation	• Configuring Outbound SSH Service
	• System Management Configuration Statements

overrides (DHCP Local Server)

Syntax	<pre> overrides { client-discover-match; delegated-pool; interface-client-limit <i>number</i>; no-arp; process-inform { pool <i>pool-name</i>; } rapid-commit; } </pre>
Hierarchy Level	<pre> [edit system services dhcp-local-server], [edit system services dhcp-local-server dhcpv6], [edit system services dhcp-local-server dhcpv6 group group-name], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit system services dhcp-local-server group group-name], [edit system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server ...], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server ...], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server ...] </pre>
Release Information	<p>Statement introduced in Junos OS Release 9.2.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Override the default configuration settings for the extended DHCP local server. Specifying the overrides statement with no subordinate statements removes all DHCP local server overrides at that hierarchy level.</p> <ul style="list-style-type: none"> To override global DHCP local server configuration options, include the overrides statement and its subordinate statements at the [edit system services dhcp-local-server] hierarchy level. To override configuration options for a named group of interfaces, include the statements at the [edit system services dhcp-local-server group <i>group-name</i>] hierarchy level. To override configuration options for a specific interface within a named group of interfaces, include the statements at the [edit system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i>] hierarchy level. Use the [edit system services dhcp-local-server dhcpv6] hierarchy level to override DHCPv6 configuration options. <p>The remaining statements are explained separately.</p> <p>The interface-client-limit and no-arp statements are not supported in the [edit system services dhcp-local-server dhcpv6] hierarchy level.</p> <p>The delegated-pool and the rapid-commit statements are supported in the [edit system services dhcp-local-server dhcpv6 ...] hierarchy level only.</p>

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">• Extended DHCP Local Server Overview• Overriding Default DHCP Local Server Configuration Settings• Deleting DHCP Local Server and DHCP Relay Override Settings• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

overrides (DHCP Relay Agent)

Syntax	<pre> overrides { allow-snooped-clients; always-write-giaddr; always-write-option-82; client-discover-match <option60-and-option82>; disable-relay; interface-client-limit <i>number</i>; layer2-unicast-replies; no-allow-snooped-clients; no-arp; no-bind-on-request; proxy-mode; replace-ip-source-with; send-release-on-delete; trust-option-82; } </pre>
Hierarchy Level	<pre> [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay group <i>group-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i>], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] </pre>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Override the default configuration settings for the extended DHCP relay agent. Specifying the overrides statement with no subordinate statements removes all DHCP relay agent overrides at that hierarchy level. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>The following statements are supported at both the [edit ... dhcp-relay] and [edit ... dhcpv6] hierarchy levels. All other statements are supported at the dhcp-relay hierarchy levels only.</p> <ul style="list-style-type: none"> • allow-snooped-clients • interface-client-limit • no-allow-snooped-clients • no-bind-on-request • send-release-on-delete <p>The remaining statements are explained separately.</p>

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Extended DHCP Relay Agent Overview Overriding the Default DHCP Relay Configuration Settings Deleting DHCP Local Server and DHCP Relay Override Settings dhcp-relay dhcp-relay (EX Series Switches only) on page 80 Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12 Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

path-length

Syntax	<code>path-length <i>certificate-path-length</i>;</code>
Hierarchy Level	[edit security certificates]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Configure the digital certificate path length.
Options	<p><i>certificate-path-length</i>—Digital certificate path length.</p> <p>Range: 2 through 15 certificates</p> <p>Default: 15 certificates</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring Digital Certificates for an ES PIC

pool (System)

Syntax	<pre>pool address/prefix-length { address-range { low address; high address; } exclude-address { address; } }</pre>
Hierarchy Level	[edit system services dhcp],
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Configure a pool of IP addresses for DHCP clients on a subnet. When a client joins the network, the DHCP server dynamically allocates an IP address from this pool.
Options	<p>address-range—Lowest and highest IP addresses in the pool that are available for dynamic address assignment. If no range is specified, the pool will use all available addresses within the subnet specified. (Broadcast addresses, interface addresses, and excluded addresses are not available.)</p> <p>exclude-address—Addresses within the range that are not used for dynamic address assignment. You can exclude one or more addresses within the range.</p> <p>The remaining statements are explained separately.</p>
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">Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers

pool (Address-Assignment Pools)

Syntax

```
pool pool-name {
    family family {
        dhcp-attributes {
            [ protocol-specific attributes ]
        }
        host hostname {
            hardware-address mac-address;
            ip-address ip-address;
        }
        network ip-prefix/<prefix-length>;
        prefix ipv6-prefix;
        range range-name {
            high upper-limit;
            low lower-limit;
            prefix-length prefix-length;
        }
    }
    link pool-name;
}
```

Hierarchy Level [edit access [address-assignment](#)]

Release Information Statement introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Configure the name of an address-assignment pool.



NOTE: Subordinate statement support depends on the platform. See individual statement topics for more detailed support information.

Options *pool-name*—Name assigned to the address-assignment pool.

The remaining statements are explained separately.

Required Privilege Level admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- [Address-Assignment Pools Overview](#)
- [Configuring Address-Assignment Pools](#)
- [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)

pool-match-order

Syntax	<pre>pool-match-order { external-authority; ip-address-first; option-82; }</pre>
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server], [edit system services dhcp-local-server]
Release Information	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1.
Description	Configure the order in which the DHCP local server uses information in the DHCP client PDU to determine how to obtain an address for the client. The remaining statements are explained separately.
Default	DHCP local server uses the ip-address-first method to determine which address pool to use.
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">• Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use• Extended DHCP Local Server Overview• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

port (HTTP/HTTPS)

Syntax	<code>port <i>port-number</i>;</code>
Hierarchy Level	[edit system services web-management]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the port on which the HTTP or HTTPS service is connected.
Options	<i>port-number</i> —The TCP port number on which the specified service listens.
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"> Configuring Management Access for the EX Series Switch (J-Web Procedure) <i>J-Web Interface User Guide</i> http on page 107 https on page 108 web-management on page 189

port (SRC Server)

Syntax	<code>port <i>port-number</i>;</code>
Hierarchy Level	[edit system services service-deployment servers <i>server-address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the port number on which to contact the SRC server.
Options	<i>port-number</i> —(Optional) The TCP port number for the SRC server. Default: 3333
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"> Configuring the Junos OS to Work with SRC Software

prefix (Address-Assignment Pools)

Syntax	<code>prefix <i>ipv6-prefix</i>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet6]
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.3 for EX Series switches.
Description	Specify the IPv6 prefix for the IPv6 address-assignment pool. This statement is mandatory for IPv6 address-assignment pools.
Options	<i>ipv6-prefix</i> —The IPv6 prefix.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Address-Assignment Pools Overview• Configuring Address-Assignment Pools• Configuring a DHCP Server on Switches (CLI Procedure) on page 28• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

prefix (DHCP Relay Agent)

Syntax	<code>prefix <i>prefix</i>;</code>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay dhcpv6 <i>relay-agent-interface-id</i>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <i>relay-agent-interface-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	<p>Add a prefix to the base option 82 Agent Circuit ID information in DHCP packets destined for a DHCP server. The prefix can consist of any combination of the hostname, logical system name, and routing instance name. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>If you include only the hostname, only the logical system name, or only the routing instance name in the prefix, the format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces with stacked virtual LANs (S-VLANs) is one of the following:</p> <pre> <i>host-name</i>:(fe ge)-<i>fpc/pic/port</i>:<i>svlan-id-vlan-id</i> <i>logical-system-name</i>:(fe ge)-<i>fpc/pic/port</i>:<i>svlan-id-vlan-id</i> <i>routing-instance-name</i>:(fe ge)-<i>fpc/pic/port</i>:<i>svlan-id-vlan-id</i> </pre> <p>If you include both the logical system name and the routing instance name in the prefix, the format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs is as follows:</p>

logical-system-name;routing-instance-name:(fe | ge)-fpc/pic/port:svlan-id-vlan-id

If you include the hostname, logical system name, and routing instance name in the prefix, the format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs is as follows:

host-name/logical-system-name;routing-instance-name:(fe | ge)-fpc/pic/port:svlan-id-vlan-id

For Fast Ethernet or Gigabit Ethernet interfaces that use virtual LANs (VLANs) but not S-VLANs, only the **vlan-id** value appears in the Agent Circuit ID format. For Fast Ethernet or Gigabit Ethernet interfaces that do not use VLANs or S-VLANs, neither the **vlan-id** value nor the **svlan-id** value appears.

Options *prefix*—Any of the following:

- **host-name**—Prepend the hostname of the router configured with the **host-name** statement at the **[edit system]** hierarchy level to the Agent Circuit ID information.
- **logical-system-name**—Prepend the name of the logical system to the Agent Circuit ID information.
- **routing-instance-name**—Prepend the name of the routing instance to the Agent Circuit ID information.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- Enabling and Disabling Insertion of Option 82 Information
- Configuring an Option 82 Prefix
- Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets

process-inform

Syntax	<pre>process-inform { pool <i>pool-name</i>; }</pre>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit system services dhcp-local-server overrides],</p> <p>[edit system services dhcp-local-server dhcpv6 overrides],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> overrides],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> interface <i>interface-name</i> overrides],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> overrides],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i> overrides]</p>
Release Information	<p>Statement introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Enable the processing of DHCP information request messages (DHCPINFORM for DHCPv4 and INFORMATION-REQUEST for DHCPv6) sent from the client to request DHCP options. For DHCP local servers, the messages are also passed to the configured server list.</p>

The remaining statement is explained separately.

Default	Information request messages are not processed.
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">• Enabling Processing of Client Information Requests• Overriding Default DHCP Local Server Configuration Settings• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

protocol-version

Syntax	<code>protocol-version <i>version</i>;</code>
Hierarchy Level	[edit system services ssh]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Specify the secure shell (SSH) protocol version.
Default	v2—SSH protocol version 2 is the default, introduced in Junos OS Release 11.4.
Options	<i>version</i> —SSH protocol version: v1, v2, or both.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring SSH Service for Remote Access to the Router or Switch

rate-limit

Syntax	<code>rate-limit <i>limit</i>;</code>
Hierarchy Level	<code>[edit system services finger],</code> <code>[edit system services ftp],</code> <code>[edit system services netconf ssh],</code> <code>[edit system services ssh],</code> <code>[edit system services telnet],</code> <code>[edit system services xnm-clear-text],</code> <code>[edit system services xnm-ssl]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	Configure the maximum number of connections attempts per protocol (either IPv6 or IPv4) on an access service.
Default	150 connections
Options	<p>rate-limit <i>limit</i>—(Optional) Maximum number of connection attempts allowed per minute, per IP protocol (either IPv4 or IPv6).</p> <p>Range: 1 through 250</p> <p>Default: 150</p>
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"> Configuring clear-text or SSL Service for Junos XML Protocol Client Applications

reconfigure (DHCP Local Server)

Syntax reconfigure {
 attempts *attempt-count*;
 clear-on-abort;
 strict;
 timeout *timeout-value*;
 token *token-value*;
 trigger {
 radius-disconnect;
 }
 }

Hierarchy Level [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services **dhcp-local-server**],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server **dhcpv6**],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server **group** *group-name*],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 **group** *group-name*],
 [edit logical-systems *logical-system-name* system services **dhcp-local-server**],
 [edit logical-systems *logical-system-name* system services dhcp-local-server **dhcpv6**],
 [edit logical-systems *logical-system-name* system services dhcp-local-server **group** *group-name*],
 [edit logical-systems *logical-system-name* system services dhcp-local-server dhcpv6 **group** *group-name*],
 [edit routing-instances *routing-instance-name* system services **dhcp-local-server**],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server **dhcpv6**],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server **group** *group-name*],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 **group** *group-name*],
 [edit system services **dhcp-local-server**],
 [edit system services dhcp-local-server **dhcpv6**],
 [edit system services dhcp-local-server **group** *group-name*],
 [edit system services dhcp-local-server dhcpv6 **group** *group-name*]

Release Information Statement introduced in Junos OS Release 10.0.
 Support at the [edit ... **dhcpv6** ...] hierarchy levels introduced in Junos OS Release 10.4.
 Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Enable dynamic reconfiguration triggered by the DHCP local server of all DHCP clients or only the DHCP clients serviced by the specified group of interfaces. A group configuration takes precedence over a DHCP local server configuration. The **strict** statement is available only for DHCPv6.

The remaining statements are explained separately.

Required Privilege Level system—To view this statement in the configuration.
 system-control—To add this statement to the configuration.

- Related Documentation**
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration](#)
 - [Configuring a DHCP Server on Switches \(CLI Procedure\) on page 28](#)


relay-agent-interface-id (DHCPv6 Relay Agent)

Syntax	<pre> relay-agent-interface-id { prefix <i>prefix</i>; use-interface-description (logical device); } </pre>
Hierarchy Level	<pre> [edit forwarding-options dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 ...] </pre>
Release Information	<p>Statement introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	<p>Insert the DHCPv6 Relay Agent Interface-ID option (option 18) in DHCPv6 packets destined for the DHCPv6 server.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • dhcp-relay • dhcp-relay (EX Series Switches only) on page 80 • Extended DHCP Relay Agent Overview • DHCPv6 Relay Agent Overview • Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

relay-option (DHCP Relay Agent)

Syntax	<pre> relay-option { option-number option-number; default-action { drop; forward-only; local-server-group local-server-group; relay-server-group relay-server-group; } equals (ascii <i>ascii-string</i> hexadecimal <i>hexadecimal-string</i>) { drop; forward-only; local-server-group local-server-group; relay-server-group relay-server-group; } starts-with (ascii <i>ascii-string</i> hexadecimal <i>hexadecimal-string</i>) { drop; forward-only; local-server-group local-server-group; relay-server-group relay-server-group; } } </pre>
Hierarchy Level	<pre> [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay group group-name], [edit forwarding-options dhcp-relay dhcpv6 group group-name], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] </pre>
Release Information	<p>Statement introduced in Junos OS Release 12.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	<p>Configure the extended DHCP relay agent selective processing that is based on DHCP options in DHCP client packets and specify the action to perform on client traffic. You can configure support globally or for a named group of interfaces, and for either DHCP or DHCPv6 relay agent.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Using DHCP Option Information to Selectively Process DHCP Client Traffic Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

relay-option-60

Syntax	<pre> relay-option-60 { vendor-option { default-local-server-group <i>local-server-group-name</i> default-relay-server-group <i>server-group-name</i> drop; equals starts-with } } </pre>
Hierarchy Level	[edit forwarding-options]
Release Information	Statement introduced before Junos OS Release 12.1 for EX Series switches. Statement deprecated in Junos OS Release 12.3 for EX Series switches.
Description	Configure the extended DHCP relay agent to use the DHCP vendor class identifier option (option 60) in DHCP client packets to forward client traffic to specific DHCP servers, or to drop selected DHCP client packets. This feature is useful in network environments where DHCP clients access services provided by multiple vendors and DHCP servers.
	<div>  <p>NOTE: The <code>relay-option-60</code> statement has been deprecated and might be removed from future product releases. We recommend that you phase out its use. See option-number.</p> </div>
Default	Disabled. There is no default vendor.
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"> • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30 • Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

relay-option-82

Syntax	<pre> relay-option-82 { circuit-id { prefix <i>prefix</i>; use-interface-description (logical device); } } </pre>
Hierarchy Level	<pre> [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay <i>group group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <i>group group-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <i>group group-name</i>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <i>group group-name</i>] </pre>
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	<p>Enable or disable the insertion of the DHCP relay agent information option (option 82) in DHCP packets destined for a DHCP server.</p> <p>If you enable insertion of option 82 information in DHCP packets, you must specify at least the circuit-id statement to include the Agent Circuit ID suboption (suboption 1) of the DHCP relay agent information option.</p> <p>You can use the relay-option-82 statement and its subordinate statements at the [edit forwarding-options dhcp-relay] hierarchy level to control insertion of option 82 information globally, or at the [edit forwarding-options dhcp-relay <i>group group-name</i>] hierarchy level to control insertion of option 82 information for a named group of interfaces.</p> <p>To restore the default behavior (option 82 information is not inserted into DHCP packets), use the delete relay-option-82 statement.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Enabling and Disabling Insertion of Option 82 Information dhcp-relay dhcp-relay on page 80

retransmission-attempt

Syntax	<code>retransmission-attempt <i>number</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet dhcp]
Release Information	Statement introduced in Junos OS Release 8.5 for J Series devices. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 9.2 for SRX Series devices.
Description	Specify the number of times the device retransmits a Dynamic Host Control Protocol (DHCP) packet if a DHCP server fails to respond. After the specified number of attempts, no further attempts at reaching a server are made.
Options	<i>number</i> —Number of retransmit attempts.. Range: 0 through 6 Default: 4
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring a DHCP Client (CLI Procedure) on page 27 • Example: Configuring the Device as a DHCP Client • interfaces on page 115 • unit • family on page 94

retransmission-interval

Syntax	<code>retransmission-interval seconds;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet dhcp]
Release Information	Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Specify the time between successive retransmissions of the client DHCP request if a DHCP server fails to respond.
Options	seconds —Number of seconds between successive retransmissions. Range: 4 through 64 seconds Default: 4 seconds
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring a DHCP Client (CLI Procedure) on page 27

server (DHCP and BOOTP Relay Agent)

Syntax	<pre>server address { logical-system <i>logical-system-name</i> <routing-instance [<default> <i>routing-instance-names</i>]>; routing-instance [<default> <i>routing-instance-names</i>]; }</pre>
Hierarchy Level	[edit forwarding-options helpers bootp], [edit forwarding-options helpers bootp interface (<i>interface-name</i> <i>interface-group</i>)]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.3 for QFX Series switches.
Description	Configure the router or switch to act as a DHCP and BOOTP relay agent.
Options	<ul style="list-style-type: none">• address—One or more addresses of the server.• logical-system <i>logical-system-name</i>—(Optional) Logical system of the server.• routing-instance <i>routing-instance-names</i>—(Optional) Routing instance name that belong to the DHCP or BOOTP relay agent.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents

server (DNS and TFTP Service)

Syntax	<code>server address <logical-system <i>logical-system-name</i>> <routing-instance <i>routing-instance-name</i>>;</code>
Hierarchy Level	[edit forwarding-options helpers domain], [edit forwarding-options helpers domain interface <i>interface-name</i>], [edit forwarding-options helpers tftp], [edit forwarding-options helpers tftp interface <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Specify the DNS or TFTP server for forwarding DNS or TFTP requests. Only one server can be specified for each interface.
Options	address —Address of the server. logical-system <i>logical-system-name</i> —(Optional) Logical system of the server. routing-instance [<i>routing-instance-names</i>] —(Optional) Set the routing instance name or names that belong to the DNS server or TFTP server.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring DNS and TFTP Packet Forwarding

server-address

Syntax	<code>server-address <i>ip-address</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet dhcp]
Release Information	Statement introduced in Junos OS Release 8.5 for J Series devices. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 9.2 for SRX Series devices.
Description	Specify the address of the DHCP server that the client should accept DHCP offers from. If this option is included in the DHCP configuration, the client accepts offers only from this server and ignores all other offers.
Default	The client accepts the first offer it receives from any DHCP server.
Options	<i>ip-address</i> —DHCP server address.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring a DHCP Client (CLI Procedure) on page 27• Example: Configuring the Device as a DHCP Client• interfaces on page 115• unit• family on page 94

server-group

Syntax	<pre>server-group { server-group-name { server-ip-address; } }</pre>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.3. Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Specify the name of a group of DHCP server addresses for use by the extended DHCP relay agent. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p>
Options	<p>server-group-name—Name of the group of DHCP or DHCPv6 server addresses.</p> <p>server-ip-address—IP address of the DHCP server belonging to this named server group. Use IPv6 addresses when configuring DHCPv6 support. You can configure a maximum of five IP addresses in each named server group.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • dhcp-relay • dhcp-relay (EX Series Switches only) on page 80 • Extended DHCP Relay Agent Overview • Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12 • Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30 • Configuring Server Groups

server-identifier

Syntax	<code>server-identifier <i>address</i>;</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	<p>For J Series Services Routers and EX Series switches only. Configure a server identifier. The identifier can be used to identify a DHCP server in a DHCP message. It can also be used as a destination address from clients to servers (for example, when the boot file is set, but not the boot server).</p> <p>Servers include the server identifier in DHCPOFFER messages so that clients can distinguish between multiple lease offers. Clients include the server identifier in DHCPREQUEST messages to select a lease and indicate which offer is accepted from multiple lease offers. Also, clients can use the server identifier to send unicast request messages to specific DHCP servers to renew a current lease.</p> <p>This address must be a manually assigned, static IP address. The server cannot send a request and receive an IP address from itself or another DHCP server.</p>
Default	If no server identifier is set, the DHCP server sets the server identifier based on the primary interface address used by the server to receive a client request. For example, if the client sends a DHCP request and the server receives it on fe-0/0/0 and the primary interface address is 1.1.1.1 , then the server identifier is set to 1.1.1.1 .
Options	address —IPv4 address of the server. This address must be accessible by all clients served within a specified range of addresses (based on an address pool or static binding).
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">Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers

servers

Syntax	<code>servers server-address { port port-number; }</code>
Hierarchy Level	[edit system services service-deployment]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure an IPv4 address for the Session and Resource Control (SRC) server.
Options	server-address —The TCP port number. Default: 3333 The remaining statements are explained separately.
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"> Configuring the Junos OS to Work with SRC Software

service-deployment

Syntax	<code>service-deployment { servers server-address { port port-number; } source-address source-address; }</code>
Hierarchy Level	[edit system services]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Enable Junos OS to work with the Session and Resource Control (SRC) software. The remaining statements are explained separately.
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"> Configuring the Junos OS to Work with SRC Software

service-profile (DHCP Relay Agent)

Syntax	<code>service-profile <i>dynamic-profile-name</i>;</code>
Hierarchy Level	<code>[edit forwarding-options dhcp-relay],</code> <code>[edit forwarding-options dhcp-relay dhcpv6],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i>],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>],</code> <code>[edit forwarding-options dhcp-relay dhcpv6 group<i>group-name</i>],</code> <code>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code> <code>forwarding-options dhcp-relay ...],</code> <code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</code>
Release Information	<p>Statement introduced in Junos OS Release 11.2.</p> <p>Support at the <code>[edit ... dhcpv6 ...]</code> hierarchy levels introduced in Junos OS Release 11.4.</p>
Description	<p>Specify the default subscriber service, which is activated when the subscriber logs in and no other service is activated by a RADIUS server or a provisioning server.</p> <ul style="list-style-type: none"> To specify the default service for all DHCP relay agent clients, include the service-profile statement at the <code>[edit forwarding-options dhcp relay]</code> hierarchy level. To specify the default service for a named group of interfaces, include the service-profile statement at the <code>[edit forwarding-options dhcp relay group <i>group-name</i>]</code> hierarchy level. To specify the default service for a particular interface within a named group of interfaces, include the service-profile statement at the <code>[edit forwarding-options dhcp relay group <i>group-name</i> interface <i>interface-name</i>]</code> hierarchy level.
Options	<i>dynamic-profile-name</i> —Name of the dynamic profile.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> dhcp-relay Attaching Dynamic Profiles to DHCP Subscriber Interfaces Grouping Interfaces with Common DHCP Configurations Default Subscriber Service Overview Configuring a Default Subscriber Service

services (System Services)

```
Syntax  services {
    dhcp { \* DHCP not supported on a DCF
        dhcp_services;
    }
    finger {
        connection-limit limit;
        rate-limit limit;
    }
    ftp {
        connection-limit limit;
        rate-limit limit;
    }
    service-deployment {
        servers address {
            port-number port-number;
        }
        source-address address;
    }
    ssh {
        connection-limit limit;
        protocol-version [v1 v2];
        rate-limit limit;
        root-login (allow | deny | deny-password);
    }
    telnet {
        connection-limit limit;
        rate-limit limit;
    }
    web-management {
        http {
            interfaces [ names ];
            port port;
        }
        https {
            interfaces [ names ];
            local-certificate name;
            port port;
        }
        session {
            idle-timeout [ minutes ];
            session-limit [ limit ];
        }
    }
    xnm-clear-text {
        connection-limit limit;
        rate-limit limit;
    }
    xnm-ssl {
        connection-limit limit;
        local-certificate name;
        rate-limit limit;
    }
}
```

```
}
```

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Configure the router or switch so that users on remote systems can access the local router or switch through the DHCP server, finger, rlogin, SSH, telnet, Web management, Junos XML protocol clear-text, Junos XML protocol SSL, and network utilities or enable Junos OS to work with the Session and Resource Control (SRC) software.

The remaining statements are explained separately.

Required Privilege Level system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- Configuring clear-text or SSL Service for Junos XML Protocol Client Applications
- Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers
- Configuring the Junos OS to Work with SRC Software

session (Time-out)

Syntax	<pre>session { idle-timeout <i>minutes</i>; session-limit <i>session-limit</i>; }</pre>
Hierarchy Level	[edit system services web-management]
Release Information	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Configure limits for the number of minutes a session can be idle before it times out, and configure the number of simultaneous J-Web user login sessions.
Options	<p>idle-timeout <i>minutes</i>—Configure the number of minutes a session can be idle before it times out.</p> <p>Range: 1 through 1440</p> <p>Default: 1440</p> <p>session-limit <i>session-limit</i>—Configure the maximum number of simultaneous J-Web user login sessions.</p> <p>Range: 1 through 1024</p> <p>Default: Unlimited</p>
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"> • <i>J-Web Interface User Guide</i>

sip-server

Syntax	<code>sip-server [address name];</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced in Junos OS Release 10.1 for EX Series switches.
Description	Configure Session Initiation Protocol (SIP) server addresses or names for DHCP servers.
Options	<p>address—IPv4 address of the SIP server. To configure multiple SIP servers, include multiple address options. This address must be accessible by all clients served within a specified range of addresses (based on an address pool or static binding).</p> <p>name—Fully qualified domain name of the SIP server. To configure multiple SIP servers, include multiple name options. This domain name must be accessible by all clients served within a specified range of addresses (based on an address pool or static binding).</p>
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">• Configuring a DHCP SIP Server (CLI Procedure) on page 26• Configuring a DHCP Server on Switches (CLI Procedure) on page 28

source-address (SRC Software)

Syntax	<code>source-address source-address;</code>
Hierarchy Level	[edit system services service-deployment]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Enable Junos OS to work with the Session and Resource Control (SRC) software.
Options	source-address — Local IPv4 address to be used as source address for traffic to the SRC server. The source address restricts traffic within the out-of-band network.
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">• Configuring the Junos OS to Work with SRC Software

source-address-giaddr

Syntax	source-address-giaddr;
Hierarchy Level	[edit forwarding-options helpers bootp], [edit forwarding-options helpers bootp interface <i>interface-name</i>]
Release Information	Statement introduced in Junos OS Release 10.1 for EX Series switches.
Description	<p>Configure the gateway IP address (giaddr) as the source IP address of the switch for relayed DHCP packets when the switch is used as the DHCP relay agent.</p> <p>When this statement is entered in the [edit forwarding-options helpers bootp] hierarchy, the gateway IP address is configured as the source IP address of the switch for relayed DHCP packets exiting all interfaces on the switch.</p> <p>When this statement is entered in the [edit forwarding-options helpers bootp interface <i>interface-name</i>] hierarchy, the gateway IP address is configured as the source IP address of the switch for relayed DHCP packets exiting the specified interface of the switch.</p> <p>In Junos OS Release 10.1 for EX Series switches and later releases, the IP address of the interface that the DHCP packet exits on the switch acting as a DHCP relay agent is used as the source IP address for relayed DHCP packets by default.</p> <p>In Junos OS Releases 9.6 and 10.0 for EX Series switches, the gateway IP address of the switch is always used as the source IP address for relayed DHCP packets when the switch is used as the DHCP relay agent.</p> <p>In Junos OS Releases 9.3 through 9.5 for EX Series switches, the IP address of the interface that the DHCP packet exits on the switch acting as a DHCP relay agent is always used as the source IP address for relayed DHCP packets.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • DHCP/BOOTP Relay for Switches Overview on page 11

ssh

Syntax	<pre>ssh { ciphers [<i>cipher-1 cipher-2 cipher-3 ...</i>]; client-alive-count-max <i>seconds</i>; client-alive-interval <i>seconds</i>; connection-limit <i>limit</i>; hostkey-algorithm <<i>algorithm</i> no-<i>algorithm</i>>; key-exchange <<i>algorithm</i>>; macs <<i>algorithm</i>>; max-sessions-per-connection <<i>number</i>>; no-tcp-forwarding; protocol-version [<i>v1 v2</i>]; rate-limit <i>limit</i>; root-login (<i>allow</i> <i>deny</i> <i>deny-password</i>); }</pre>
Hierarchy Level	[edit system services]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>client-alive-interval and client-alive-max-count statements introduced in Junos OS Release 12.2.</p>
Description	<p>Allow SSH requests from remote systems to the local router or switch.</p> <p>The remaining statements are explained separately.</p>
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">Configuring SSH Service for Remote Access to the Router or Switch

static-binding

Syntax	<pre>static-binding <i>mac-address</i> { <i>client-identifier</i> (ascii <i>client-id</i> hexadecimal <i>client-id</i>); fixed-address { <i>address</i>; } host-name <i>client-hostname</i>; }</pre>
Hierarchy Level	<pre>[edit system services <i>dhcp</i>], [edit system services <i>dhcp</i>]</pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	<p>For J Series Services routers and EX Series switches only. Set static bindings for DHCP clients. A static binding is a mapping between a fixed IP address and the client's MAC address or client identifier.</p>
Options	<p><i>mac-address</i>—The MAC address of the client. This is a hardware address that uniquely identifies a client on the network.</p> <p><i>fixed-address address</i>—Fixed IP address assigned to the client. Typically a client has one address assigned, but you can assign more.</p> <p><i>host-name client-hostname</i>—Hostname of the client requesting the DHCP server. The name can include the local domain name. Otherwise, the name is resolved based on the <i>domain-name</i> statement.</p> <p><i>client-identifier (ascii client-id hexadecimal client-id)</i>—Used by the DHCP server to index the database of address bindings. The client identifier is an ASCII string or hexadecimal number and can include a type-value pair as specified in RFC 1700, <i>Assigned Numbers</i>. Either a client identifier or the client's MAC address must be configured to uniquely identify the client on the network.</p>
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"> Configuring the Router or Interface to Act as a DHCP Server on J Series Services Routers Configuring a DHCP Server on Switches (CLI Procedure) on page 28

system-generated-certificate

Syntax	system-generated-certificate;
Hierarchy Level	[edit system services web-management https]
Release Information	Command introduced in Junos OS Release 11.1 for EX Series switches.
Description	Configure the automatically generated self-signed certificate for enabling HTTPS services..
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">• Enabling HTTPS Service on Switches Using Self-Signed Certificates (CLI Procedure) on page 31

telnet

Syntax	telnet { connection-limit <i>limit</i> ; rate-limit <i>limit</i> ; }
Hierarchy Level	[edit system services]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Provide Telnet connections from remote systems to the local router or switch. The remaining statements are explained separately.
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">• Configuring Telnet Service for Remote Access to a Router or Switch

tftp

Syntax	<pre> tftp { description <i>text-description</i>; interface <i>interface-name</i> { broadcast; description <i>text-description</i>; no-listen; server address <logical-system <i>logical-system-name</i>> <routing-instance <i>routing-instance-name</i>>; } server address <logical-system <i>logical-system-name</i>> <routing-instance <i>routing-instance-name</i>>; } </pre>
Hierarchy Level	[edit forwarding-options helpers]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	<p>Enable TFTP request packet forwarding.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring DNS and TFTP Packet Forwarding

trace (DHCP Relay Agent)

Syntax	trace;
Hierarchy Level	<p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 10.4.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Enable trace operations for a group of interfaces or for a specific interface within a group. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>EX Series switches do not support DHCPv6.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• dhcp-relay (EX Series Switches only) on page 80• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30• Tracing Extended DHCP Operations• Tracing Extended DHCP Operations for Specific Interfaces

traceoptions (DNS and TFTP Packet Forwarding)

Syntax	<pre> traceoptions { file <i>filename</i> <files <i>number</i>> <match <i>regular-expression</i>> <size <i>bytes</i>> <world-readable no-world-readable>; flag <i>flag</i>; level <i>level</i>; <no-remote-trace>; } </pre>
Hierarchy Level	[edit forwarding-options helpers]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement standardized and match option introduced in Junos OS Release 8.0.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Configure tracing operations for BOOTP, DNS and TFTP packet forwarding.
Default	If you do not include this statement, no tracing operations are performed.
Options	<p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks (" "). All files are placed in a file named fud in the directory /var/log. If you include the file statement, you must specify a filename.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <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</p> <p>Default: 3 files</p> <p>flag <i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none"> • address—Trace address management events • all—Trace all events • bootp—Trace BOOTP or DHCP services events • config—Trace configuration events • domain—Trace DNS service events • ifdb—Trace interface database operations • io—Trace I/O operations • main—Trace main loop events • port—Trace arbitrary protocol events

- **rtsock**—Trace routing socket operations
- **tftp**—Trace TFTP service events
- **trace**—Trace tracing operations
- **ui**—Trace user interface operations
- **util**—Trace miscellaneous utility operations

match *regular-expression*—(Optional) Refine the output to include lines that contain the regular expression.

no-remote-trace—(Optional) Disable remote tracing globally or for a specific tracing operation.

no-world-readable—(Optional) Restrict file access to the owner.

size *size*—(Optional) 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** 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 filename.

Syntax: *xk* to specify KB, *xm* to specify MB, or *xg* to specify GB


Range: 0 bytes through 4,294,967,295 KB

Default: 128 KB

world-readable—(Optional) Enable unrestricted file access.

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Tracing BOOTP, DNS, and TFTP Forwarding Operations

traceoptions

Syntax	<pre> traceoptions { file <i>filename</i> <files <i>number</i>> <size <i>size</i>>; flag all; flag certificates; flag database; flag general; flag ike; flag parse; flag policy-manager; flag routing-socket; flag timer; level no-remote-trace } </pre>
Hierarchy Level	<p>[edit security], [edit services ipsec-vpn]</p> <p>Trace options can be configured at either the [edit security] or the [edit services ipsec-vpn] hierarchy level, but not at both levels.</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	<p>Configure security trace options.</p> <p>To specify more than one trace option, include multiple flag statements. Trace option output is recorded in the <code>/var/log/kmd</code> file.</p>
<div style="display: flex; align-items: center;">  <div> <p>NOTE: The <code>traceoptions</code> statement is not supported on QFabric systems.</p> </div> </div>	
Options	<p>files <i>number</i>—(Optional) Maximum number of trace files. When a trace file (for example, kmd) reaches its maximum size, it is renamed kmd.0, then kmd.1, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you must also specify a maximum file size with the size option.</p> <p>Range: 2 through 1000 files</p> <p>Default: 0 files</p> <p>size <i>size</i>—(Optional) Maximum size of each trace file, in kilobytes (KB). When a trace file (for example, kmd) reaches this size, it is renamed, kmd.0, then kmd.1 and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>Default: 1024 KB</p>

flag *flag*—Trace operation to perform. To specify more than one trace operation, include multiple **flag** statements.

- **all**—Trace all security events.
- **certificates**—Trace certificate events.
- **database**—Trace database events.
- **general**—Trace general events.
- **ike**—Trace IKE module processing.
- **parse**—Trace configuration processing.
- **policy-manager**—Trace policy manager processing.
- **routing-socket**—Trace routing socket messages.
- **timer**—Trace internal timer events.

level *level*—(Optional) Set traceoptions level.

- **all**—match all levels.
- **error**—Match error conditions.
- **info**—Match informational messages.
- **notice**—Match conditions that should be handled specially.
- **verbose**—Match verbose messages.
- **warning**—Match warning messages.

no-remote-trace—(Optional) Disable remote tracing

Required Privilege	admin—To view the configuration.
Level	admin-control—To add this statement to the configuration.

Related Documentation	<ul style="list-style-type: none">• Configuring Tracing Operations for Security Services
------------------------------	--

traceoptions (DHCP Server)

Syntax	<pre> traceoptions { file <i>filename</i> <files <i>number</i>> <match <i>regex</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i>; } </pre>
Hierarchy Level	[edit system services dhcp]
Release Information	<p>Statement for tracing J Series Services Router DHCP processes introduced in Junos OS Release 8.0.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Define tracing operations for DHCP processes for J Series Services Routers and EX Series switches.
Options	<p>file <i>filename</i>—Name of the file that receives the output of the tracing operation. Enclose the name in quotation marks. All files are placed in the directory <i>/var/log</i>.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files. When a trace file named <i>trace-file</i> reaches its maximum size, it is renamed <i>trace-file.0</i>, then <i>trace-file.1</i>, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <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</p> <p>Default: 3 files</p> <p>flag <i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none"> • all—All tracing operations • binding—Trace binding operations • config—Log reading of configuration • conflict—Trace user-detected conflicts for IP addresses • event—Trace important events • ifdb—Trace interface database operations • io— Trace I/O operations • lease—Trace lease operations • main—Trace main loop operations • misc— Trace miscellaneous operations • packet—Trace DHCP packets

- **options**—Trace DHCP options
- **pool**—Trace address pool operations
- **protocol**—Trace protocol operations
- **rtsock**—Trace routing socket operations
- **scope**—Trace scope operations
- **signal**—Trace DHCP signal operations
- **trace**—All tracing operations
- **ui**—Trace user interface operations

match *regex*—(Optional) Refine the output to include lines that contain the regular expression.

- **all**—All tracing operations
- **binding**—Trace binding operations
- **config**—Log reading of configuration
- **conflict**—Trace user-detected conflicts for IP addresses
- **event**—Trace important events
- **ifdb**—Trace interface database operations
- **io**—Trace I/O operations
- **lease**—Trace lease operations
- **main**—Trace main loop operations
- **match *regex***—Refine the output to include lines that contain the regular expression.
- **misc**—Trace miscellaneous operations
- **packet**—Trace DHCP packets
- **options**—Trace DHCP options
- **pool**—Trace address pool operations
- **protocol**—Trace protocol operations
- **rtsock**—Trace routing socket operations
- **scope**—Trace scope operations
- **signal**—Trace DHCP signal operations
- **trace**—All tracing operations
- **ui**—Trace user interface operations

no-world-readable—(Optional) Disable unrestricted file access.

size *size*—(Optional) 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 filename.

Syntax: *xk* to specify KB, *xm* to specify MB, or *xg* to specify GB

Range: 10 KB through 1 GB

Default: 128 KB

world-readable—(Optional) Enable unrestricted file access.

Required Privilege Level	system—To view this statement in the configuration.
	system-control—To add this statement to the configuration.
Related Documentation	• Configuring Tracing Operations for DHCP Processes
	• System Management Configuration Statements

update-server

Syntax	update-server;
Hierarchy Level	[edit Interfaces <i>interface-name</i> unit <i>logical-unit-number</i> inet dhcp]
Release Information	Statement introduced in Junos OS Release 8.5 for J Series devices. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 9.2 for SRX Series devices.
Description	Propagate TCP/IP settings learned from an external DHCP server to the DHCP server running on the switch, router, or device.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring a DHCP Client (CLI Procedure) on page 27 • Example: Configuring the Device as a DHCP Client • interfaces on page 115 • unit • family on page 94

use-interface-description

Syntax use-interface-description (logical | device);

Hierarchy Level [edit forwarding-options dhcp-relay **dhcpv6** relay-agent-interface-id],
 [edit forwarding-options dhcp-relay **dhcpv6** group *group-name* relay-agent-interface-id],
 [edit forwarding-options dhcp-relay relay-option-82 **circuit-id**],
 [edit forwarding-options dhcp-relay group *group-name* relay-option-82 **circuit-id**],
 [edit logical-systems *logical-system-name* forwarding-options dhcp-relay **dhcpv6** relay-agent-interface-id],
 [edit logical-systems *logical-system-name* forwarding-options dhcp-relay **dhcpv6** group *group-name* relay-agent-interface-id],
 [edit logical-systems *logical-system-name* forwarding-options dhcp-relay relay-option-82 **circuit-id**],
 [edit logical-systems *logical-system-name* forwarding-options dhcp-relay group *group-name* relay-option-82 **circuit-id**],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* forwarding-options dhcp-relay **dhcpv6** relay-agent-interface-id],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* forwarding-options dhcp-relay **dhcpv6** group *group-name* relay-agent-interface-id],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* forwarding-options dhcp-relay relay-option-82 **circuit-id**],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* forwarding-options dhcp-relay group *group-name* relay-option-82 **circuit-id**],
 [edit routing-instances *routing-instance-name* forwarding-options dhcp-relay **dhcpv6** relay-agent-interface-id],
 [edit routing-instances *routing-instance-name* forwarding-options dhcp-relay **dhcpv6** group *group-name* relay-agent-interface-id],
 [edit routing-instances *routing-instance-name* forwarding-options dhcp-relay relay-option-82 **circuit-id**],
 [edit routing-instances *routing-instance-name* forwarding-options dhcp-relay group *group-name* relay-option-82 **circuit-id**]

Release Information Statement introduced in Junos OS Release 9.6.
 Support at the [edit ... **dhcpv6**] hierarchy levels introduced in Junos OS Release 11.4.
 Statement introduced in Junos OS Release 12.3 for EX Series switches.

Description Use the textual interface description instead of the interface identifier when creating the agent-circuit-id suboption of the DHCP relay agent option 82. Use the statement at the [edit ... **dhcpv6**] hierarchy levels to configure DHCPv6 support.

If you specify that the textual description is used and no description is configured for the interface, DHCP relay defaults to using the interface identifier. The textual description is configured using the **description** statement at the [edit interfaces *interface-name*] hierarchy level.



NOTE: By default, DHCP relay accepts a maximum of 253 ASCII characters. If the textual interface description is longer than 253 characters, DHCP relay drops the packet, which results in the DHCP client failing to bind.

Options	logical —Use the textual description that is configured for the logical interface.
	device —Use the textual description that is configured for the device interface.
Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	• Enabling and Disabling Insertion of Option 82 Information
	• Using a Textual Description in Option 82
	• Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets
	• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30

use-primary (DHCP Relay Agent)


Syntax	<code>use-primary <i>primary-profile-name</i>;</code>
Hierarchy Level	<p>[edit forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dynamic-profile <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> dynamic-profile <i>profile-name</i>]</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> dynamic-profile <i>profile-name</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 9.3.</p> <p>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
Description	<p>Specify the dynamic profile to configure as the primary dynamic profile. The primary dynamic profile is instantiated when the first subscriber logs in. Subsequent subscribers are not assigned the primary dynamic profile; instead, they are assigned the dynamic profile specified for the interface. When the first subscriber logs out, the next subscriber that logs in is assigned the primary dynamic profile.</p> <p>Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.</p> <p>EX Series switches do not support DHCPv6.</p>
Options	<i>primary-profile-name</i> —Name of the dynamic profile to configure as the primary dynamic profile
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**
- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces](#)
 - [dhcp-relay \(EX Series Switches only\) on page 80](#)
 - [Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12](#)
 - [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)

vendor-id

Syntax	<code>vendor-id <i>vendor-id</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family inet dhcp]
Release Information	Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure a vendor class ID for the Dynamic Host Configuration Protocol (DHCP) client.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring a DHCP Client (CLI Procedure) on page 27

vendor-option

Syntax	<pre>vendor-option { default-local-server-group <i>local-server-group-name</i> default-relay-server-group <i>server-group-name</i> drop; equals starts-with }</pre>
Hierarchy Level	[edit forwarding-options dhcp-relay relay-option-60]
Release Information	Statement introduced before Junos OS Release 12.1 for EX Series switches. Statement deprecated in Junos OS Release 12.3 for EX Series switches.
Description	Configure the match criteria when you use the DHCP vendor class identifier option (option 60) in DHCP client packets to forward client traffic to specific DHCP servers. The extended DHCP relay agent compares the option 60 vendor-specific strings received in DHCP client packets against the match criteria that you specify. If there is a match, you can define certain actions for the associated DHCP client packets.
	<div><p>NOTE: The <code>vendor-option</code> statement has been deprecated and might be removed from future product releases. We recommend that you phase out its use. See option-number.</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">• Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 30• Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12

web-management

Syntax	<pre>web-management { http { interfaces [<i>interface-names</i>]; port <i>port</i>; } https { interfaces [<i>interface-names</i>]; local-certificate <i>name</i>; port <i>port</i>; } }</pre>
Hierarchy Level	[edit system services]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	<p>Configure settings for HTTP or HTTPS access. HTTP access allows management of the router or switch using the browser-based J-Web graphical user interface. HTTPS access allows secure management of the router or switch using the J-Web interface. With HTTPS access, communication between the router or switch Web server and your browser is encrypted.</p> <p>The remaining statements are explained separately.</p>
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"> Configuring Management Access for the EX Series Switch (J-Web Procedure) <i>J-Web Interface User Guide</i> http on page 107 https on page 108 port on page 147

wins-server (System)

Syntax	<code>wins-server { <i>address</i>; }</code>
Hierarchy Level	[edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	For J Series Services Routers and EX Series switches only. Specify one or more NetBIOS Name Servers. When a DHCP client is added to the network and assigned an IP address, the NetBIOS Name Server manages the Windows Internet Name Service (WINS) database that matches IP addresses (such as 192.168.1.3) to Windows NetBIOS names (such as \\Marketing). List servers in order of preference.
Options	<i>address</i> —IPv4 address of the NetBIOS Name Server running WINS. To configure multiple servers, include multiple <i>address</i> options.
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">Configuring the Router or Interface to Act as a DHCP Server on J Series Services RoutersConfiguring a DHCP Server on Switches (CLI Procedure) on page 28

PART 3

Administration

- [Routine Monitoring on page 193](#)
- [Operational Commands on page 197](#)

CHAPTER 8

Routine Monitoring

- [Monitoring DHCP Services on page 193](#)
- [Verifying and Managing DHCP Relay Configuration for EX Series Switches on page 196](#)

Monitoring DHCP Services

Purpose A switch or router can operate as a DHCP server. Use the monitoring functionality to view information about dynamic and static DHCP leases, conflicts, pools, and statistics.

Action To monitor the DHCP server in the J-Web interface, select **Monitor > Services > DHCP**.

To monitor the DHCP server in the CLI, enter the following CLI commands:

- `show system services dhcp binding`
- `show system services dhcp conflict`
- `show system services dhcp pool`
- `show system services dhcp statistics`
- `show system services dhcp relay-statistics`
- `show system services dhcp global`
- `show system services dhcp client`

Meaning [Table 10 on page 193](#) summarizes the output fields in DHCP displays in the J-Web interface.

Table 10: Summary of DHCP Output Fields

Field	Values	Additional Information
-------	--------	------------------------

Global tab

Table 10: Summary of DHCP Output Fields (*continued*)

Field	Values	Additional Information
Name	<div>This column displays the following information:</div> <ul style="list-style-type: none">• Boot lease length• Domain Name• Name servers• Server identifier• Domain search• Gateway routers• WINS server• Boot file• Boot server• Default lease time• Minimum lease time• Maximum lease time	
Value	Displays the value for each of the parameters in the Name column.	
Bindings tab		
Allocated Address	List of IP addresses the DHCP server has assigned to clients.	
MAC Address	Corresponding media access control (MAC) address of the client.	
Binding Type	Type of binding assigned to the client: dynamic or static .	DHCP servers can assign a dynamic binding from a pool of IP addresses or a static binding to one or more specific IP addresses.
Lease Expires	Date and time the lease expires, or never for leases that do not expire.	
Pools tab		
Pool Name	Subnet on which the IP address pool is defined.	
Low Address	Lowest address in the IP address pool.	
High Address	Highest address in the IP address pool.	
Excluded Addresses	Addresses excluded from the address pool.	
Clients tab		
Interface Name	Name of the logical interface.	

Table 10: Summary of DHCP Output Fields (*continued*)

Field	Values	Additional Information
Hardware Address	Vendor identification.	
Status	State of the client binding.	
Address Obtained	IP address obtained from the DHCP server.	
Update Server	Indicates whether server update is enabled.	
Lease Obtained	Date and time the lease was obtained.	
Lease Expires	Date and time the lease expires.	
Renew	Reacquires an IP address from the server for the interface. When you click this option, the command sends a discover message if the client state is INIT and a renew request message if the client state is BOUND. For all other states it performs no action.	
Release	Clears other resources received earlier from the server, and reinitializes the client state to INIT for the particular interface.	
Conflicts tab		
Detection Time	Date and time the client detected the conflict.	
Detection Method	How the conflict was detected.	Only client-detected conflicts are displayed.
Address	IP address where the conflict occurs.	The addresses in the conflicts list remain excluded until you use the clear system services dhcp conflict command to manually clear the list.
DHCP Statistics		
Relay Statistics tab		
Packet Counters	Displays the number of packet counters.	
Dropped Packet Counters	Graphically displays the number of dropped packet counters.	
Statistics tab		

Table 10: Summary of DHCP Output Fields (*continued*)

Field	Values	Additional Information
Packets dropped	Total number of packets dropped and the number of packets dropped due to a particular condition.	
Messages received	Number of BOOTREQUEST, DHCPDECLINE, DHCPDISCOVER, DHCPINFORM, DHCPRELEASE, and DHCPREQUEST messages sent from DHCP clients and received by the DHCP server.	
Messages sent	Number of BOOTREPLY, DHCPACK, DHCPOFFER, and DHCPNAK messages sent from the DHCP server to DHCP clients.	

- Related Documentation**
- [Configuring DHCP Services \(J-Web Procedure\) on page 23](#)
 - [Understanding DHCP Services for Switches on page 7](#)

Verifying and Managing DHCP Relay Configuration for EX Series Switches

Purpose View or clear statistics for extended DHCP relay agent:

- Action**
- To display extended DHCP relay agent statistics:

```
user@switcht> show dhcp relay statistics
```
 - To clear all extended DHCP relay agent statistics:

```
user@switcht> clear dhcp relay statistics
```

- Related Documentation**
- [Configuring an Extended DHCP Relay Server on EX Series Switches \(CLI Procedure\) on page 30](#)
 - [Understanding the Extended DHCP Relay Agent for EX Series Switches on page 12](#)

CHAPTER 9

Operational Commands

clear dhcp relay statistics

Syntax	<code>clear dhcp relay statistics</code> <code><logical-system <i>logical-system-name</i>></code> <code><routing-instance <i>routing-instance-name</i>></code>
Syntax	Syntax for EX Series switches: <code>show dhcp relay statistics</code> <code><routing-instance <i>routing-instance-name</i>></code>
Release Information	Command introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 12.1 for EX Series switches. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.
Description	Clear all Dynamic Host Configuration Protocol (DHCP) relay statistics.
Options	<code>logical-system <i>logical-system-name</i></code> —(On routers only) (Optional) Perform this operation on the specified logical system. If you do not specify a logical system name, statistics are cleared for the default logical system. <code>routing-instance <i>routing-instance-name</i></code> —(Optional) Perform this operation on the specified routing instance. If you do not specify a routing instance name, statistics are cleared for the default routing instance.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show dhcp relay statistics on page 212
List of Sample Output	clear dhcp relay statistics on page 199
Output Fields	Table 11 on page 199 lists the output fields for the <code>clear dhcp relay statistics</code> command.

Table 11: clear dhcp relay statistics Output Fields

Field Name	Field Description
Packets dropped	<p>Number of packets discarded by the extended DHCP relay agent application due to errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> • Total—Total number of packets discarded by the extended DHCP relay agent application. • Bad hardware address—Number of packets discarded because an invalid hardware address was specified. • Bad opcode—Number of packets discarded because an invalid operation code was specified. • Bad options—Number of packets discarded because invalid options were specified. • Invalid server address—Number of packets discarded because an invalid server address was specified. • No available addresses—Number of packets discarded because there were no addresses available for assignment. • No interface match—Number of packets discarded because they did not belong to a configured interface. • No routing instance match—Number of packets discarded because they did not belong to a configured routing instance. • No valid local address—Number of packets discarded because there was no valid local address. • Packet too short—Number of packets discarded because they were too short. • Read error—Number of packets discarded because of a system read error. • Send error—Number of packets that the extended DHCP relay application could not send. • Option 60—Number of packets discarded containing DHCP option 60 vendor-specific information. • Option 82—Number of packets discarded because DHCP option 82 information could not be added.
Messages received	<p>Number of DHCP messages received.</p> <ul style="list-style-type: none"> • BOOTREQUEST—Number of BOOTP protocol data units (PDUs) received • DHCPDECLINE—Number of DHCP PDUs of type DECLINE received • DHCPDISCOVER—Number of DHCP PDUs of type DISCOVER received • DHCPINFORM—Number of DHCP PDUs of type INFORM received • DHCPRELEASE—Number of DHCP PDUs of type RELEASE received • DHCPREQUEST—Number of DHCP PDUs of type REQUEST received
Messages sent	<p>Number of DHCP messages sent.</p> <ul style="list-style-type: none"> • BOOTREPLY—Number of BOOTP PDUs transmitted • DHCPOFFER—Number of DHCP OFFER PDUs transmitted • DHCPACK—Number of DHCP ACK PDUs transmitted • DHCPNACK—Number of DHCP NACK PDUs transmitted

Sample Output

clear dhcp relay statistics

The following sample output displays the DHCP relay statistics before and after the **clear dhcp relay statistics** command is issued.

```
user@host> show dhcp relay statistics
```

```
Packets dropped:
  Total                0

Messages received:
  BOOTREQUEST          116
  DHCPDECLINE           0
  DHCPDISCOVER          11
  DHCPINFORM            0
  DHCPRELEASE           0
  DHCPREQUEST          105

Messages sent:
  BOOTREPLY             44
  DHCPOFFER             11
  DHCPACK               11
  DHCPNAK               11
```

```
user@host> clear dhcp relay statistics
```


```
user@host> show dhcp relay statistics
```

```
Packets dropped:
  Total                0

Messages received:
  BOOTREQUEST          0
  DHCPDECLINE           0
  DHCPDISCOVER          0
  DHCPINFORM            0
  DHCPRELEASE           0
  DHCPREQUEST           0

Messages sent:
  BOOTREPLY             0
  DHCPOFFER             0
  DHCPACK               0
  DHCPNAK               0
```

clear security pki local-certificate

Syntax	clear security pki local-certificate <all certificate-id <i>certificate-id-name</i> system-generated>
Release Information	Command introduced in Junos OS Release 11.1 for EX Series switches.
Description	Delete local digital certificates, certificate requests, and the corresponding public/private key pairs from the switch.
Options	<p>all—(Optional) Delete all local digital certificates, certificate requests, and the corresponding public and private key pairs from the router.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;">  <p>NOTE: This option does not delete the automatically generated self-signed certificate or its public/private key pair.</p> </div> <p>certificate-id <i>certificate-id-name</i>—(Optional) Delete the specified local digital certificate and corresponding public and private key pair.</p> <p>system-generated—(Optional) Delete the automatically generated self-signed certificate.</p>
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • Deleting Self-Signed Certificates (CLI Procedure) on page 33
List of Sample Output	clear security pki local-certificate all on page 201
Output Fields	This command produces no output.

Sample Output

clear security pki local-certificate all

```
user@switch> clear security pki local-certificate all
```

clear system services dhcp binding

Syntax	clear system services dhcp binding <address>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switches only) Remove obsolete IP address bindings on a Dynamic Host Configuration Protocol (DHCP) server and return them to the IP address pool.
Options	address —(Optional) Remove a specific IP address binding and return it to the address pool.
Required Privilege Level	view and system
Related Documentation	<ul style="list-style-type: none">• show system services dhcp binding on page 218
List of Sample Output	clear system services dhcp binding on page 202
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear system services dhcp binding

```
user@host> clear system services dhcp binding
```

clear system services dhcp conflict

Syntax	clear system services dhcp conflict <address>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switches only) Remove IP addresses from the Dynamic Host Configuration Protocol (DHCP) server conflict list and return them to the IP address pool.
Options	address —(Optional) Remove a specific IP address from the conflict list and return it to the address pool.
Required Privilege Level	view and system
Related Documentation	<ul style="list-style-type: none">• show system services dhcp conflict on page 221
List of Sample Output	clear system services dhcp conflict on page 203
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear system services dhcp conflict

```
user@host> clear system services dhcp conflict
```

clear system services dhcp statistics

Syntax	clear system services dhcp statistics
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switches only) Clear Dynamic Host Configuration Protocol (DHCP) server statistics.
Options	This command has no options.
Required Privilege Level	view and system
Related Documentation	<ul style="list-style-type: none">• show system services dhcp statistics on page 226
List of Sample Output	clear system services dhcp statistics on page 204
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear system services dhcp statistics

```
user@host> clear system services dhcp statistics
```

request ipsec switch

Syntax	<code>request ipsec switch (interface <es-fpc/pic/port> security-associations <sa-name>)</code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(Encryption interface on M Series, PTX Series, and T Series routers and EX Series switches only) Manually switch from the primary to the backup encryption services interface, or switch from the primary to the backup IP Security (IPsec) tunnel.
Options	<code>interface <es-fpc/pic/port></code> —Switch to the backup encryption interface. <code>security-associations <sa-name></code> —Switch to the backup tunnel.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show ipsec redundancy
List of Sample Output	request ipsec switch on page 205
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request ipsec switch

```
user@host> request ipsec switch security-associations sa-private
```

request security certificate (signed)

Syntax	<code>request security certificate enroll filename <i>filename</i> subject <i>subject</i> alternative-subject <i>alternative-subject</i> certification-authority <i>certification-authority</i> encoding (binary pem) key-file <i>key-file</i> domain-name <i>domain-name</i></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Obtain a signed certificate from a certificate authority (CA). The signed certificate validates the CA and the owner of the certificate. The results are saved in a specified file to the <code>/var/etc/ikecert</code> directory.
Options	<p>filename <i>filename</i>—File that stores the certificate.</p> <p>subject <i>subject</i>—Distinguished name (dn), which consists of a set of components—for example, an organization (o), an organization unit (ou), a country (c), and a locality (l).</p> <p>alternative-subject <i>alternative-subject</i>—Tunnel source address.</p> <p>certification-authority <i>certification-authority</i>—Name of the certificate authority profile in the configuration.</p> <p>encoding (binary pem)—File format used for the certificate. The format can be a binary file or privacy-enhanced mail (PEM), an ASCII base64-encoded format. The default format is binary.</p> <p>key-file <i>key-file</i>—File containing a local private key.</p> <p>domain-name <i>domain-name</i>—Fully qualified domain name.</p>
Required Privilege Level	maintenance
List of Sample Output	request security certificate (signed) on page 206
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security certificate (signed)

```
user@host> request security certificate enroll filename host.crt subject c=uk,o=london
alternative-subject 10.50.1.4 certification-authority verisign key-file host-1.prv domain-name
host.juniper.net
CA name: juniper.net CA file: ca_verisign
local pub/private key pair: host.prv
subject: c=uk,o=london domain name: host.juniper.net
alternative subject: 10.50.1.4
Encoding: binary
```


Certificate enrollment has started. To view the status of your enrollment, check the key management process (kmd) log file at /var/log/kmd. <-----

request security certificate (unsigned)

Syntax	<code>request security certificate enroll filename <i>filename</i> ca-file <i>ca-file</i> ca-name <i>ca-name</i> encoding (binary perm) url <i>url</i></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Obtain a certificate from a certificate authority (CA). The results are saved in a specified file to the <code>/var/etc/ikecert</code> directory.
Options	<p><code>filename <i>filename</i></code>—File that stores the public key certificate.</p> <p><code>ca-file <i>ca-file</i></code>—Name of the certificate authority profile in the configuration.</p> <p><code>ca-name <i>ca-name</i></code>—Name of the certificate authority.</p> <p><code>encoding (binary pem)</code>—File format used for the certificate. The format can be a binary file or privacy-enhanced mail (PEM), an ASCII base64-encoded format. The default value is binary.</p> <p><code>url <i>url</i></code>—Certificate authority URL.</p>
Required Privilege Level	maintenance
List of Sample Output	request security certificate (unsigned) on page 208
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security certificate (unsigned)

```
user@host> request security certificate enroll filename ca_verisign ca-file verisign ca-name
juniper.net urlxyzcompany URL
http://<verisign ca-name xyzcompany url>/cgi-bin/pkiclient.exe CA name: juniper.net
CA file: verisign Encoding: binary
Certificate enrollment has started. To view the status of your enrollment, check
the key management process (kmd) log file at /var/log/kmd. <-----
```

request security key-pair

Syntax	<code>request security key-pair <i>filename</i></code> <code><size <i>key-size</i>></code> <code><type (rsa dsa)></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(Encryption interface on M Series and T Series routers and EX Series switches only) Generate a public and private key pair for a digital certificate.
Options	<p><i>filename</i>—Name of a file in which to store the key pair.</p> <p><i>size key-size</i>—(Optional) Key size, in bits. The key size can be 512, 1024, or 2048. The default value is 1024.</p> <p><i>type</i>—(Optional) Algorithm used to encrypt the key:</p> <ul style="list-style-type: none"> • rsa—RSA algorithm. This is the default. • dsa—Digital signature algorithm with Secure Hash Algorithm (SHA).
Required Privilege Level	maintenance
List of Sample Output	request security key-pair on page 209
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security key-pair

```
user@host> request security key-pair security-key-file
```

request security pki generate-key-pair

Syntax	<code>request security pki generate-key-pair certificate-id <i>certificate-id-name</i></code> <code><size (512 1024 2048)></code> <code><type (dsa rsa)></code>
Release Information	Command introduced in Junos OS Release 11.1 for EX Series switches.
Description	Generate a public key infrastructure (PKI) public/private key pair for a local digital certificate.
Options	<p>certificate-id <i>certificate-id-name</i>—Name of the local digital certificate and the public/private key pair.</p> <p>size—(Optional) Key pair size. The key pair size can be 512, 1024, or 2048 bits. If a key pair size is not specified, the default value, 1024 bits, is applied.</p> <p>type—(Optional) The algorithm to be used for encrypting the public/private key pair. The encryption algorithm can be dsa or rsa. If an encryption algorithm is not specified, the default value, rsa, is applied.</p>
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none">• Manually Generating Self-Signed Certificates on Switches (CLI Procedure) on page 32
List of Sample Output	request security pki generate-key-pair on page 210
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security pki generate-key-pair

```
user@switch> request security pki generate-key-pair certificate-id billy size 2048
Generated key pair billy, key size 2048 bits
```

request security pki local-certificate generate-self-signed

Syntax	<code>request security pki local-certificate generate-self-signed certificate-id <i>certificate-id-name</i> domain-name <i>domain-name</i> ip-address <i>ip-address</i> email <i>email-address</i> subject <i>subject-distinguished-name</i></code>
Release Information	Command introduced in Junos OS Release 11.1 for EX Series switches.
Description	Manually generate a self-signed certificate for the given distinguished name.
Options	<p>certificate-id <i>certificate-id-name</i>—Name of the local digital certificate and the public/private key pair.</p> <p>domain-name <i>domain-name</i>—Fully qualified domain name (FQDN). The FQDN provides the identity of the certificate owner for Internet Key Exchange (IKE) negotiations and provides an alternative to the subject name.</p> <p>email <i>email-address</i>—E-mail address of the certificate holder.</p> <p>ip-address <i>ip-address</i>—IP address of the switch.</p> <p>subject <i>subject-distinguished-name</i>—Distinguished name format that contains the common name, department, company name, state, and country:</p> <ul style="list-style-type: none"> • CN—Common name • OU—Organizational unit name • O—Organization name • ST—State • C—Country
Required Privilege Level	maintenance security
Related Documentation	<ul style="list-style-type: none"> • Manually Generating Self-Signed Certificates on Switches (CLI Procedure) on page 32
List of Sample Output	request security pki local-certificate generate-self-signed on page 211
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request security pki local-certificate generate-self-signed

```
user@switch> request security pki local-certificate generate-self-signed certificate-id self-cert
subject cn=abc domain-name abc.net email jdoe@abc.net
Self-signed certificate generated and loaded successfully
```

show dhcp relay statistics

Syntax	<code>show dhcp relay statistics</code> <code><logical-system <i>logical-system-name</i>></code> <code><routing-instance <i>routing-instance-name</i>></code>
Syntax	Syntax for EX Series switches: <code>show dhcp relay statistics</code> <code><routing-instance <i>routing-instance-name</i>></code>
Release Information	Command introduced in Junos OS Release 8.3. Command introduced in Junos OS Release 12.1 for EX Series switches. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.
Description	Display Dynamic Host Configuration Protocol (DHCP) relay statistics.
Options	<code>logical-system <i>logical-system-name</i></code> —(On routers only) (Optional) Perform this operation on the specified logical system. If you do not specify a logical system name, statistics are displayed for the default logical system. <code>routing-instance <i>routing-instance-name</i></code> —(Optional) Perform this operation on the specified routing instance. If you do not specify a routing instance name, statistics are displayed for the default routing instance.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• clear dhcp relay statistics on page 198
List of Sample Output	show dhcp relay statistics on page 214
Output Fields	Table 12 on page 213 lists the output fields for the <code>show dhcp relay statistics</code> command. Output fields are listed in the approximate order in which they appear.

Table 12: show dhcp relay statistics Output Fields

Field Name	Field Description
Packets dropped	<p>Number of packets discarded by the extended DHCP relay agent application due to errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> • Total—Total number of packets discarded by the extended DHCP relay agent application. • Bad hardware address—Number of packets discarded because an invalid hardware address was specified. • Bad opcode—Number of packets discarded because an invalid operation code was specified. • Bad options—Number of packets discarded because invalid options were specified. • Invalid server address—Number of packets discarded because an invalid server address was specified. • No available addresses—Number of packets discarded because there were no addresses available for assignment. • No interface match—Number of packets discarded because they did not belong to a configured interface. • No routing instance match—Number of packets discarded because they did not belong to a configured routing instance. • No valid local address—Number of packets discarded because there was no valid local address. • Packet too short—Number of packets discarded because they were too short. • Read error—Number of packets discarded because of a system read error. • Send error—Number of packets that the extended DHCP relay application could not send. • Option 60—Number of packets discarded containing DHCP option 60 vendor-specific information. • Option 82—Number of packets discarded because DHCP option 82 information could not be added.
Messages received	<p>Number of DHCP messages received.</p> <ul style="list-style-type: none"> • BOOTREQUEST—Number of BOOTP protocol data units (PDUs) received • DHCPDECLINE—Number of DHCP PDUs of type DECLINE received • DHCPDISCOVER—Number of DHCP PDUs of type DISCOVER received • DHCPINFORM—Number of DHCP PDUs of type INFORM received • DHCPRELEASE—Number of DHCP PDUs of type RELEASE received • DHCPREQUEST—Number of DHCP PDUs of type REQUEST received
Messages sent	<p>Number of DHCP messages sent.</p> <ul style="list-style-type: none"> • BOOTREPLY—Number of BOOTP PDUs transmitted • DHCPOFFER—Number of DHCP OFFER PDUs transmitted • DHCPACK—Number of DHCP ACK PDUs transmitted • DHCPNACK—Number of DHCP NACK PDUs transmitted • DHCPFORCERENEW—Number of DHCP FORCERENEW PDUs transmitted
Packets forwarded	<p>Number of packets forwarded.</p> <ul style="list-style-type: none"> • BOOTREQUEST—Number of BOOTREQUEST protocol data units (PDUs) forwarded • BOOTREPLY—Number of BOOTREPLY protocol data units (PDUs) forwarded

Sample Output

show dhcp relay statistics

```
user@host> show dhcp relay statistics
Packets dropped:
  Total                30
  Bad hardware address  1
  Bad opcode            1
  Bad options           3
  Invalid server address 5
  No available addresses 1
  No interface match    2
  No routing instance match 9
  No valid local address 4
  Packet too short      2
  Read error            1
  Send error            1
  Option 60             1
  Option 82             2

Messages received:
  BOOTREQUEST          116
  DHCPDECLINE           0
  DHCPDISCOVER         11
  DHCPINFORM           0
  DHCPRELEASE          0
  DHCPREQUEST         105

Messages sent:
  BOOTREPLY            0
  DHCPOFFER            2
  DHCPACK              1
  DHCPNAK              0
  DHCPFORCERENEW       0

Packets forwarded:
  Total                4
  BOOTREQUEST          2
  BOOTREPLY            2
```


show security pki local-certificate

Syntax	show security pki local-certificate <brief detail> <certificate-id <i>certificate-id-name</i> > <system-generated>
Release Information	Command introduced in Junos OS Release 11.1 for EX Series switches.
Description	Display information about the local digital certificates and the corresponding public keys installed in the switch.
Options	<p>none—(Same as brief) Display information about all local digital certificates and corresponding public keys.</p> <p>brief detail—(Optional) Display information about local digital certificates and corresponding public keys for the specified level of output.</p> <p>certificate-id <i>certificate-id-name</i>—(Optional) Display information about only the specified the local digital certificate and corresponding public keys.</p> <p>system-generated—(Optional) Display information about the automatically generated self-signed certificate.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Manually Generating Self-Signed Certificates on Switches (CLI Procedure) on page 32
List of Sample Output	show security pki local-certificate on page 216 show security pki local-certificate detail on page 217
Output Fields	Table 13 on page 215 lists the output fields for the show security pki local-certificate command. Output fields are listed in the approximate order in which they appear.

Table 13: show security pki local-certificate Output Fields

Field Name	Field Description	Level of Output
Certificate identifier	Name of the digital certificate.	All levels
Certificate version	Revision number of the digital certificate.	detail
Serial number	Unique serial number of the digital certificate.	detail
Issued by	Authority that issued the digital certificate.	none brief
Issued to	Device that was issued the digital certificate.	none brief

Table 13: show security pki local-certificate Output Fields (*continued*)

Field Name	Field Description	Level of Output
Issuer	Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are: <ul style="list-style-type: none"> • Common name—Name of the authority. • Organization—Organization of origin. • Organizational unit—Department within an organization. • State—State of origin. • Country—Country of origin. 	detail
Subject	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: <ul style="list-style-type: none"> • Common name—Name of the authority. • Organization—Organization of origin. • Organizational unit—Department within an organization. • State—State of origin. • Country—Country of origin. 	detail
Alternate subject	Domain name or IP address of the device related to the digital certificate.	detail
Validity	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> • Not before—Start time when the digital certificate becomes valid. • Not after—End time when the digital certificate becomes invalid. 	All levels
Public key algorithm	Encryption algorithm used with the private key, such as rsaEncryption (1024 bits) .	All levels
Public key verification status	Public key verification status: Failed or Passed . The detail output also provides the verification hash.	All levels
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as sha1WithRSAEncryption .	detail
Fingerprint	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	detail
Distribution CRL	Distinguished name information and URL for the certificate revocation list (CRL) server.	detail
Use for key	Use of the public key, such as Certificate signing , CRL signing , Digital signature , or Key encipherment .	detail

Sample Output

show security pki local-certificate

```

user@switch> show security pki local-certificate
Certificate identifier: local-entrust2
Issued to: router2.juniper.net, Issued by: juniper

```

```

Validity:
  Not before: 2005 Nov 21st, 23:28:22 GMT
  Not after: 2008 Nov 21st, 23:58:22 GMT
Public key algorithm: rsaEncryption(1024 bits)
Public key verification status: Passed

```

show security pki local-certificate detail

```

user@switch> show security pki local-certificate detail
Certificate identifier: local-entrust3
Certificate version: 3
Serial number: 4355 94f9
Issuer:
  Organization: juniper, Country: us
Subject:
  Organization: juniper, Country: us, Common name: switch1.juniper.net
Alternate subject: switch1.juniper.net
Validity:
  Not before: 2005 Nov 21st, 23:33:58 GMT
  Not after: 2008 Nov 22nd, 00:03:58 GMT
Public key algorithm: rsaEncryption(1024 bits)
Public key verification status: Passed
fb:79:df:d4:a9:03:0f:d3:69:7e:c1:e4:27:35:9c:d9:b1:a2:47:78
d2:6d:f3:e5:f4:68:4f:b3:04:45:88:57:99:82:39:a6:51:9e:5f:42
23:3f:d7:6e:3d:a5:54:a9:b1:2d:6e:90:dd:12:8a:bf:ef:2b:20:50
ba:f0:da:d9:0c:ad:5e:d6:c6:98:3a:ae:3f:90:dd:94:78:c1:ea:2e
7c:f0:2d:d4:79:d4:cd:f0:52:df:5e:72:f2:e7:ae:66:f7:61:f4:bc
72:57:3e:6c:6d:d3:24:58:8b:f4:ef:da:2a:6a:fa:eb:98:f8:34:84
79:54:da:4f:d3:6f:52:1f
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  61:3a:d0:b4:7a:16:9b:39:ba:81:3f:9d:ab:34:e5:c8:be:3b:a1:6d (sha1)
  60:a0:ff:58:05:4a:65:73:9d:74:3a:e1:83:6f:1b:c8 (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: Digital signature

```

show system services dhcp binding

Syntax	show system services dhcp binding <detail> <address>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers only) Display Dynamic Host Configuration Protocol (DHCP) server client binding information.
Options	<p>none—Display brief information about all active client bindings.</p> <p>detail—(Optional) Display detailed information about all active client bindings.</p> <p>address—(Optional) Display detailed client binding information for the specified IP address only.</p>
Required Privilege Level	view and system
Related Documentation	<ul style="list-style-type: none"> • clear system services dhcp binding on page 202
List of Sample Output	show system services dhcp binding on page 219 show system services dhcp binding address on page 219 show system services dhcp binding address detail on page 219
Output Fields	Table 14 on page 218 describes the output fields for the show system services dhcp binding command. Output fields are listed in the approximate order in which they appear.

Table 14: show system services dhcp binding Output Fields

Field Name	Field Description	Level of Output
Allocated address	List of IP addresses the DHCP server has assigned to clients.	All levels
MAC address	Corresponding media access control (MAC) hardware address of the client.	All levels
Client identifier	(address option only) Client's unique identifier (represented by an ASCII string or hexadecimal digits). This identifier is used by the DHCP server to index its database of address bindings.	All levels
Binding Type	Type of binding assigned to the client. DHCP servers can assign a dynamic binding from a pool of IP addresses or a static binding to one or more specific IP addresses.	All levels
Lease Expires at	Time the lease expires or never for leases that do not expire.	All levels
Lease Obtained at	(address option only) Time the client obtained the lease from the DHCP server.	detail

Table 14: show system services dhcp binding Output Fields (*continued*)

Field Name	Field Description	Level of Output
State	Status of the binding. Bindings can be active or expired.	detail
Pool	Address pool that contains the IP address assigned to the client.	detail
Request received on	Interface on which the DHCP message exchange occurs. The IP address pool is configured based on the interface's IP address. If a relay agent is used, its IP address is also displayed.	detail
DHCP options	User-defined options created for the DHCP server. If no options have been defined, this field is blank.	detail

Sample Output

show system services dhcp binding

```
user@host> show system services dhcp binding

Allocated address  MAC address      Binding Type  Lease expires at
192.168.1.2        00:a0:12:00:12:ab  static       never
192.168.1.3        00:a0:12:00:13:02  dynamic      2004-05-03 13:01:42 PDT
```

show system services dhcp binding address

```
user@host> show system services dhcp binding 192.168.1.3

DHCP binding information:
Allocated address: 192.168.1.3
Mac address: 00:a0:12:00:12:ab
Client identifier
61 63 65 64 2d 30 30 3a 61 30 3a 31 32 3a 30 30aced-00:a0:12:00
3a 31 33 3a 30 32:13:02

Lease information:
  Binding Type dynamic
  Obtained at 2004-05-02 13:01:42 PDT
  Expires at 2004-05-03 13:01:42 PDT
```

show system services dhcp binding address detail

```
user@host> show system services dhcp binding 192.168.1.3 detail

DHCP binding information:
Allocated address      192.168.1.3
MAC address 00:a0:12:00:12:ab
Pool                  192.168.1.0/24
Request received on fe-0/0/0, relayed by 192.168.4.254

Lease information:
  Type                DHCP
  Obtained at         2004-05-02 13:01:42 PDT
  Expires at          2004-05-03 13:01:42 PDT
  State active

DHCP options:
  Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
```

Name: domain-name, Value: mydomain.tld
Code: 19, Type: flag, Value: off
Code: 40, Type: string, Value: domain.tld
Code: 32, Type: ip-address, Value: 3.3.3.33

show system services dhcp conflict

Syntax	show system services dhcp conflict
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers only and EX Series switches) Display Dynamic Host Configuration Protocol (DHCP) client-detected conflicts for IP addresses. When a conflict is detected, the DHCP server removes the address from the address pool.
Options	This command has no options.
Required Privilege Level	view and system
Related Documentation	<ul style="list-style-type: none"> • clear system services dhcp conflict on page 203
List of Sample Output	show system services dhcp conflict on page 221
Output Fields	Table 15 on page 221 describes the output fields for the show system services dhcp conflict command. Output fields are listed in the approximate order in which they appear.

Table 15: show system services dhcp conflict Output Fields

Field Name	Field Description
Detection time	Date and time the client detected the conflict.
Detection method	How the conflict was detected.
Address	IP address where the conflict occurs. The addresses in the conflicts list remain excluded from the pool until you use a clear system services dhcp conflict command to manually clear the list.

Sample Output

show system services dhcp conflict

```
user@host> show system services dhcp conflict
```

```

Detection time      Detection method  Address
2004-08-03 19:04:00 PDT  ARP              3.3.3.5
2004-08-04 04:23:12 PDT  Ping             4.4.4.8
2004-08-05 21:06:44 PDT  Client           3.3.3.10
```

show system services dhcp global

Syntax	show system services dhcp global
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) global configuration options. Global options apply to all scopes and clients served by the DHCP server. Global options are overridden if specified otherwise in scope or client options. Scope options apply to specific subnets or ranges of addresses. Client options apply to specific clients.
Options	This command has no options.
Required Privilege Level	view and system
List of Sample Output	show system services dhcp global on page 223
Output Fields	Table 16 on page 222 describes the output fields for the show system services dhcp global command. Output fields are listed in the approximate order in which they appear.

Table 16: show system services dhcp global Output Fields

Field Name	Field Description
BOOTP lease length	Length of lease time assigned to BOOTP clients.
Default lease time	Lease time assigned to clients that do not request a specific lease time.
Minimum lease time	Minimum time a client retains an IP address lease on the server.
Maximum lease time	Maximum time a client can retain an IP address lease on the server.
DHCP options	User-defined options created for the DHCP server. If no options have been defined, this field is blank.

Sample Output

show system services dhcp global

```
user@host> show system services dhcp global

Global settings:
  BOOTP lease length      infinite

DHCP lease times:
  Default lease time      1 hour
  Minimum lease time      2 hours
  Maximum lease time      infinite

DHCP options:
  Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
  Name: domain-name, Value: mydomain.tld
  Code: 19, Type: flag, Value: off
  Code: 40, Type: string, Value: domain.tld
  Code: 32, Type: ip-address, Value: 3.3.3.33
```

show system services dhcp pool

Syntax	show system services dhcp pool <detail> <subnet-address>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server IP address pools.
Options	none —Display brief information about all IP address pools. detail —(Optional) Display detailed information. subnet-address —(Optional) Display information for the specified subnet address.
Required Privilege Level	view and system
List of Sample Output	show system services dhcp pool on page 225 show system services dhcp pool subnet-address on page 225 show system services dhcp pool subnet-address detail on page 225
Output Fields	Table 17 on page 224 describes the output fields for the show system services dhcp pool command. Output fields are listed in the approximate order in which they appear.

Table 17: show system services dhcp pool Output Fields

Field Name	Field Description	Level of Output
Pool name	Subnet on which the IP address pool is defined.	None specified
Low address	Lowest address in the IP address pool.	None specified
High address	Highest address in the IP address pool.	None specified
Excluded addresses	Addresses excluded from the address pool.	None specified
Subnet	(<i>subnet-address</i> option only) Subnet to which the specified address pool belongs.	None specified
Address range	(<i>subnet-address</i> option only) Range of IP addresses in the address pool.	None specified
Addresses assigned	Number of IP addresses in the pool that are assigned to DHCP clients and the total number of IP addresses in the pool.	detail
Active	Number of assigned IP addresses in the pool that are active.	detail
Excluded	Number of assigned IP addresses in the pool that are excluded.	detail
Default lease time	Lease time assigned to clients that do not request a specific lease time.	detail

Table 17: show system services dhcp pool Output Fields (*continued*)

Field Name	Field Description	Level of Output
Minimum lease time	Minimum time a client can retain an IP address lease on the server.	detail
Maximum lease time	Maximum time a client can retain an IP address lease on the server.	detail
DHCP options	User-defined options created for the DHCP server. If no options have been defined, this field is blank.	detail

Sample Output

show system services dhcp pool

```
user@host> show system services dhcp pool

Pool name      Low address    High address    Excluded addresses
3.3.3.0/24     3.3.3.2       3.3.3.254      3.3.3.1
```

show system services dhcp pool subnet-address

```
user@host> show system services dhcp pool 3.3.3.0/24

Pool information:
  Subnet                3.3.3.0/24
  Address range         3.3.3.2 - 3.3.3.254
  Addresses assigned    2/253
```

show system services dhcp pool subnet-address detail

```
user@host> show system services dhcp pool 3.3.3.0/24 detail

Pool information:
  Subnet                3.3.3.0/24
  Address range         3.3.3.2 - 3.3.3.254
  Addresses assigned    2/253
  Active: 1, Excluded: 1

DHCP lease times:
  Default lease time    1 hour
  Minimum lease time    2 hours
  Maximum lease time    infinite

DHCP options:
  Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
  Name: domain-name, Value: mydomain.tld
  Name: router, Value: { 3.3.3.1 }
  Name: server-identifier, Value: 3.3.3.1
  Code: 19, Type: flag, Value: off
  Code: 40, Type: string, Value: domain.tld
  Code: 32, Type: ip-address, Value: 3.3.3.333.3.3.254 3.3.3.1
```

show system services dhcp statistics

Syntax	show system services dhcp statistics
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server statistics.
Options	This command has no options.
Required Privilege Level	view and system
Related Documentation	<ul style="list-style-type: none"> • clear system services dhcp statistics on page 204
List of Sample Output	show system services dhcp statistics on page 227
Output Fields	Table 18 on page 226 describes the output fields for the show system services dhcp statistics command. Output fields are listed in the approximate order in which they appear.

Table 18: show system services dhcp statistics Output Fields

Field Name	Field Description
Default lease time	Lease time assigned to clients that do not request a specific lease time.
Minimum lease time	Minimum time a client can retain an IP address lease on the server.
Maximum lease time	Maximum time a client can retain an IP address lease on the server.
Packets dropped	Total number of packets dropped and number of packets dropped because of: <ul style="list-style-type: none"> • Invalid hardware address • Invalid opcode • Invalid server address • No available address • No interface match • No routing instance match • No valid local addresses • Packet too short • Read error • Send error

Table 18: show system services dhcp statistics Output Fields (*continued*)

Field Name	Field Description
Messages received	<p>Number of the following message types sent from DHCP clients and received by the DHCP server:</p> <ul style="list-style-type: none"> • BOOTREQUEST • DHCPDECLINE • DHCPDISCOVER • DHCPINFORM • DHCPRELEASE • DHCPREQUEST
Messages sent	<p>Number of the following message types sent from the DHCP server to DHCP clients:</p> <ul style="list-style-type: none"> • BOOTREPLY • DHCPACK • DHCPOFFER • DHCPNAK

Sample Output

show system services dhcp statistics

```
user@host> show system services dhcp statistics
```

```
DHCP lease times:
  Default lease time      1 hour
  Minimum lease time     2 hours
  Maximum lease time     infinite
```

```
Packets dropped:
  Total                  0
  Bad hardware address   0
  Bad opcode             0
  Invalid server address 0
  No available addresses 0
  No interface match     0
  No routing instance match 0
  No valid local address 0
  Packet too short       0
  Read error             0
  Send error             0
```

```
Messages received:
  BOOTREQUEST           0
  DHCPDECLINE           0
  DHCPDISCOVER          0
  DHCPINFORM            0
  DHCPRELEASE           0
  DHCPREQUEST           0
```

```
Messages sent:
  BOOTREPLY             0
  DHCPACK               0
```

DHCPOFFER	0
DHCPNAK	0

show system services service-deployment

Syntax	show system services service-deployment
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series.
Description	Display information about a Session and Resource Control (SRC) client.
Options	This command has no options.
Required Privilege Level	system view
List of Sample Output	show system services service-deployment on page 229
Output Fields	Table 19 on page 229 lists the output fields for the show system services service-deployment command. Output fields are listed in the approximate order in which they appear.

Table 19: show system services service-deployment Output Fields

Field Name	Field Description
PDT Keepalive settings	Configured PDT keepalive interval, in seconds.
Keepalives sent	Number of keepalives sent.
Notifications sent	Number of notifications sent.
Last update from peer	Time at which the last update from a peer was received.

Sample Output

show system services service-deployment

```
user@host> show system services service-deployment
Connected to 192.4.4.4 port 10288 since 2004-05-03 11:04:34 PDT Keepalive settings:
Interval 15 seconds Keepalives sent: 750 Notifications sent: 0 Last update from
peer: 00:00:06 ago
```

ssh

Syntax	<pre>ssh host <bypass-routing> <inet inet6> <interface interface-name> <logical-system logical-system-name> <routing-instance routing-instance-name> <source address> <v1 v2></pre>
Syntax (EX Series Switch and the QFX Series)	<pre>ssh host <bypass-routing> <inet inet6> <interface interface-name> <routing-instance routing-instance-name> <source address> <v1 v2></pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p>
Description	<p>Use the SSH program to open a connection between a local router or switch and a remote system and execute commands on the remote system. You can issue the ssh command from the Junos OS CLI to log in to a remote system or from a remote system to log in to the local router or switch. When executing this command, you include one or more CLI commands by enclosing them in quotation marks and separating the commands with semicolons:</p> <pre>ssh address 'cli-command1 ; cli-command2 '</pre>
Options	<p>host—Name or address of the remote system.</p> <p>bypass-routing—(Optional) Bypass the normal routing tables and send ping requests directly to a system on an attached network. If the system is not on a directly attached network, an error is returned. Use this option to ping a local system through an interface that has no route through it.</p> <p>inet inet6—(Optional) Create an IPv4 or IPv6 connection, respectively.</p> <p>interface interface-name—(Optional) Interface name for the SSH session. (This option does not work when default-address-selection is configured at the [edit system] hierarchy level, because this configuration uses the loopback interface as the source address for all locally generated IP packets.)</p> <p>logical-system logical-system-name—(Optional) Name of a particular logical system for the SSH attempt.</p> <p>routing-instance routing-instance-name—(Optional) Name of the routing instance for the SSH attempt.</p>

source address—(Optional) Source address of the SSH connection.

v1 | v2—(Optional) Use SSH version 1 or 2, respectively, when connecting to a remote host.

Additional Information To configure an SSH (version 1) key for your user account, include the **authentication ssh-rsa** statement at the **[edit system login user *user-name*]** hierarchy level. To configure an SSH (version 2) key for your user account, include the **authentication dsa-rsa** statement at the **[edit system login user *user-name*]** hierarchy level. For details, see the .

You can limit the number of times a user can attempt to enter a password while logging in through SSH. To specify the number of times a user can attempt to enter a password to log in through SSH, include the **retry-options** statement at the **[edit system login]** hierarchy level. For details, see the .

Required Privilege Level network

Related Documentation

- Configuring SSH Host Keys for Secure Copying of Data

List of Sample Output [ssh on page 231](#)

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

ssh

```
user@switch> ssh cree
Host key not found from the list of known hosts.
Are you sure you want to continue connecting (yes/no)? yes

Host ?cree' added to the list of known hosts.
boojun@cree's password:
Last login: Sun Jun 21 10:43:42 1998 from junos-router
% ...
```

telnet

Syntax	<code>telnet <i>host</i></code> <code><8bit></code> <code><bypass-routing></code> <code><inet inet6></code> <code><interface <i>interface-name</i>></code> <code><logical-system <i>logical-system-name</i>></code> <code><no-resolve></code> <code><port <i>port-number</i>></code> <code><routing-instance <i>routing-instance-name</i>></code> <code><source <i>source-address</i>></code>
Syntax (EX Series Switches)	<code>telnet <i>host</i></code> <code><8bit></code> <code><bypass-routing></code> <code><inet inet6></code> <code><interface <i>interface-name</i>></code> <code><no-resolve></code> <code><port <i>port-number</i>></code> <code><routing-instance <i>routing-instance-name</i>></code> <code><source <i>source-address</i>></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Open a telnet session to a remote system. Type Ctrl+] to escape from the telnet session to the telnet command level, and then type quit to exit from telnet.
Options	<p><i>host</i>—Name or address of the remote system.</p> <p>8bit—(Optional) Use an 8-bit data path.</p> <p>bypass-routing—(Optional) Bypass the normal routing tables and send ping requests directly to a system on an attached network. If the system is not on a directly attached network, an error is returned. Use this option to ping a local system through an interface that has no route through it.</p> <p>inet inet6—(Optional) Open an IPv4 or IPv6 session, respectively.</p> <p>interface <i>interface-name</i>—(Optional) Interface name for the telnet session. (This option does not work when default-address-selection is configured at the [edit system] hierarchy level, because this configuration uses the loopback interface as the source address for all locally generated IP packets.)</p> <p>logical-system <i>logical-system-name</i>—(Optional) Name of a particular logical system for the telnet attempt.</p> <p>no-resolve—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.</p> <p>port <i>port-number</i>—(Optional) Port number or service name on the remote system.</p>

routing-instance *routing-instance-name*—(Optional) Name of the routing instance for the telnet attempt.

source *source-address*—(Optional) Source address of the telnet connection.

Additional Information You can limit the number of times a user can attempt to enter a password while logging in through telnet. To specify the number of times a user can attempt to enter a password to log in through telnet, include the **retry-options** statement at the **[edit system login]** hierarchy level. For details, see the Junos OS System Basics Configuration Guide.

Required Privilege Level network

List of Sample Output [telnet on page 233](#)

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

telnet

```
user@host> telnet 192.154.1.254
Trying 192.154.169.254...
Connected to level5.company.net.
Escape character is '^]'.
ttypa
login:
```

