



Junos[®] OS

DHCP Relay Agent Feature Guide for Subscriber Management

Release

14.1



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Junos[®] OS DHCP Relay Agent Feature Guide for Subscriber Management

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About the Documentation

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Documentation and Release Notes

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

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

Supported Platforms

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

- MX 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 xiii defines notice icons used in this guide.

Table 1: Notice Icons

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

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure

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

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none">Introduces or emphasizes important new terms.Identifies guide names.Identifies RFC and Internet draft titles.	<ul style="list-style-type: none">A policy <i>term</i> is a named structure that defines match conditions and actions.<i>Junos OS CLI User Guide</i>RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none">To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level.The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(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</i> <i>string2</i> <i>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)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none">In the Logical Interfaces box, select All Interfaces.To cancel the configuration, click Cancel.

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

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

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

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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

Self-Help Online Tools and Resources

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

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>

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

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

Opening a Case with JTAC

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

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [DHCP Relay Agent in Subscriber Access Networks on page 3](#)

CHAPTER 1

DHCP Relay Agent in Subscriber Access Networks

- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCP Relay Proxy Overview on page 8](#)
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Extended DHCP Relay Agent Overview

You can configure extended DHCP relay options on the router or on the switch and enable the router (or 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.

DHCP relay supports the attachment of dynamic profiles and also interacts with the local AAA Service Framework to use back-end authentication servers, such as RADIUS, to provide subscriber authentication or DHCP client authentication. You can attach dynamic profiles and configure authentication support on a global basis or for a specific group of interfaces.



NOTE: The PTX Series Packet Transport Routers do not support authentication for DHCP relay agents.

On the routers, you can use DHCP relay in carrier edge applications such as video/IPTV to obtain configuration parameters, including an IP address, for your subscribers. For information about how to use the DHCP relay agent in a video/IPTV application, see *Broadband Subscriber Management Edge Router Overview*.

On the switches, you can use DHCP relay to obtain configuration parameters including an IP address for DHCP clients.



NOTE: 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, you cannot enable both the extended DHCP relay agent and the DHCP/BOOTP relay agent on the router at the same time.

For information about the DHCP/BOOTP relay agent, see *Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents*.

You can also configure the extended DHCP relay agent to support IPv6 clients. See “[DHCPv6 Relay Agent Overview](#)” on [page 10](#) for information about the DHCPv6 relay agent feature.

To configure the extended DHCP relay agent on the router (or switch), include the `dhcp-relay` statement at the `[edit forwarding-options]` hierarchy level. See the “[\[edit forwarding-options dhcp-relay\] Hierarchy Level](#)” on [page 111](#) for the complete DHCP relay agent syntax.

You can also include the `dhcp-relay` statement at the following hierarchy levels:

- `[edit logical-systems logical-system-name forwarding-options]`
- `[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options]`
- `[edit routing-instances routing-instance-name forwarding-options]`

This overview covers:

- [Interaction Among the DHCP Relay Agent, DHCP Client, and DHCP Servers on page 6](#)
- [DHCP Liveness Detection on page 7](#)

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

The pattern of interaction among the DHCP Relay agent, DHCP client, and DHCP servers is the same regardless of whether the software installation is on a router or a switch. However, there are some difference in the details of usage.

On routers—In a typical carrier edge network configuration, the DHCP client is on the subscriber's computer, and the DHCP relay agent is configured on the router between the DHCP client and one or more DHCP servers.

On switches—In a typical network configuration, the DHCP client is on an access device such as a personal computer and the DHCP relay agent is configured on the switch between the DHCP client and one or more 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 for the subscriber (or DHCP client), including an IP address.
2. The DHCP relay agent receives the discover packet and forwards copies 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 receipt of 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 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" on all of the packets unicast between the client and the server that

pass through the router (or switch) to determine when the lease for this client has expired or been released. This process is referred to as *lease shadowing* or *passive snooping*.

DHCP Liveness Detection

Liveness detection for DHCP subscriber or DHCP client IP sessions utilizes an active liveness detection protocol to institute liveness detection checks for relevant clients. Clients are expected to respond to liveness detection requests within a specified amount of time. If the responses are not received within that time for a given number of consecutive attempts, then the liveness detection check fails and a failure action is implemented.



NOTE: DHCP liveness detection either globally or per DHCP group.

Related Documentation

- [DHCPv6 Relay Agent Overview on page 10](#)
- [Access and Access-Internal Routes for Subscriber Management](#)
- [Dynamic Profile Attachment to DHCP Subscriber Interfaces Overview on page 11](#)
- [Using External AAA Authentication Services with DHCP on page 30](#)
- [DHCP Relay Proxy Overview on page 8](#)
- [Graceful Routing Engine Switchover on page 24](#)
- [High Availability Using ISSU in the PPP Access Network](#)
- [Verifying and Managing DHCP Relay Configuration on page 225](#)
- [Tracing Extended DHCP Operations on page 287](#)
- [Example: Minimum DHCP Relay Agent Configuration on page 77](#)
- [Example: DHCP Relay Agent Configuration with Multiple Clients and Servers on page 78](#)
- [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 79](#)
- [Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing on page 83](#)
- [Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine on page 93](#)

DHCP Relay Proxy Overview

DHCP relay proxy mode is an enhancement to extended DHCP relay. DHCP relay proxy supports all DHCP relay features while providing additional features and benefits.

Normally, extended DHCP relay operates as a helper application for DHCP operations. Except for the ability to add DHCP relay agent options and the gateway address (giaddr) to DHCP packets, DHCP relay is transparent to DHCP clients and DHCP servers, and simply forwards messages between DHCP clients and servers.

When you configure DHCP relay to operate in proxy mode, the relay is no longer transparent. In proxy mode, DHCP relay conceals DHCP server details from DHCP clients, which interact with a DHCP relay in proxy mode as though it is the DHCP server. For DHCP servers there is no change, because proxy mode has no effect on how the DHCP server interacts with the DHCP relay.

DHCP relay proxy provides the following benefits:

- DHCP server isolation and DoS protection—DHCP clients are unable to detect the DHCP servers, learn DHCP server addresses, or determine the number of servers that are providing DHCP support. Server isolation also provides denial-of-service (DoS) protection for the DHCP servers.
- Multiple lease offer selection—DHCP relay proxy receives lease offers from multiple DHCP servers and selects a single offer to send to the DHCP client, thereby reducing traffic in the network. Currently, the DHCP relay proxy selects the first offer received.
- Support for both numbered and unnumbered Ethernet interfaces—For DHCP clients connected through Ethernet interfaces, when the DHCP client obtains an address, the DHCP relay proxy adds an access internal host route specifying that interface as the outbound interface. The route is automatically removed when the lease time expires or when the client releases the address.
- Logical system support—DHCP relay proxy can be configured in a logical system, whereas a non-proxy mode DHCP relay cannot.



NOTE: Extended DHCP relay proxy is not supported for the J Series Services Routers DHCP server. Also, you cannot configure both DHCP relay proxy and extended DHCP local server on the same interface.

Interaction Among DHCP Relay Proxy, DHCP Client, and DHCP Servers

The DHCP relay agent is configured on the router (or switch), which operates between the DHCP client and one or more DHCP servers.

The following steps provide a high-level description of how DHCP relay proxy interacts with DHCP clients and DHCP servers.

1. The DHCP client sends a discover packet to locate a DHCP server in the network from which to obtain configuration parameters for the subscriber.
2. The DHCP relay proxy receives the discover packet from the DHCP client and forwards copies of the packet to each supporting DHCP server. The DHCP relay proxy then creates a client table entry to keep track of the client state.
3. In response to the discover packet, each DHCP server sends an offer packet to the client, which the DHCP relay proxy receives. The DHCP relay proxy does the following:
 - a. Selects the first offer received as the offer to sent to the client
 - b. Replaces the DHCP server address with the address of the DHCP relay proxy
 - c. Forwards the offer to the DHCP client.
4. The DHCP client receives the offer from the DHCP relay proxy.
5. The DHCP client sends a request packet that indicates the DHCP server from which to obtain configuration information—the request packet specifies the address of the DHCP relay proxy.
6. The DHCP relay proxy receives the request packet and forwards copies, which include the address of selected server, to all supporting DHCP servers.
7. The DHCP server requested by the client sends an acknowledgement (ACK) packet that contains the client configuration parameters.
8. The DHCP relay proxy receives the ACK packet, replaces the DHCP server address with its own address, and forwards the packet 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 proxy installs a host route and Address Resolution Protocol (ARP) entry for the DHCP client.
11. After the initial DHCP lease is established, the DHCP relay proxy receives all lease renewals and lease releases from the DHCP client and forwards them to the DHCP server.

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Enabling DHCP Relay Proxy Mode on page 67](#)
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 73](#)

DHCPv6 Relay Agent Overview

The DHCPv6 relay agent enhances the extended DHCP relay agent by providing support in an IPv6 network. The DHCPv6 relay agent passes messages between the DHCPv6 client and the DHCPv6 server, similar to the way DHCP relay agent supports an IPv4 network.

When a DHCPv6 client logs in, the DHCPv6 relay agent uses the AAA service framework to interact with the RADIUS server to provide authentication and accounting. The RADIUS server, which is configured independently of DHCP, authenticates the client and supplies the IPv6 prefix and client configuration parameters, such as session timeout and the maximum number of clients allowed per interface.



NOTE: The PTX Series Packet Transport Routers do not support authentication for DHCPv6 relay agents.

The DHCPv6 relay agent is compatible with the extended DHCP local server and the extended DHCP relay agent, and can be enabled on the same interface as either the extended DHCP local server or DHCP relay agent.

To configure the DHCPv6 relay agent on the router (or switch), you include the **dhcpx6** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level.

You can also include the **dhcpx6** statement at the following hierarchy levels:

- **[edit logical-systems *logical-system-name* forwarding-options dhcp-relay]**
- **[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* forwarding-options dhcp-relay]**
- **[edit routing-instances *routing-instance-name* forwarding-options dhcp-relay]**

Related Documentation

- [Using External AAA Authentication Services with DHCP on page 30](#)
- [Grouping Interfaces with Common DHCP Configurations on page 35](#)
- [Group-Specific DHCP Relay Options on page 14](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)
- [Configuring Passwords for Usernames](#)
- [Creating Unique Usernames for DHCP Clients](#)
- [Verifying and Managing DHCPv6 Local Server Configuration](#)
- [Example: Extended DHCPv6 Local Server Configuration](#)

Dynamic Profile Attachment to DHCP Subscriber Interfaces Overview

The router's DHCP support enables you to attach a dynamic profile to a DHCP subscriber interface. When a DHCP subscriber logs in, the router instantiates the specified dynamic profile and then applies the services defined in the profile to the interface.

You can attach dynamic profiles to all interfaces or you can specify a particular group of interfaces to which the profile is attached. Both the DHCP local server and the DHCP relay agent support the attachment of dynamic profiles to interfaces.

You can enable the following optional features when the dynamic profile is attached. The two options cannot be used together.

- Enable multiple DHCP subscribers to share the same VLAN logical interface. The firewall filters, CoS schedulers, and IGMP configuration of the clients are merged.
- Specify the primary dynamic profile that is instantiated when the first subscriber logs in.

Multiple DHCP Subscribers Sharing the Same VLAN Logical Interface

The **aggregate-clients** statement specifies that the router merge the firewall filters, CoS schedulers, and IGMP configuration of multiple DHCP clients that are on the same VLAN logical interface (for example, multiple clients belonging to the same household). You can configure the aggregate-clients support for all interfaces or for a group of interfaces. The **aggregate-clients** statement provides the option of either merging (chaining) or replacing software components for each client.

By default, the feature is disabled and a single DHCP client is allowed per VLAN when a dynamic profile is associated with the VLAN logical interface.

When you specify the **merge** option, the router aggregates the software components for multiple subscribers as follows:

- Firewall filters—The filters are chained together using the precedence as the order of execution. If the same firewall filter is attached multiple times, the filter is executed only once.
- CoS schedulers—The different CoS schedulers are merged as if the scheduler map has multiple schedulers. The merge operation for the individual traffic-control-profiles parameters (shaping-rate, delay-buffer-rate, guaranteed-rate) preserves the maximum value for each parameter.
- IGMP configuration—The current IGMP configuration is replaced with the configuration of the newest DHCP client.

When you specify the **replace** option, the entire logical interface is replaced whenever a new client logs in to the network using the same VLAN logical interface. For example, if a customer subscribes to voice, video, and data services on the network, when a voice client logs in, instead of applying a specific voice filter for only that service, the entire voice, video, and data filter chain is applied.



NOTE: You cannot use a dynamic demux interface to represent multiple subscribers in a dynamic profile attached to an interface. One dynamic demux interface represents one subscriber. Do not configure the `aggregate-clients` option when attaching a dynamic profile to a demux interface for DHCP.

Primary Dynamic Profile

The **use-primary** option enables you to specify the primary dynamic profile that 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.

This feature can conserve logical interfaces in a network where dynamic IP demux interfaces are used to represent subscribers. To conserve interfaces, make sure the primary profile that you specify does not create a demux interface, but provides the initial policies for the primary interface subscriber.

Related Documentation

- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 67](#)

Default Subscriber Service Overview

Subscriber management enables you to specify a default subscriber service for DHCP subscribers. The default service (dynamic profile) is applied to subscribers when the subscriber logs in. By configuring a default service, you can apply a particular service (for example, a basic service) to subscribers who are not explicitly assigned a service.

When a subscriber logs in, the configured default service is always activated, even when remote service provisioning or RADIUS service activation is configured for the subscriber. The default service is deactivated only when the subscriber is successfully provisioned by the PCRF by means of the GX-Plus application. (Remote provisioning is configured by the **provisioning-order** statement at the **[edit access profile]** hierarchy level.)

In all other cases, the default service remains active. For example, if RADIUS authentication is configured but service activation is not, the default subscriber service remains activated. Likewise, if RADIUS authentication is not configured, the default subscriber service remains activated.

Default services can also be deactivated either with a RADIUS CoA deactivate request or with the **request network-access aaa subscriber delete session-id** command.

To create and assign a default subscriber service, you must complete the following operations:

- Create the service—Ensure that the service you want to use has been configured in a dynamic profile. The actual service is no different than any other service used for subscriber management.

- Specify the default service—Use the Junos OS CLI to specify the service that is used as the default service.
- Specify the interfaces on which the default service is assigned —Use the Junos OS CLI to specify that the default service is used globally, for a group of interfaces, or for a specific interface.

**Related
Documentation**

- [Configuring a Default Subscriber Service on page 35](#)
- *CLI-Activated Subscriber Services*
- *Activating and Deactivating Subscriber Services Locally with the CLI*
- *Understanding Gx-Plus Interactions Between the Router and the PCRF*

DHCP Duplicate Client In Subnet Overview

In some network environments, client IDs and hardware addresses (MAC addresses) might not be unique, resulting in duplicate clients. A duplicate DHCP client occurs when a client attempts to get a lease, and that client has the same client ID or the same hardware address as an existing DHCP client—the existing client and the new client cannot exist simultaneously, unless you have configured the optional duplicate client support.



NOTE: This document describes an enhanced method for providing support for duplicate clients. The enhanced method is mutually exclusive with the previously existing method, which used the `duplicate-clients-on-interface` statement at the `[edit forwarding-options dhcp-relay]` and `[edit system services dhcp-local-server]` hierarchy levels. If you attempt to configure both methods, the commit operation fails.

By default, DHCP local server and DHCP relay agent use the subnet information to differentiate between duplicate clients. However, in some cases, this level of differentiation is not adequate. For example, when multiple subinterfaces share the same underlying loopback interface with the same preferred source address, the interfaces appear to be on the same subnet.

You can enable support for duplicate clients in a subnet by configuring DHCP to use additional information to uniquely identify clients—the additional information is either the client incoming interface or the option 82 information in the DHCP packets. Using the option 82 information provides the following important benefits:

- You can configure DHCP relay to preserve and use the remotely created option 82.
- DHCP local server can support an environment in which an aggregation device is present between the client and the DHCP server.

When configured to support duplicate clients in the subnet, DHCP uses the following information to distinguish between the duplicate clients:

- The subnet on which the client resides
- The client ID or hardware address
- The duplicate clients option you configure—either the client incoming interface or the option 82 information in the client's incoming DHCP packets

**Related
Documentation**

- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 31](#)
- [Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Their Incoming Interfaces on page 33](#)
- [Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Option 82 Information on page 32](#)

Group-Specific DHCP Relay Options

You can include the following statements at the **[edit forwarding-options dhcp-relay group group-name]** hierarchy level to set group-specific DHCP relay agent configuration options. Group-specific statements apply only to the named group of interfaces, and override any global DHCP relay agent settings for the same statement.

Include the statements at the **[edit forwarding-options dhcp-relay dhcpv6 group group-name]** hierarchy level to configure group-specific options for DHCPv6 relay agent.

- **active-server-group**—Configure an active server group to apply a common DHCP relay agent configuration to a named group of DHCP server addresses. For information, see [“Configuring Active Server Groups” on page 66](#).
- **authentication**—Configure the parameters the router (or switch) sends to the external AAA server.
- **dynamic-profile**—Specify the dynamic profile that is attached to a group of interfaces.
- **interface**—Specify one or more interfaces, or a range of interfaces, that are within the specified group.
- **liveness-detection**—Configure bidirectional failure detection timers and authentication criteria for static routes. For more information, see [“DHCP Liveness Detection Overview” on page 72](#).
- **overrides**—Override the default configuration settings for the extended DHCP relay agent. For information, see [“Overriding the Default DHCP Relay Configuration Settings” on page 38](#).
- **relay-agent-interface-id**—(DHCPv6 only) Insert the DHCPv6 Relay Agent Interface-ID option (option 18) in DHCPv6 packets destined for the DHCPv6 server.
- **relay-agent-remote-id**—(DHCPv6 only) Insert the DHCPv6 Relay Agent Remote-ID option (option 37) in DHCPv6 packets destined for the DHCPv6 server.
- **relay-option**—Configure selective processing, which uses DHCP options in client packets to identify and filter client traffic, and to specify the action DHCP relay agent takes

with the traffic. For more information, see [“Using DHCP Option Information to Selectively Process DHCP Client Traffic” on page 65](#).

- **relay-option-82**—(DHCPv4 only) Enable or disable the insertion of option 82 information in packets destined for a DHCP server. For information, see [“Using DHCP Relay Agent Option 82 Information” on page 60](#).
- **service-profile**—Specify the default subscriber service, (or default profile) which is activated when the subscriber (or DHCP client) logs in and no other service is activated by a RADIUS server or a provisioning server. For more information, see [“Default Subscriber Service Overview” on page 12](#).

**Related
Documentation**

- [Grouping Interfaces with Common DHCP Configurations on page 35](#)

DHCPv6 Relay Agent Options

Subscriber management enables you to configure DHCPv6 relay agent to include additional information in the client-originated DHCP packets that the relay forwards to a DHCPv6 server. This support is equivalent to the option 82 support provided by the DHCPv4 relay agent. The DHCPv6 server uses the additional information in the packets to determine the IPv6 address to assign to the client. The server might also use the information for other purposes; for example, to determine which services to grant the client, or to provide additional security against threats such as address spoofing. The DHCPv6 server sends its reply back to the DHCPv6 relay agent, and the agent removes the option information from the message, and then forwards the packet to the client.

You can configure the DHCPv6 relay agent to include the following options in the packet the relay sends to the DHCPv6 server:

- **Relay Agent Interface-ID (option 18)**—An ASCII string that identifies the interface on which the client DHCPv6 packet is received. This is the equivalent of the DHCPv4 relay agent option 82 Agent Circuit ID suboption (suboption 1).
- **Relay Agent Remote-ID (option 37)**—An ASCII string assigned by the DHCPv6 relay agent that securely identifies the client. This is the equivalent of the DHCPv4 relay agent option 82 Agent Remote ID suboption (suboption 2).

**Related
Documentation**

- [Configuring DHCPv6 Relay Agent Options on page 69](#)
- [Inserting DHCPv6 Interface-ID Option \(Option 18\) In DHCPv6 Packets on page 70](#)
- [Inserting DHCPv6 Remote-ID Option \(Option 37\) In DHCPv6 Packets on page 71](#)

DHCP Access, Access-Internal, and Destination Route Suppression

During the DHCP client binding operation, the DHCP process adds route information for the DHCP sessions by default. The DHCP process adds access-internal and destination routes for DHCPv4 sessions, and access-internal and access routes for DHCPv6 sessions. In some scenarios, you might want to override the default behavior and prevent DHCP from automatically installing the route information. For example, DHCP relay installs destination (host) routes by default—this action is required in certain configurations to enable address renewals from the DHCP server to work properly. However, the default installation of destination routes might cause a conflict when you configure DHCP relay with static subscriber interfaces. To avoid such configuration conflicts you can override the default behavior and prevent DHCP relay from installing the routes.



NOTE: You cannot suppress access-internal routes when the subscriber is configured with both IA_NA and IA_PD addresses over IP demux interfaces—the IA_PD route relies on the IA_NA route for next hop connectivity.

You can configure both DHCP local server and DHCP relay agent to override the default route installation behavior, and you can specify the override for both DHCPv4 and DHCPv6 sessions. You can override the route installation globally or for named interface groups. For DHCPv4 you can override the installation of destination routes only or access-internal routes (the access-internal option prevents installation of both destination and access-internal routes). For DHCPv6 you can specify access routes, access-internal routes, or both.



NOTE: In Junos OS releases prior to Release 13.2, the `no-arp` statement was used to override the default installation of host routes. In Junos OS Release 13.2 and later, the `no-arp` statement is deprecated and the function is replaced by the `route-suppression` statement.

Related Documentation

- [Preventing DHCP from Installing Access, Access-Internal, and Destination Routes by Default on page 42](#)
- [Extended DHCP Local Server Overview](#)
- [DHCPv6 Local Server Overview](#)
- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCPv6 Relay Agent Overview on page 10](#)

DHCP Lease-Time Validation Overview

In a subscriber access environment, a DHCP server obtains an address lease from either local configuration or from an external DHCP server, and assigns the lease to the DHCP client address.

Obtaining leases from external sources can present issues when the external source is owned or managed by a third party—the third party might configure the external source to provide address leases that are unsuitable for the subscriber access environment. For example, extremely short lease times can create unnecessary traffic that results in reduced performance in the network.

To avoid potential issues caused by short DHCP lease times, subscriber management provides a lease-time validation feature. Lease-time validation enables you to explicitly configure a threshold for the minimum lease time allowed in your subscriber access environment, and to specify a violation action (such as dropping the lease offer) the router takes when a short lease time is offered by a third party. You can specify the following violation actions:

- **drop**—(DHCPv4 and DHCPv6 relay agent) The third-party lease offer is dropped and the client binding fails.
- **override-lease**—(DHCPv4 and DHCPv6 local server) The third-party lease time is overridden by the specified threshold value.
- **strict**—(DHCPv4 and DHCPv6 local server) The third-party lease is ignored and the client binding fails.
- **no action**—If you do not specify a violation action, DHCP binds the client using the third-party lease but marks the binding as lease-time violating.

A lease-time violation can occur during the initial lease grant or during a rebinding or renewal operation. To reduce excessive and redundant log messages, the router consolidates lease-time violation reporting, as shown in [Table 3 on page 17](#).

Table 3: Lease-Time Violation Event Logging

Event	syslog	Extended DHCP Traceoptions
Initial lease-time violation for the specific DHCP server	warning	warning
Number of lease-time violations return to zero for the specific DHCP server	warning	warning
Status of lease-time violations caused by specific DHCP server, reported in the interval configured in ltv-syslog-interval command	warning	—
Violation action of drop occurred, or the DHCP packet was not generated	—	warning

Table 3: Lease-Time Violation Event Logging (*continued*)

Event	syslog	Extended DHCP Traceoptions
Violation action of override-lease occurred (DHCP local server only)	–	warning
Lease-time violation	–	warning

Related Documentation

- [Configuring a DHCP Lease-Time Threshold on page 48](#)
- [Extended DHCP Local Server Overview](#)
- [DHCPv6 Local Server Overview](#)
- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCPv6 Relay Agent Overview on page 10](#)

DHCP Snooping Support

DHCP snooping provides DHCP security on the router or switch by filtering incoming messages. When DHCP snooping is enabled, the router differentiates between trusted and untrusted interfaces, and forwards messages from trusted sources while rejecting the untrusted messages.

In Junos OS, DHCP snooping is enabled in a routing instance when you configure either the **dhcp-relay** statement at the **[edit forwarding-options]** hierarchy level, or the **dhcp-local-server** statement at the **[edit system services]** hierarchy level in that routing instance. However, depending on the Junos OS release, the router processes the snooped packets differently, as described in the following list:

- In Junos OS Release 10.0 and earlier, the router processes snooped packets normally.
- In Junos OS Release 10.1 and later, the router discards snooped packets by default. To enable normal processing of snooped packets in Junos OS Release 10.1 and later, you must explicitly configure the **allow-snooped-clients** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level.

You can configure DHCP snooping support for the following:

- DHCPv4 relay agent—Override the router's (or switch's) default snooping configuration and specify that DHCP snooping is enabled or disabled globally, for a named group of interfaces, or for a specific interface within a named group.

In a separate procedure, you can set a global configuration to specify whether the DHCPv4 relay agent forwards or drops snooped packets for all interfaces, only configured interfaces, or only nonconfigured interfaces. The router also uses the global DHCP relay agent snooping configuration to determine whether to forward or drop snooped BOOTREPLY packets.

- DHCPv6 relay agent—As you can with snooping support for the DHCPv4 relay agent, you can override the default DHCPv6 relay agent snooping configuration on the router to explicitly enable or disable snooping support globally, for a named group of interfaces, or for a specific interface with a named group of interfaces.

In multi-relay topologies where more than one DHCPv6 relay agent is between the DHCPv6 client and the DHCPv6 server, snooping enables intervening DHCPv6 relay agents between the client and the server to correctly receive and process the unicast traffic from the client and forward it to the server. The DHCPv6 relay agent snoops incoming unicast DHCPv6 packets by setting up a filter with UDP port 547 (the DHCPv6 UDP server port) on a per-forwarding table basis. The DHCPv6 relay agent then processes the packets intercepted by the filter and forwards the packets to the DHCPv6 server.

Unlike the DHCPv4 relay agent, the DHCPv6 relay agent does not support global configuration of forwarding support for DHCPv6 snooped packets.

- DHCP local server—Configure whether DHCP local server forwards or drops snooped packets for all interfaces, only configured interfaces, or only nonconfigured interfaces.

**Related
Documentation**

- [Configuring DHCP Snooping for DHCP Relay Agent on page 49](#)
- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 88](#)

DHCP Options and Selective Traffic Processing Overview

Subscriber management enables you to provide selective traffic processing based on information that is provided in the DHCP and DHCPv6 options string included in the traffic. The selective traffic processing feature helps you manage multivendor networks by enabling the extended DHCP and DHCPv6 relay agent to compare option-specific strings received in DHCP client packets against a list of ASCII or hexadecimal strings that you configure on the router. Selective traffic processing allows you to identify traffic based on the option in the DHCP client packets, filter the traffic, and specify the action DHCP relay takes for the traffic. You can use DHCP options 60 and 77 and DHCPv6 options 15 and 16 to identify client traffic. You configure the action the router takes for the selected traffic, such as forwarding the traffic to a specific DHCP server, or dropping the traffic. DHCP relay agent selective traffic processing also allows you to specify a default action, which the router uses when no other action satisfies the configuration.

Using selective traffic processing is helpful in network environments where DHCP clients access services that are provided by multiple vendors and by multiple DHCP servers. For example, a DHCP client might gain Internet access from a particular DHCP server provided by one vendor, and access an IPTV service from a different DHCP server owned by a second vendor. Using the option-specific information in the DHCP client packets enables DHCP relay agent to differentiate between the two servers and to take the correct action for the subscriber.

You might also use selective processing to distinguish between services to different DHCP subscribers on the same interface. For example, a household might include two IP devices

that obtain their IP addresses from the service provider's DHCP server. The service provider might want to bind one of the devices to the incoming interface, sharing that address with other households. At the same time the service provider might want the second device to have its own filter and CoS capabilities. For this second device, the service provider can use selective processing to create a dynamic IP demux interface.

You can configure selective processing support globally or for a named group of interfaces. You can also configure the support for the extended DHCP relay agent on a per logical system and per routing instance basis.

To configure selective processing, you specify the DHCP or DHCPv6 option attribute that identifies the traffic, the match criteria used to filter the traffic, and the action to perform with the filtered traffic.

You can use the following DHCP options to selectively process client traffic:

- DHCPv4 option 60 (Vendor Class Identifier)
- DHCPv4 option 77 (User Class Identifier)
- DHCPv6 option 15 (User Class Option)
- DHCPv6 option 16 (Vendor Class Option)

You can configure exact match or partial match criteria to filter client traffic, and specify either the **ascii** option (to define a nonempty ASCII string of 1 through 255 alphanumeric characters) or the **hexadecimal** option (to define a hexadecimal string of 1 through 255 hexadecimal characters [0 through 9, a through f, and A through F]).



BEST PRACTICE: Because of the format of DHCP option 77 and DHCPv6 option 16, we recommend you configure hexadecimal matching only with these two options instead of ASCII matching.

You can configure an unlimited number of match strings. If you configure a string as both exact match (**equals**) and a partial match (**starts-with**) criteria, the exact match takes precedence. Wildcard characters are not supported in exact match or partial match strings.

Use the following match criteria to filter client traffic:

- **equals**—Your specified string is an exact match to the option string in client traffic.
- **starts-with**—Your specified string is a subset of the option string in client traffic, starting with the left-most character. For example, your configuration of the string "test" is a subset of "test123" in the client's option string, and matches the **starts-with** criteria.
- **default-action**—The option string in client traffic does not satisfy any match criteria, or no match criteria are configured.



NOTE: The default-action is optional. If the match criteria are not satisfied or not configured and there is no default-action configured, DHCP relay processes the traffic in the normal manner.

You can specify the following actions for the filtered client traffic:

- **drop**—Discard the traffic.
- **forward-only**—Forward the traffic, without creating a new subscriber session.



NOTE: When you use the **forward-only** action, the only configured **overrides** operation supported is the **trust-option-82** option. DHCP relay agent ignores all other **overrides** options that are configured.

- **local-server-group**—Forward the traffic to the specified group of DHCP local servers that provides the requested client service. This option is not supported for DHCPv6 relay agent.
- **relay-server-group**—Forward the traffic to the specified group of DHCP servers that provides the requested client service.

Related Documentation

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Grouping Interfaces with Common DHCP Configurations on page 35](#)
- [Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65](#)
- [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 79](#)
- [Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing on page 83](#)

DHCP Auto Logout Overview

This topic provides an introduction to the optional DHCP auto logout feature and includes the following sections:

- [Auto Logout Overview on page 21](#)
- [How DHCP Identifies and Releases Clients on page 22](#)
- [Option 60 and Option 82 Requirements on page 23](#)

Auto Logout Overview

Auto logout is an optional configuration for DHCP local server and DHCP relay agent that improves the efficiency of DHCP IP address assignment. Auto logout enables IP addresses to be immediately released and returned to the address pool when the addresses are no longer used by DHCP clients. DHCP can then assign the addresses to other clients. Without

auto logout, an IP address is blocked for the entire lease period, and DHCP must wait until the address lease time expires before reusing the address.

Auto logout is particularly useful when DHCP uses long lease times for IP address assignments and to help avoid allocating duplicate IP addresses for a single client.

For example, you might have an environment that includes set-top boxes (STB) that are often upgraded or replaced. Each time a STB is changed, the new STB repeats the DHCP discover process to obtain client configuration information and an IP address. DHCP views the new STB as a completely new client and assigns a new IP address—the previous IP address assigned to the client (the old STB) remains blocked and unavailable until the lease expires. If auto logout is configured in this situation, DHCP recognizes that the new STB is actually the same client and then immediately releases the original IP address. DHCP relay agent acts as a proxy client for auto logout and sends a DHCP release message to the DHCP server.

How DHCP Identifies and Releases Clients

The auto logout feature requires that DHCP explicitly identify clients. By default, DHCP local server and DHCP relay agent identify clients based on MAC address or Client Identifier, and subnet. However, in some cases this type of identification might not be sufficient. For example, in the previous STB example, each STB has a different MAC address, so DHCP incorrectly assumes that an upgraded or replacement STB is a new client.

In order to explicitly identify clients, auto logout uses a secondary identification method when the primary identification method is unsuccessful—the primary method is considered unsuccessful if the MAC address or Client Identifier does not match that of an existing client. Subscriber management supports two different secondary identification methods that you can configure.

- Incoming interface method—DHCP views a new client connection on the interface as if it comes from the same client. DHCP deletes the existing client binding before creating a binding for the newly connected device. This method allows only one client device to connect on the interface.



NOTE: The incoming interface method differs from the `overrides interface-client-limit 1` statement, which retains the existing binding and rejects the newly connected client.

- Option 60 and option 82 method—DHCP considers two clients as different if they have the same option 60 and option 82 information, but different subnets.

DHCP local server and DHCP relay agent perform the following operations when auto logout is enabled and the secondary identification method identifies a duplicate client (that is, the Discover packet is from an existing client).

- DHCP local server immediately releases the existing address.

- DHCP relay agent immediately releases the existing client and then sends a DHCP release packet to the DHCP server. Sending the release packet ensures that DHCP relay and the DHCP server are synchronized.

If the DHCP relay receives a Discover message from an existing client, the DHCP relay forwards the Discover message to the DHCP server. The DHCP relay preserves the binding if the client's existing IP address is returned by the DHCP server. This behavior is not applicable if the proxy-mode override or client-discover-match functionality are enabled.



NOTE: If the DHCP relay agent is in snoop mode, DHCP relay releases the client but does not send a release packet to the DHCP server if the discover packet is for a passive client (a client added as a result of snooped packets) or if the discover packet is a snooped packet.

Option 60 and Option 82 Requirements

DHCP local server requires that the received discover packet include both DHCP option 60 and option 82. If either option is missing, DHCP local server cannot perform the secondary identification method and auto logout is not used.

DHCP relay agent requires that the received discover packet contain DHCP option 60. DHCP relay determines the option 82 value based on the guidelines provided in “[DHCP Relay Agent Option 82 Value for Auto Logout](#)” on page 46.

Related Documentation

- [Automatically Logging Out DHCP Clients on page 45](#)
- [DHCP Relay Agent Option 82 Value for Auto Logout on page 46](#)
- [Allowing Only One DHCP Client Per Interface on page 44](#)
- [Clearing DHCP Bindings for Subscriber Access on page 223](#)

Subscriber Binding Retention During Interface Delete Events

You can configure the router to maintain DHCP subscribers when an event occurs that normally results in the router deleting the subscriber. For example, by default, the router logs out DHCP subscribers when an interface delete event occurs, such as a DPC reboot or failure. However, if you configure the router to maintain subscribers, the router identifies each subscriber that was on the deleted interface, and resumes normal packet processing for the subscriber when the interface is restored.



NOTE: Subscribers are logged off as usual when their lease expires, even if the router is configured to maintain subscribers and the subscriber is on a deleted interface that has not yet been restored.

You configure the router to maintain subscribers on a global basis— the configuration applies to DHCP local server, DHCPv6 local server, and DHCP relay clients in all logical

routers and routing instances. When you enable the maintain subscribers feature, the router applies the feature to existing subscribers as well as subscribers who later connect.

If the maintain subscribers feature is enabled on the router, you can explicitly delete a subscriber binding and log out the subscriber by either specifying a lease expiration timeout or using one of the following commands, as appropriate:

- `clear dhcp server binding`
- `clear dhcpv6 server binding`
- `clear dhcp relay binding`

**Related
Documentation**

- [Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events on page 47](#)
- [Verifying and Managing the DHCP Maintain Subscribers Feature on page 226](#)

Graceful Routing Engine Switchover

For EX Series switches, only extended DHCP local server maintains the state of active DHCP client leases. The DHCP local server supports the attachment of dynamic profiles and also interacts with the local AAA Service Framework to use back-end authentication servers, such as RADIUS, to provide subscriber authentication. You can configure dynamic profile and authentication support on a global basis or for a specific group of interfaces. The extended DHCP local server also supports the use of Junos address-assignment pools or external authorities, such as RADIUS, to provide the client address and configuration information.

For MX Series routers, the extended DHCP local server and the DHCP relay agent applications both maintain the state of active DHCP client leases in the session database. The extended DHCP application can recover this state if the DHCP process fails or is manually restarted, thus preventing the loss of active DHCP clients in either of these circumstances. However, the state of active DHCP client leases is lost if a power failure occurs or if the kernel stops operating (for example, when the router is reloaded) on a single Routing Engine.

You can enable graceful switchover support on both EX Series switches and MX Series routers. To enable graceful switchover support for the extended DHCP local server or extended DHCP relay agent on a switch, include the **graceful-switchover** statement at the **[edit chassis redundancy]** hierarchy level. To enable graceful Routing Engine switchover support on MX Series routers, include the **graceful-switchover** statement at the **[edit chassis redundancy]** hierarchy level. You cannot disable graceful Routing Engine switchover support for the extended DHCP application when the router is configured to support graceful Routing Engine switchover.

For more information about using graceful Routing Engine switchover, see *Understanding Graceful Routing Engine Switchover in the Junos OS*.

**Related
Documentation**

- [Extended DHCP Local Server Overview](#)

- [Extended DHCP Relay Agent Overview on page 4](#)
- *High Availability Using ISSU in the PPP Access Network*

Port Number Requirements for DHCP Firewall Filters

When you configure a firewall filter to perform some action on DHCP packets at the Routing Engine, such as protecting the Routing Engine by allowing only proper DHCP packets, you must specify both port 67 (bootps) and port 68 (bootpc) for both the source and destination. The firewall filter acts at both the line cards and the Routing Engine.

This requirement applies to both DHCP local server and DHCP relay, but it applies only when DHCP is provided by the `jdhcpd` process. MX Series routers, M120 routers, and M320 routers use `jdhcpd`. For DHCP relay, that means the configuration is required only at the `[edit forwarding-options dhcp-relay]` hierarchy level and not at the `[edit forwarding-options helpers bootp]` hierarchy level.

DHCP packets received on the line cards are encapsulated by `jdhcpd` with a new UDP header where their source and destination addresses are set to port 68 before being forwarded to the Routing Engine.

For DHCP relay and DHCP proxy, packets sent to the DHCP server from the router have both the source and destination UDP ports set to 67. The DHCP server responds using the same ports. However, when the line card receives these DHCP response packets, it changes both port numbers from 67 to 68 before passing the packets to the Routing Engine. Consequently the filter needs to accept port 67 for packets relayed from the client to the server, and port 68 for packets relayed from the server to the client.

Failure to include both port 67 and port 68 as described here results in most DHCP packets not being accepted.

For information about firewall filters, see *Firewall Filters Overview*.

Related Documentation

- [Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine on page 93](#)
- *Extended DHCP Local Server Overview*
- [Extended DHCP Relay Agent Overview on page 4](#)
- *Dynamic Firewall Filters Overview*

PART 2

Configuration

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- [Examples on page 77](#)
- [Configuration Statements on page 101](#)

CHAPTER 2

Configuration Tasks for DHCP Relay Agent

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- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 31](#)
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- [Automatically Logging Out DHCP Clients on page 45](#)
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- [Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events on page 47](#)
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- [Configuring DHCP Snooping for DHCP Relay Agent on page 49](#)
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- [Preventing DHCP Spoofing on page 56](#)
- [Sending Release Messages When Clients Are Deleted on page 57](#)
- [Disabling Automatic Binding of Stray DHCP Requests on page 58](#)
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- [Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65](#)
- [Configuring Server Groups on page 66](#)
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- [Configuring DHCPv6 Relay Agent Options on page 69](#)
- [Inserting DHCPv6 Interface-ID Option \(Option 18\) In DHCPv6 Packets on page 70](#)
- [Inserting DHCPv6 Remote-ID Option \(Option 37\) In DHCPv6 Packets on page 71](#)
- [DHCP Liveness Detection Overview on page 72](#)
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 73](#)
- [Monitoring DHCP Server Responsiveness on page 75](#)
- [Disabling DHCP Relay on page 76](#)

Using External AAA Authentication Services with DHCP

The extended DHCP local server, including DHCPv6 local server, and the extended DHCP relay agent, including DHCPv6 relay agent, support the use of external AAA authentication services, such as RADIUS, to authenticate DHCP clients. When the extended DHCP local server or relay agent receives a discover PDU from a client, the extended DHCP application contacts the AAA server to authenticate the DHCP client. The extended DHCP application can obtain client addresses and DHCP configuration options from the external AAA authentication server.



NOTE: This section uses the term *extended DHCP application* to refer to both the extended DHCP local server and the extended DHCP relay agent.

The external authentication feature also supports AAA directed logout. If the external AAA service supports a user logout directive, the extended DHCP application honors the logout and responds as though it were requested by a CLI management command. All of the client state information and allocated resources are deleted at logout. The extended DHCP application supports directed logout using the list of configured authentication servers you specify with the **authentication-server** statement at the **[edit access profile profile-name]** hierarchy level.

You can configure either global authentication support or group-specific support.

You must configure the **username-include** statement to enable the use of authentication. The **password** statement is not required and does not cause DHCP to use authentication if the **username-include** statement is not included.

To configure DHCP local server and DHCP relay agent authentication support:

1. Specify that you want to configure authentication options.

- For DHCP local server:

```
[edit system services dhcp-local-server]
user@host# edit authentication
```

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay]
user@host# edit authentication
```

- For DHCPv6 local server:

```
[edit system services dhcp-local-server dhcpv6]
user@host# edit authentication
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit authentication
```

2. (Optional) Configure a password that authenticates the username to the external authentication service.

See [Configuring Passwords for Usernames](#).

3. (Optional) Configure optional features to create a unique username.

See [Creating Unique Usernames for DHCP Clients](#).

**Related
Documentation**

- [Extended DHCP Local Server Overview](#)
- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCPv6 Local Server Overview](#)
- [DHCPv6 Relay Agent Overview on page 10](#)

Guidelines for Configuring Support for DHCP Duplicate Clients

When configuring DHCP duplicate client support, consider the following guidelines:

- The DHCP duplicate client support feature is used for DHCPv4 clients only.
- If you want to preserve the remotely-created option 82 information, use the **option 82** option with the **duplicate-clients-in-subnet** statement to distinguish between duplicate clients. If there is no remotely created option 82 in the incoming DHCP packets, the router locally creates the option 82 information.

- If you want to use the locally-created option-82, use the **incoming-interface** option with the **duplicate-clients-in-subnet** statement to distinguish between duplicate clients.
- DHCP relay agent and DHCP local server in the same routing instance must have the same the **duplicate-clients-in-subnet** configuration.
- For the Layer 3 wholesale model:
 - The wholesaler and retailer logical system/routing instances must have the same **duplicate-clients-in-subnet** statement configuration.
 - For DHCP relay, the wholesaler and the retailer routing contexts must both have the **relay-option-82** statement configured with the Agent Circuit ID suboption (suboption 1) in option 82.

**Related
Documentation**

- [DHCP Duplicate Client In Subnet Overview on page 13](#)
- [Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Their Incoming Interfaces on page 33](#)
- [Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Option 82 Information on page 32](#)

Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Option 82 Information

Duplicate clients occur when two clients in a subnet have the same hardware address or the same client ID.

The following two procedures describe how to configure the router to use the option 82 information in the incoming packets to differentiate between duplicate clients. The first procedure describes the configuration for DHCP relay agent. The second procedure is for DHCP local server.

To configure the DHCP relay agent to differentiate between duplicate clients based on option 82 information:

1. Specify that you want to configure DHCP relay agent.

```
[edit forwarding-options]  
user@host# edit dhcp-relay
```

2. Configure DHCP relay to insert option 82 information if there is no remotely created option 82. Use the default setting, which inserts the interface ID rather than the optional interface description.

```
[edit forwarding-options dhcp-relay]  
user@host# set relay-option-82 circuit-id
```

3. Configure the router to always accept DHCP client packets that contain option 82 information.

```
[edit forwarding-options dhcp-relay]  
user@host# set overrides trust-option-82
```




NOTE: The `trust-option-82` statement must always be enabled so the router can process incoming DHCP client packets that contain option 82 information when the packets have a gateway IP address (giaddr) of 0 (zero).

4. Configure DHCP relay to use the remotely created option 82 information to distinguish between duplicate clients. If there is no remotely created option 82 in the traffic, the router locally creates the option 82 information.

```
[edit forwarding-options dhcp-relay]
user@host# set duplicate-clients-in-subnet option-82
```



NOTE: Make sure that the `always-write-option-82` statement is *not* enabled, as the statement will overwrite the remotely created option 82.

To configure the DHCP local server to differentiate between duplicate clients based on the option 82 information:

1. Specify that you want to configure DHCP local server.

```
[edit system services]
user@host# edit dhcp-local-server
```

2. Configure the duplicate client support with the `option-82` option.

```
[edit system services dhcp-local-server]
user@host# set duplicate-clients-in-subnet option-82
```

Related Documentation

- [DHCP Duplicate Client In Subnet Overview on page 13](#)
- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 31](#)
- [Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Their Incoming Interfaces on page 33](#)

Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Their Incoming Interfaces

Duplicate clients occur when two clients in a subnet have the same hardware address or the same client ID.

The following two procedures describe how to configure the router to use the clients' incoming interface to differentiate between duplicate clients. The first procedure describes the configuration for DHCP relay agent; the second procedure is for DHCP local server.

To configure the DHCP relay agent to differentiate between duplicate clients based on the client incoming interface:

1. Specify that you want to configure DHCP relay agent.

```
[edit forwarding-options]
user@host# edit dhcp-relay
```

2. Configure the duplicate client support with the **incoming-interface** option.

```
[edit forwarding-options dhcp-relay]
user@host# set duplicate-clients-in-subnet incoming-interface
```

3. Configure DHCP relay to insert option 82 information if the information is not specified remotely. Use the default setting, which inserts the interface ID rather than the optional interface description.

```
[edit forwarding-options dhcp-relay]
user@host# set relay-option-82 circuit-id
```

4. Configure the router to overwrite any remotely supplied option 82 information in incoming packets.

```
[edit forwarding-options dhcp-relay]
user@host# set overrides always-write-option-82
```

5. Configure the router to always accept DHCP client packets that contain option 82 information.

```
[edit forwarding-options dhcp-relay]
user@host# set overrides trust-option-82
```



NOTE: The **trust-option-82** statement must always be enabled so the router can process incoming DHCP client packets that contain option 82 information when the packets have a gateway IP address (giaddr) of 0 (zero).

To configure the DHCP local server to differentiate between duplicate clients based on the client incoming interface:

1. Specify that you want to configure DHCP local server.

```
[edit system services]
user@host# edit dhcp-local-server
```

2. Configure the duplicate client support with the **incoming-interface** option.

```
[edit system services dhcp-local-server]
user@host# set duplicate-clients-in-subnet incoming-interface
```

Related Documentation

- [DHCP Duplicate Client In Subnet Overview on page 13](#)
- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 31](#)
- [Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Option 82 Information on page 32](#)

Configuring a Default Subscriber Service

Subscriber management enables you to specify a default subscriber service for DHCP (and DHCPv6) local server and DHCP relay agent. The default service is the service (dynamic profile) that is applied to subscribers when they log in.

Default services are subsequently deactivated in any of the following circumstances:

- A PCRF responds to AAA for the subscriber.
- A RADIUS CoA deactivation request is issued.
- You deactivate the service manually through the CLI.

To configure a default subscriber service:

1. Ensure that the service you want to use as the default has been configured in a dynamic profile.
2. Specify the default service.

The following example configures the default service for DHCP local server subscribers.

```
[edit system services dhcp-local-server]
user@host# set service-profile retailer1-subscriber
```

3. Attach the default service—you can attach the profile globally, for a group of interfaces, or for a specific interface.

The following example attaches the profile to a named group of interfaces for DHCP local server.

- Specify the group to which the default service is attached.

```
[edit system services dhcp-local-server]
user@host# set group subscriber-svl
```

- Specify the dynamic profile that defines the default service.

```
[edit system services dhcp-local-server group subscriber-svl]
user@host# set dynamic-profile retailer1-subscriber
```

Related Documentation

- [Default Subscriber Service Overview on page 12](#)
- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 67](#)

Grouping Interfaces with Common DHCP Configurations

You use the group feature to group together a set of interfaces and then apply a common DHCP configuration to the named interface group. The extended DHCP local server, DHCPv6 local server, DHCP relay agent, and DHCPv6 relay agent all support interface groups.

The following steps create a DHCP local server group; the steps are similar for the DHCPv6 local server, DHCP relay agent, and DHCPv6 relay agent.

To configure a DHCP local server interface group:

1. Specify that you want to configure DHCP local server.

```
[edit system services]
user@host# edit dhcp-local-server
```

2. Create the group and assign a name.

```
[edit system services dhcp-local-server]
user@host# edit group boston
```

3. Specify the names of one or more interfaces on which the extended DHCP application is enabled. You can repeat the *interface interface-name* statement to specify multiple interfaces within the group, but you cannot use the same interface in more than one group.

```
[edit system services dhcp-local-server group boston]
user@host# set interface fe-1/0/1.1
user@host# set interface fe-1/0/1.2
```

4. (Optional) You can use the **upto** option to specify a range of interfaces for a group.

```
[edit system services dhcp-local-server group boston]
user@host# set interface fe-1/0/1.3 upto fe-1/0/1.9
```

5. (Optional) You can use the **exclude** option to exclude a specific interface or a specified range of interfaces from the group. For example:

```
[edit system services dhcp-local-server group boston]
user@host# set interface fe-1/0/1.1 upto fe-1/0/1.102
user@host# set interface fe-1/0/1.6 exclude
user@host# set interface fe-1/0/1.70 upto fe-1/0/1.80 exclude
```

Related Documentation

- [Extended DHCP Local Server Overview](#)
- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCPv6 Local Server Overview](#)
- [DHCPv6 Relay Agent Overview on page 10](#)
- [Group-Specific DHCP Local Server Options](#)
- [Group-Specific DHCP Relay Options on page 14](#)
- [Guidelines for Configuring Interface Ranges on page 36](#)

Guidelines for Configuring Interface Ranges

This topic describes guidelines to consider when configuring interface ranges for named interface groups for DHCP local server and DHCP relay. The guidelines refer to the following configuration statement:

```
user@host# set interface interface-name upto upto-interface-name
```

- The start subunit, **interface *interface-name***, serves as the key for the stanza. The remaining configuration settings are considered attributes.
- If the subunit is not included, an implicit **.0** subunit is enforced. The implicit subunit is applied to all interfaces when autoconfiguration is enabled. For example, **interface ge-2/2/2** is treated as **interface ge-2/2/2.0**.
- Ranged entries contain the **upto** option, and the configuration applies to all interfaces within the specified range. The start of a ranged entry must be less than the end of the range. Discrete entries apply to a single interface, except in the case of autoconfiguration, in which a **0** (zero) subunit acts as a wildcard.
- Interface stanzas defined within the same router or switch context are dependent and can constrain each other—both DHCP local server and DHCP relay are considered. Interface stanzas defined across different router (switch) contexts are independent and do not constrain one another.
- Each interface stanza, whether discrete or ranged, has a unique start subunit across a given router context. For example, the following configuration is not allowed within the same group because **ge-1/0/0.10** is the start subunit for both.

```
interface ge-1/0/0.10 upto ge-1/0/0.30
interface ge-1/0/0.10
```

- Two groups cannot share interface space. For example, the following configuration is not allowed because the three stanzas share the same space and interfere with one another—interface **ge-1/0/0.26** is common to all three.

```
dhcp-relay group diamond interface ge-1/0/0.10 upto ge-1/0/0.30
dhcp-local-server group ruby interface ge-1/0/0.26
dhcp-relay group sapphire interface ge-1/0/0.25 upto ge-1/0/0.35
```

- Two ranges cannot overlap, either within a group or across groups. Overlapping occurs when two interface ranges share common subunit space but neither range is a proper subset of the other. The following ranges overlap:

```
interface ge-1/0/0.10 upto ge-1/0/0.30
interface ge-1/0/0.20 upto ge-1/0/0.40
```

- A range can contain multiple nested ranges. A nested range is a proper subset of another range. When ranges are nested, the smallest matching range applies.

In the following example, the three ranges nest properly:

```
interface ge-1/0/0.10 upto ge-1/0/0.30
interface ge-1/0/0.12 upto ge-1/0/0.15 exclude
interface ge-1/0/0.25 upto ge-1/0/0.29 exclude
```

- Discrete interfaces take precedence over ranges. In the following example, interface **ge-1/0/0.20** takes precedence and enforces an interface client limit of 5.

```
interface ge-1/0/0.10 upto ge-1/0/0.30
interface ge-1/0/0.15 upto ge-1/0/0.25 exclude
interface ge-1/0/0.20 overrides interface-client-limit 5
```

Related Documentation

- [Grouping Interfaces with Common DHCP Configurations on page 35](#)

Overriding the Default DHCP Relay Configuration Settings

You can override the default DHCP and DHCPv6 relay agent configuration settings at the global level, for a named group of interfaces, or for a specific interface within a named group.

- To override global default DHCP relay agent configuration options, include the **overrides** statement and its subordinate statements at the **[edit forwarding-options dhcp-relay]** hierarchy level.
- To override DHCP relay configuration options for a named group of interfaces, include the statements at the **[edit forwarding-options dhcp-relay group group-name]** hierarchy level.
- To override DHCP relay configuration options for a specific interface within a named group of interfaces, include the statements at the **[edit forwarding-options dhcp-relay group group-name interface]** hierarchy level.
- To configure overrides for DHCPv6 relay, use the supported statements at the **[edit forwarding-options dhcp-relay dhcpv6]** hierarchy level.

To override default DHCP relay agent configuration settings:

1. Specify that you want to configure override options.

Global override:

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

Group-level override:

```
[edit forwarding-options dhcp-relay]
user@host# edit group boston overrides
```

Per-interface override:

```
[edit forwarding-options dhcp-relay]
user@host# edit group boston interface fe-1/0/1.2 overrides
```

2. (DHCPv4 only) Enable DHCP relay proxy mode.
See [“Enabling DHCP Relay Proxy Mode” on page 67](#).
3. (DHCPv4 only) Overwrite the giaddr in DHCP packets that the DHCP relay agent forwards.
See [“Overwriting giaddr Information” on page 39](#).
4. (DHCPv4 only) Replace the IP source address in DHCP relay request and release packets with the gateway IP address (giaddr).
See [“Replacing the DHCP Relay Request and Release Packet Source Address” on page 40](#).
5. (DHCPv4 only) Override the DHCP relay agent information option (option 82) in DHCP packets.

See [“Overriding Option 82 Information” on page 40](#).

6. (DHCPv4 only) Override the setting of the broadcast bit in DHCP request packets and use the Layer 2 unicast transmission method.

See [“Using Layer 2 Unicast Transmission for DHCP Packets” on page 41](#).

7. (DHCPv4 only) Trust DHCP client packets that have a giaddr of 0 and that contain option 82 information.

See [“Trusting Option 82 Information” on page 41](#).

8. (DHCPv4 and DHCPv6) Override the maximum number of DHCP clients allowed per interface.

See [“Specifying the Maximum Number of DHCP Clients Per Interface” on page 43](#).

9. (DHCPv4 only) Configure client auto logout.

See [“DHCP Auto Logout Overview” on page 21](#).

10. (DHCPv4 and DHCPv6) Enable or disable support for DHCP snooped clients on interfaces.

See [“Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent” on page 50](#).

11. (DHCPv4 and DHCPv6) Delay authentication of subscribers until the DHCP client sends a Request packet.

See the [delay-authentication](#) statement.

12. (DHCPv4 and DHCPv6) Send release messages to the DHCP server when clients are deleted.

See [“Sending Release Messages When Clients Are Deleted” on page 57](#).

13. (DHCPv4 only) Disable the DHCP relay agent on specific interfaces.

See [“Disabling DHCP Relay” on page 76](#).

14. (DHCPv4 and DHCPv6) Disable automatic binding of stray DHCP requests.

See [“Disabling Automatic Binding of Stray DHCP Requests” on page 58](#).

- Related Documentation**
- [Group-Specific DHCP Relay Options on page 14](#)
 - [Deleting DHCP Local Server and DHCP Relay Override Settings](#)

Overwriting giaddr Information

You can configure the DHCP relay agent to change the gateway IP address (giaddr) field in packets that it forwards between a DHCP client and a DHCP server.

To overwrite the giaddr of every DHCP packet with the giaddr of the DHCP relay agent before forwarding the packet to the DHCP server:

1. Specify that you want to configure override options.

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

2. Specify that the giaddr of DHCP packets is overwritten.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set always-write-giaddr
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Replacing the DHCP Relay Request and Release Packet Source Address

You can configure the DHCP relay agent to replace request and release packets with the gateway IP address (giaddr) before forwarding the packet to the DHCP server.

To replace the source address with giaddr:

1. Specify that you want to configure override options.

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

2. Specify that you want to replace the IP source address in DHCP relay request and release packets with the gateway IP address (giaddr).

```
[edit forwarding-options dhcp-relay overrides]
user@host# set replace-ip-source-with giaddr
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Overriding Option 82 Information

You can configure the DHCP relay agent to add or remove the DHCP relay agent information option (option 82) in DHCP packets.

This feature causes the DHCP relay agent to perform one of the following actions, depending on the configuration:

- If the DHCP relay agent is configured to add option 82 information to DHCP packets, it clears the existing option 82 values from the DHCP packets and inserts the new values before forwarding the packets to the DHCP server.
- If the DHCP relay agent is not configured to add option 82 information to DHCP packets, it clears the existing option 82 values from the packets, but does not add any new values before forwarding the packets to the DHCP server.

To override the default option 82 information in DHCP packets destined for a DHCP server:

1. Specify that you want to configure override options.


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

- Specify that the option 82 information in DHCP packets is overwritten.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set always-write-option-82
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Using Layer 2 Unicast Transmission for DHCP Packets

You can configure the DHCP relay agent to override the setting of the broadcast bit in DHCP request packets. DHCP relay agent then instead uses the Layer 2 unicast transmission method to send DHCP Offer reply packets and DHCP ACK reply packets from the DHCP server to DHCP clients during the discovery process.

To override the default setting of the broadcast bit in DHCP request packets:

- Specify that you want to configure override options.

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

- Specify that the DHCP relay agent uses the Layer 2 unicast transmission method.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set layer2-unicast-replies
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Trusting Option 82 Information

By default, the DHCP relay agent treats client packets with a giaddr of 0 (zero) and option 82 information as if the packets originated at an untrusted source, and drops them without further processing. You can override this behavior and specify that the DHCP relay agent process DHCP client packets that have a giaddr of 0 (zero) and contain option 82 information.

To configure DHCP relay agent to trust option 82 information:

- Specify that you want to configure override options.

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

- Specify that the DHCP relay agent process DHCP client packets with a giaddr of 0 and that contain option 82 information.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set trust-option-82
```

- Related Documentation**
- [Extended DHCP Relay Agent Overview on page 4](#)
 - [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Preventing DHCP from Installing Access, Access-Internal, and Destination Routes by Default

You can configure both DHCP local server and DHCP relay agent to override the default installation of access, access-internal, and destination routes. For DHCPv4 you can override the installation of destination routes only or access-internal routes (the access-internal option prevents installation of both destination and access-internal routes). For DHCPv6 you can specify access routes, access-internal routes, or both. You can configure the override globally or for named interface groups.



NOTE: You cannot suppress access-internal routes when the subscriber is configured with both IA_NA and IA_PD addresses over IP demux interfaces—the IA_PD route relies on the IA_NA route for next hop connectivity.



NOTE: In Junos OS releases prior to Release 13.2, the `no-arp` statement was used to override the default installation of host routes. In Junos OS Release 13.2 and later, the `no-arp` statement is deprecated and the function is replaced by the `route-suppression` statement.

To configure route suppression and prevent DHCP from installing specific types of routes:

- For DHCP local server route suppression (for example, a global configuration):

```
[edit system services dhcp-local-server]
user@host# set route-suppression access-internal
```

- For DHCP relay (for example, a group-specific configuration):

```
[edit forwarding-options dhcp-relay group southeast]
user@host# set route-suppression destination
```

- For DHCPv6 local server (for example, a group-specific configuration):

```
[edit system services dhcp-local-server group southern3]
user@host# set dhcpv6 route-suppression access access-internal
```

- For DHCPv6 relay (for example, a global configuration):

```
[edit forwarding-options dhcp-relay]
user@host# set dhcpv6 route-suppression access
```

- Related Documentation**
- [DHCP Access, Access-Internal, and Destination Route Suppression on page 16](#)
 - [Extended DHCP Local Server Overview](#)
 - [DHCPv6 Local Server Overview](#)
 - [Extended DHCP Relay Agent Overview on page 4](#)

- [DHCPv6 Relay Agent Overview on page 10](#)

Specifying the Maximum Number of DHCP Clients Per Interface

By default, there is no limit to the number of DHCP local server or DHCP relay clients allowed on an interface. However, you can override the default setting and specify the maximum number of clients allowed per interface, in the range 1 through 500,000. When the number of clients on the interface reaches the specified limit, no additional DHCP Discover PDUs or DHCPv6 Solicit PDUs are accepted. When the number of clients subsequently drops below the limit, new clients are again accepted.



NOTE: The maximum number of DHCP (and DHCPv6) local server clients or DHCP (and DHCPv6) relay clients can also be specified by Juniper Networks VSA 26-143 during client login. The VSA-specified value always takes precedence if the `interface-client-limit` statement specifies a different number.

If the VSA-specified value differs with each client login, DHCP uses the largest limit set by the VSA until there are no clients on the interface.

To configure the maximum number of DHCP clients allowed per interface:

1. Specify that you want to configure override options.
 - For DHCP local server:


```
[edit system services dhcp-local-server]
user@host# edit overrides
```
 - For DHCPv6 local server:


```
[edit system services dhcp-local-server dhcpv6]
user@host# edit overrides
```
 - For DHCP relay agent:


```
[edit forwarding-options dhcp-relay]
user@host# edit overrides
```
 - For DHCPv6 relay agent:


```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit overrides
```
2. Configure the maximum number of clients allowed per interface. (DHCP local server, DHCPv6 local server, DHCP relay agent and DHCPv6 relay agent all support the `interface-client-limit` statement.)


```
[edit system services dhcp-local-server overrides]
user@host# set interface-client-limit number
```



NOTE: For DHCP local server and DHCP relay agent, you can use either the `interface-client-limit` statement or the `client-discover-match incoming-interface` statement to set a limit of one client per interface. The `interface-client-limit` statement with a value of 1 retains the existing client and rejects any new client connections. The `client-discover-match incoming-interface` statement deletes the existing client and allows a new client to connect.

**Related
Documentation**

- *Overriding Default DHCP Local Server Configuration Settings*
- [Allowing Only One DHCP Client Per Interface on page 44](#)
- *Deleting DHCP Local Server and DHCP Relay Override Settings*
- *Extended DHCP Local Server Overview*
- [Extended DHCP Relay Agent Overview on page 4](#)

Allowing Only One DHCP Client Per Interface

Subscriber management provides two methods that you can use to configure DHCP local server and DHCP relay agent to allow only one DHCP client per interface. The two methods differ on which client is allowed on the interface—the new client or the existing client. The two methods are supported by both DHCP local server and DHCP relay agent, and can be configured globally, for a group of interfaces, or for a specific interface.

- **Accept new client**—Delete the existing client binding and allow the new client to connect. To configure this action, use the ... **overrides client-discover-match incoming-interface** statement.
- **Keep existing client**—Retain the existing client binding on the interface and reject any requests from new DHCP clients. To configure this action, use the ... **overrides interface-client-limit 1** statement to specify a maximum of one client.

To configure the router to delete the existing client binding on the interface and allow the new client to connect:

1. Specify that you want to configure override options.

- For DHCP local server:

```
[edit system services dhcp-local-server]
user@host# edit overrides
```

- For DHCP relay agent:

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

2. Configure the router to view all client connections on the interface as coming from the same client, which allows a new client to replace the existing client. This example shows the DHCP local server configuration. The DHCP relay agent configuration is similar.

```
[edit system services dhcp-local-server overrides]
user@host# set client-discover-match incoming-interface
```

To configure the router to keep the existing client binding on the interface and refuse connections from new clients:

1. Specify that you want to configure override options.

- For DHCP local server:

```
[edit system services dhcp-local-server]
user@host# edit overrides
```

- For DHCP relay agent:

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

2. Set the maximum number of clients allowed per interface to one. This example shows the DHCP local server configuration. The DHCP relay agent configuration is similar.

```
[edit system services dhcp-local-server overrides]
user@host# set interface-client-limit 1
```

Related Documentation

- [DHCP Auto Logout Overview on page 21](#)
- [Automatically Logging Out DHCP Clients on page 45](#)

Automatically Logging Out DHCP Clients

You can configure the extended DHCP local server and extended DHCP relay to automatically log out DHCP clients. Auto logout immediately releases an existing client when DHCP receives a discover packet from a client whose identity matches an existing client. DHCP then releases the existing client IP address without waiting for the normal lease expiration.



NOTE: When the existing client is released, the new client undergoes the normal authentication process. The new client might not receive the same IP address as the original client.

To configure DHCP client auto logout:

1. Specify that you want to configure override options.

- For DHCP local server:

```
[edit system services dhcp-local-server]
user@host# edit overrides
```

- For DHCP relay agent:

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

2. Enable auto logout and specify the secondary identification method you want to use when the primary identification method is unsuccessful.

- For example, to configure DHCP local server to use the incoming interface method:

```
[edit system services dhcp-local-server overrides]
user@host# set client-discover-match incoming-interface
```

- For example, to configure DHCP relay agent to use the option 60 and option 82 method:

```
[edit forwarding-options dhcp-relay overrides]
user@host# set client-discover-match option60-and-option82
```



NOTE: If you change the auto logout configuration, existing clients continue to use the auto logout setting that was configured when they logged in. New clients use the new setting.

Related Documentation

- [DHCP Auto Logout Overview on page 21](#)
- [DHCP Relay Agent Option 82 Value for Auto Logout on page 46](#)
- [Allowing Only One DHCP Client Per Interface on page 44](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings](#)
- [Extended DHCP Local Server Overview](#)
- [Extended DHCP Relay Agent Overview on page 4](#)

DHCP Relay Agent Option 82 Value for Auto Logout

Table 4 on page 46 indicates how the DHCP relay agent determines the option 82 value used for the client auto logout feature. Depending on the configuration settings, DHCP relay agent takes the action indicated in the right column.

Table 4: DHCP Relay Agent Option 82 Value for Auto Logout

DHCP Relay Agent Configuration Settings				giaddr in non-snooped packet	Action Taken
DHCP Relay Configured with Option 82	Discover Packet Contains Option 82	Override "trust-option-82"	Override "always-write-option-82"		
No	No	—	—	—	No secondary search performed
No	Yes	Yes	—	—	Use option 82 from packet
No	Yes	No	—	Zero	Drop packet

Table 4: DHCP Relay Agent Option 82 Value for Auto Logout (*continued*)

DHCP Relay Agent Configuration Settings				giaddr in non-snooped packet	Action Taken
DHCP Relay Configured with Option 82	Discover Packet Contains Option 82	Override "trust-option-82"	Override "always-write-option-82"		
No	Yes	No	—	Non-zero	Use option 82 from packet
Yes	No	—	—	—	Use configured option 82
Yes	Yes	No	—	Zero	Drop packet
Yes	Yes	No	No	Non-zero	Use option 82 from packet
Yes	Yes	No	Yes	Non-zero	Overwrite the configured option 82
Yes	Yes	Yes	No	—	Use option 82 from packet
Yes	Yes	Yes	Yes	—	Overwrite the configured option 82

Related Documentation

- [DHCP Auto Logout Overview on page 21](#)
- [Automatically Logging Out DHCP Clients on page 45](#)

Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events

You can specify a configuration in which the router does not log out a subscriber when the subscriber's interface is deleted.

To configure the router to maintain DHCP subscribers when the subscriber interface is deleted:

1. Specify that you want to configure subscriber management.


```
[edit system services]
user@host# edit subscriber-management
```
2. Configure the router to support the maintain-subscriber feature.


```
[edit system services subscriber-management]
user@host# edit maintain-subscriber
```

3. Configure the router to enable the maintain-subscriber feature when an interface-delete event occurs.

```
[edit system services subscriber-management maintain-subscriber]
user@host# set interface-delete
```

**Related
Documentation**

- [Subscriber Binding Retention During Interface Delete Events on page 23](#)
- [Verifying and Managing the DHCP Maintain Subscribers Feature on page 226](#)

Configuring a DHCP Lease-Time Threshold

Subscriber management provides a lease-time validation feature that enables you to specify the minimum DHCP lease time allowed in your subscriber access environment. When you configure lease-time validation, you specify the lease-time threshold and the action the router performs when an offered lease time is less than the threshold (such as dropping the lease).

Lease-time validation ensures that leases that are offered by third-party DHCP servers or address assignment pools always meet the requirements of your network. For example, you want short leases to be rejected because they can result in excessive renewal traffic that can impact network performance.

You can configure lease-time validation on DHCPv4 and DHCPv6 local servers, and DHCPv4 and DHCPv6 relay agents, and for individual interfaces or interface groups. DHCP relay proxy also supports lease-time validation.

The following procedure describes the steps you use to configure lease-time validation. This example describes a configuration for DHCP relay agent. You use similar steps at the appropriate hierarchy levels for DHCP local server, DHCPv6 local server, and DHCPv6 relay agent.

To configure lease time validation for DHCP relay agent:

1. Specify that you want to configure DHCP relay agent support.

```
[edit forwarding-options]
user@host# edit dhcp-relay
```

2. Specify that you want to configure the DHCP lease time validation feature.

```
[edit forwarding-options dhcp-relay]
user@host# set lease-time-validation
```

3. Configure the threshold that specifies the minimum DHCP client lease time allowed in your network.

```
[edit forwarding-options dhcp-relay lease-time-validation]
user@host# set lease-time-threshold 3600
```

4. Configure the action the router takes when a lease time violation occurs.

```
[edit forwarding-options dhcp-relay lease-time-validation]
user@host# set violation-action drop
```




NOTE: DHCP relay agent and DHCP local server support different violation actions. See the violation-action statement for descriptions of the actions.

If you do not specify a violation action, DHCP binds the client using the third-party lease but marks the binding as lease-time violating.

5. (Optional) Configure how often you want the router to consolidate and log syslog warning messages.

```
[edit system processes dhcp-service]
user@host# set ltv-syslog-interval 3600
```

**Related
Documentation**

- [DHCP Lease-Time Validation Overview on page 17](#)
- [Extended DHCP Local Server Overview](#)
- [Extended DHCP Relay Agent Overview on page 4](#)

Configuring DHCP Snooping for DHCP Relay Agent

DHCP relay agent uses a two-part configuration to determine how to handle DHCP snooped packets. First, you enable or disable snooping support for DHCP relay agent and, optionally, override the default snooping configuration. Then you configure the forwarding action for snooped clients, which specifies whether DHCP relay agent forwards or drops snooped traffic.

To configure DHCP snooping for DHCP relay agent:

1. (DHCPv4 and DHCPv6) Enable or disable DHCP snooping. You can configure DHCP snooping globally, for a named group of interfaces, or for a specific interface.
See [“Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent” on page 50](#).
2. (DHCPv4 only) Configure snooped packets forwarding support.
See [“Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent” on page 54](#).

**Related
Documentation**

- [DHCP Snooping Support on page 18](#)
- [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 50](#)
- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 54](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 88](#)

Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent

DHCP relay agent uses a two-part configuration to determine how to handle DHCP snooped packets. This topic describes the first procedure, in which you configure DHCP relay to either enable or disable support for snooped packets.

The second procedure, which applies only to DHCPv4 relay agent, is described in [“Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent” on page 54](#), and configures the **forward-snooped-clients** statement, which determines whether the snooped packets are forwarded or dropped, depending on the type of interface.



NOTE: The router has a default global setting that specifies whether DHCP snooping support is enabled or disabled for DHCP relay. In Junos OS Release 10.0 and earlier, DHCP snooping is enabled by default. In Junos OS Release 10.1 and later, DHCP snooping is disabled by default.

You can override the default global DHCP snooping configuration and explicitly enable or disable DHCP snooping support. You can configure the explicit snooping support globally, for a group of interfaces, or for a specific interface in a group.

- To enable DHCP relay or DHCPv6 relay snooping support, include the **allow-snooped-clients** option in the **overrides** statement.
- To disable DHCP relay or DHCPv6 relay snooping support, include the **no-allow-snooped-clients** option in the **overrides** statement.

To enable or disable DHCP snooping support globally:

1. Specify that you want to configure DHCP relay agent.

- For DHCP relay agent:

```
[edit]
user@host# edit forwarding-options dhcp-relay
```

- For DHCPv6 relay agent:

```
[edit]
user@host# edit forwarding-options dhcp-relay dhcpv6
```

2. Specify that you want to override the default configuration.

- For DHCP relay agent:

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

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit overrides
```

3. Enable or disable DHCP snooping support.

- To enable DHCP snooping:
 - For DHCP relay agent:


```
[edit forwarding-options dhcp-relay overrides]
user@host# set allow-snooped-clients
```
 - For DHCPv6 relay agent:


```
[edit forwarding-options dhcp-relay dhcpv6 overrides]
user@host# set allow-snooped-clients
```
- To disable DHCP snooping:
 - For DHCP relay agent:


```
[edit forwarding-options dhcp-relay overrides]
user@host# set no-allow-snooped-clients
```
 - For DHCPv6 relay agent:


```
[edit forwarding-options dhcp-relay dhcpv6 overrides]
user@host# set no-allow-snooped-clients
```

For example, to enable global DHCP snooping support :

```
forwarding-options {
  dhcp-relay {
    overrides {
      allow-snooped-clients;
    }
  }
}
```

To enable or disable DHCP snooping support for a group of interfaces:

1. Specify that you want to configure DHCP relay agent.
 - For DHCP relay agent:


```
[edit]
user@host# edit forwarding-options dhcp-relay
```
 - For DHCPv6 relay agent:


```
[edit]
user@host# edit forwarding-options dhcp-relay dhcpv6
```
2. Specify the named group.
 - For DHCP relay agent:


```
[edit forwarding-options dhcp-relay]
user@host# edit group group-name
```
 - For DHCPv6 relay agent:


```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit group group-name
```
3. Specify that you want to override the default configuration.
 - For DHCP relay agent:

```
[edit forwarding-options dhcp-relay group group-name]  
user@host# edit overrides
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name]  
user@host# edit overrides
```

4. Enable or disable DHCP snooping support.

- To enable DHCP snooping:

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay group group-name overrides]  
user@host# set allow-snooped-clients
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name overrides]  
user@host# set allow-snooped-clients
```

- To disable DHCP snooping:

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay group group-name overrides]  
user@host# set no-allow-snooped-clients
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name overrides]  
user@host# set no-allow-snooped-clients
```

For example, to enable DHCP snooping support on all interfaces in group **boston**:

```
forwarding-options {  
  dhcp-relay {  
    group boston {  
      overrides {  
        allow-snooped-clients;  
      }  
    }  
  }  
}
```

To enable or disable DHCP snooping support on a specific interface:

1. Specify that you want to configure DHCP relay agent.

- For DHCP relay agent:

```
[edit]  
user@host# edit forwarding-options dhcp-relay
```

- For DHCPv6 relay agent:

```
[edit]  
user@host# edit forwarding-options dhcp-relay dhcpv6
```

2. Specify the named group containing the interface.

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay]
user@host# edit group group-name
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit group group-name
```

3. Specify the interface for which you want to configure DHCP snooping.

- For DHCP relay agent:

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

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name]
user@host# edit interface interface-name
```

4. Specify that you want to override the default configuration on the interface.

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay group group-name interface interface-name]
user@host# edit overrides
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name interface
interface-name]
user@host# edit overrides
```

5. Enable or disable DHCP snooping support.

- To enable DHCP snooping:

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay group group-name interface interface-name
overrides]
user@host# set allow-snooped-clients
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name interface
interface-name overrides]
user@host# set allow-snooped-clients
```

- To disable DHCP snooping:

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay group group-name interface interface-name
overrides]
user@host# set no-allow-snooped-clients
```

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name interface
interface-name overrides]
user@host# set no-allow-snooped-clients
```

For example, to disable DHCP snooping support on interface **ge-2/1/8.0** in group **boston**:

```
forwarding-options {
  dhcp-relay {
    group boston {
      interface ge-2/1/8.0 {
        overrides {
          no-allow-snooped-clients;
        }
      }
    }
  }
}
```

To enable DHCPv6 snooping support on interface **ge-3/2/1.1** in group **sunnyvale**:

```
forwarding-options {
  dhcp-relay {
    dhcpv6 {
      group sunnyvale {
        interface ge-3/2/1.1 {
          overrides {
            allow-snooped-clients;
          }
        }
      }
    }
  }
}
```

**Related
Documentation**

- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 54](#)
- [DHCP Snooping Support on page 18](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent

You can configure how DHCP relay agent handles DHCP snooped packets. Depending on the configuration, DHCP relay agent either forwards or drops the snooped packets it receives.

DHCP relay uses a two-part configuration to determine how to handle DHCP snooped packets. This topic describes how you use the **forward-snooped-clients** statement to manage whether DHCP relay agent forwards or drops snooped packets, depending on the type of interface on which the packets are snooped. In the other part of the DHCP relay agent snooping configuration, which is described in “[Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent](#)” on page 50, you enable or disable the DHCP relay snooping feature.

[Table 5 on page 55](#) shows the action the router or switch takes on snooped packets when DHCP snooping is enabled by the **allow-snooped-clients** statement. [Table 6 on page 55](#)

shows the action the router (or switch) takes on snooped packets when DHCP snooping is disabled by the **no-allow-snooped-clients** statement.

The router or switch also uses the configuration of the DHCP relay agent forwarding support to determine how to handle snooped BOOTREPLY packets. [Table 7 on page 55](#) shows the action the router (or switch) takes for the snooped BOOTREPLY packets.



NOTE: Configured interfaces have been configured with the **group** statement in the **[edit forwarding-options dhcp-relay]** hierarchy. Non-configured interfaces are in the logical system/routing instance but have not been configured by the **group** statement.

Table 5: Actions for DHCP Relay Agent Snooped Packets When DHCP Snooping Is Enabled

forward-snooped-clients Configuration	Action on Configured Interfaces	Action on Non-Configured Interfaces
forward-snooped-clients not configured	snooped packets result in subscriber (DHCP client) creation	dropped
all-interfaces	forwarded	forwarded
configured-interfaces	forwarded	dropped
non-configured-interfaces	snooped packets result in subscriber (DHCP client) creation	forwarded

Table 6: Actions for DHCP Relay Agent Snooped Packets When DHCP Snooping Is Disabled

forward-snooped-clients Configuration	Action on Configured Interfaces	Action on Non-Configured Interfaces
forward-snooped-clients not configured	dropped	dropped
all-interfaces	dropped	forwarded
configured-interfaces	dropped	dropped
non-configured-interfaces	dropped	forwarded

Table 7: Actions for Snooped BOOTREPLY Packets

forward-snooped-clients Configuration	Action
forward-snooped-clients not configured	snooped BOOTREPLY packets dropped if client is not found

Table 7: Actions for Snooped BOOTREPLY Packets (*continued*)

forward-snooped-clients Configuration	Action
forward-snooped-clients all configurations	snooped BOOTREPLY packets forwarded if client is not found

To configure DHCP snooped packet forwarding and BOOTREPLY snooped packet forwarding for DHCP relay agent:

1. Specify that you want to configure DHCP relay agent.

```
[edit]
user@host# edit forwarding-options dhcp-relay
```

2. Enable DHCP snooped packet forwarding.

```
[edit forwarding-options dhcp-relay]
user@host# edit forward-snooped-clients
```

3. Specify the interfaces that are supported for snooped packet forwarding.

```
[edit forwarding-options dhcp-relay forward-snooped-clients]
user@host# set (all-interfaces | configured-interfaces | non-configured-interfaces)
```

For example, to configure DHCP relay agent to forward DHCP snooped packets on only configured interfaces:

```
[edit]
forwarding-options {
  dhcp-relay {
    forward-snooped-clients configured-interfaces;
  }
}
```

Related Documentation

- [DHCP Snooping Support on page 18](#)
- [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 50](#)

Preventing DHCP Spoofing

A problem that sometimes occurs with DHCP is *DHCP spoofing*. In DHCP spoofing, an untrusted client floods a network with DHCP messages. Often these attacks utilize source IP address spoofing to conceal the true source of the attack.

DHCP snooping helps prevent DHCP spoofing by copying DHCP messages to the control plane and using the information in the packets to create anti-spoofing filters. The anti-spoofing filters bind a client's MAC address to its DHCP-assigned IP address and use this information to filter spoofed DHCP messages. In a typical topology, a carrier edge router (in this function also referred to as the broadband services router [BSR]) connects the DHCP server and the MX Series router (or broadband services aggregator [BSA]) performing the snooping. The MX Series router connects to the client and the BSR.

To configure DHCP snooping, you include the appropriate interfaces within a DHCP group. You can configure DHCP snooping for VPLS environments and bridge domains.

- In a VPLS environment, DHCP requests are forwarded over pseudowires. You configure DHCP snooping over VPLS at the **[edit routing-instances routing-instance-name]** hierarchy level.
- In bridge domains, DHCP snooping works on a per learning bridge basis. Each learning domain must have an upstream interface configured. This interface acts as the flood port for DHCP requests coming from the client side. DHCP requests are forwarded across learning domains in a bridge domain. You configure DHCP snooping on bridge domains at the **[edit routing-instances routing-instance-name bridge-domains bridge-domain-name]** hierarchy level.

To configure DHCP relay to prevent DHCP spoofing:

1. Access the appropriate hierarchy for either a VPLS or bridge domain configuration.

```
user@host# edit routing-instances blue
```
2. Specify that you want to configure DHCP relay.

```
[edit routing-instances blue]
user@host# edit forwarding-options dhcp-relay
```
3. Create the group and assign a name.

```
[edit routing-instances blue forwarding-options dhcp-relay]
user@host# edit group svl-10
```
4. Specify the names of one or more interfaces. DHCP will trust only the MAC addresses learned on the specified interfaces.

```
[edit routing-instances blue forwarding-options dhcp-relay group svl-10]
user@host# set interface fe-1/0/1.1
user@host# set interface fe-1/0/1.2
```



NOTE: You can explicitly enable and disable interface support for DHCP snooped clients. See [“Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent” on page 50](#).

Related Documentation

- [Extended DHCP Relay Agent Overview on page 4](#)
- For examples of DHCP snooping, see the *JUNOS MX Series Ethernet Services Routers Solutions Guide*.
- [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 50](#)

Sending Release Messages When Clients Are Deleted

By default, when DHCP relay and relay proxy delete a client, they do not send a release message to the DHCP server. You can override the default behavior and configure DHCP

relay and relay proxy to send a release message whenever they delete a client. The release message sent by DHCP relay and relay proxy includes option 82 information.



NOTE: In Junos OS Release 10.1 and earlier, DHCP relay sends a release message to the DHCP server when the `client-discover-match` statement is included as a DHCP relay override. In Junos OS Release 10.2 and later, you must include the `send-release-on-delete` statement to configure DHCP relay and relay proxy to send the release message when the `client-discover-match` statement is included.

You can use the `[edit forwarding-options dhcp-relay dhcpv6]` hierarchy level to override the default behavior for DHCPv6 relay agent.

To send a release message:

1. Specify that you want to configure override options.

- For DHCP relay agent:

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

- For DHCPv6 relay agent:

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit overrides
```

2. Specify that you want DHCP relay and relay proxy (or DHCPv6 relay agent) to send a release message when clients are deleted.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set send-release-on-delete
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Disabling Automatic Binding of Stray DHCP Requests

DHCP requests that are received but have no entry in the database are known as stray requests. By default, DHCP relay, DHCP relay proxy, and DHCPv6 relay agent attempt to bind the requesting client by creating a database entry and forwarding the request to the DHCP server. If the server responds with an ACK, the client is bound and the ACK is forwarded to the client. If the server responds with a NAK, the database entry is deleted and the NAK is forwarded to the client. This behavior occurs regardless of whether authentication is configured.

You can override the default configuration at the global level, for a named group of interfaces, or for a specific interface within a named group. Overriding the default causes DHCP relay, DHCP relay proxy, and DHCPv6 relay agent to drop all stray requests instead of attempting to bind the clients.



NOTE: In Junos OS Release 10.4 and later, automatic binding of stray requests is enabled by default.

In Junos OS Release 10.3 and earlier releases, automatic binding of stray requests is disabled by default. In those releases, DHCP relay drops stray requests and forwards a NAK to the client when authentication is configured. Otherwise, DHCP relay attempts to bind the requesting client. In those releases, DHCP relay proxy always drops stray requests and forwards a NAK to the client, regardless of the authentication configuration.

- To disable automatic binding behavior, include the **no-bind-on-request** statement when you configure DHCP overrides at the global, group, or interface level.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set no-bind-on-request
```

- To override the default behavior for DHCPv6 relay agent, configure the override at the **[edit forwarding-options dhcp-relay dhcpv6]** hierarchy level.

```
[edit forwarding-options dhcp-relay dhcpv6 overrides]
user@host# set no-bind-on-request
```

The following two examples show a configuration that disables automatic binding of stray requests for a group of interfaces and a configuration that disables automatic binding on a specific interface.

To disable automatic binding of stray requests on a group of interfaces:

1. Specify the named group.

```
[edit forwarding-options dhcp-relay]
user@host# edit group boston
```

2. Specify that you want to configure overrides.

```
[edit forwarding-options dhcp-relay group boston]
user@host# edit overrides
```

3. Disable automatic binding for the group.

```
[edit forwarding-options dhcp-relay group boston overrides]
user@host# set no-bind-on-request
```

To disable automatic binding of stray requests on a specific interface:

1. Specify the named group of which the interface is a member.

```
[edit forwarding-options dhcp-relay]
user@host# edit group boston
```

2. Specify the interface on which you want to disable automatic binding.

```
[edit forwarding-options dhcp-relay group boston]
user@host# edit interface fe-1/0/1.2
```

3. Specify that you want to configure overrides.

```
[edit forwarding-options dhcp-relay group boston interface fe-1/0/1.2]
user@host# edit overrides
```

4. Disable automatic binding on the interface.

```
[edit forwarding-options dhcp-relay group boston interface fe-1/0/1.2 overrides]
user@host# set no-bind-on-request
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Using DHCP Relay Agent Option 82 Information

Subscriber management enables you to configure DHCP relay agent to include additional option 82 information in the DHCP packets that the relay receives from clients and forwards to a DHCP server. The DHCP server uses the additional information to determine the IP address to assign to the client. The server might also use the information for other purposes; for example, to determine which services to grant the client, or to provide additional security against threats such as address spoofing. The DHCP server sends its reply back to the DHCP relay agent, and the agent removes the option 82 information from the message and forwards the packet to the client.

To configure support for the DHCP relay agent information option 82, you use the **relay-option-82** statement. You can configure the DHCP relay agent to include the following suboptions in the packet the relay sends to the DHCP server:

- Agent Circuit ID (suboption 1)—An ASCII string that identifies the interface on which the client DHCP packet is received.
- Agent Remote ID (suboption 2)—An ASCII string assigned by the DHCP relay agent that securely identifies the client.

You can configure the option 82 support globally or for a named group of interfaces.

To restore the default behavior, in which option 82 information is not inserted into DHCP packets, you use the **delete relay-option-82** statement.



NOTE: The DHCPv6 relay agent provides similar Agent Circuit ID and Agent Remote ID support for DHCPv6 clients. For DHCPv6, subscriber management uses DHCPv6 option 18 to include the circuit ID in the packets that the relay sends to a DHCPv6 server, and option 37 to include the remote ID in the packets. See [“DHCPv6 Relay Agent Options” on page 15.](#)

The following sections describe the option 82 operations you can configure:

- [Configuring Option 82 Information on page 61](#)
- [Including a Prefix in DHCP Options on page 61](#)
- [Including a Textual Description in DHCP Options on page 63](#)

Configuring Option 82 Information

You use the **relay-option-82** statement to configure DHCP relay agent to insert option 82 information in DHCP packets that the relay receives from clients and forwards to a DHCP server. When you configure option 82, you also include at least one of the suboption statements to specify the type of information you want to include in the DHCP packets. Use the **circuit-id** statement to include the Agent Circuit ID (suboption 1) in the packets, or the **remote-id** statement to include the Agent Remote ID (suboption 2).

You can optionally configure DHCP relay agent to include a prefix or the interface description as part of the suboption information. If you specify the **circuit-id** or **remote-id** statement without including either of the optional **prefix** or **use-interface-description** statements, the format of the Agent Circuit ID or Agent Remote ID information for Fast Ethernet (**fe**) or Gigabit Ethernet (**ge**) interfaces is one of the following, depending on your network configuration:

- For Fast Ethernet or Gigabit Ethernet interfaces that do not use virtual local area networks (VLANs) or stacked VLANs (S-VLANs):

(fe | ge)-fpc/pic/port

- For Fast Ethernet or Gigabit Ethernet interfaces that use VLANs:

(fe | ge)-fpc/pic/port:vlan-id

- For Fast Ethernet or Gigabit Ethernet interfaces that use S-VLANs:

(fe | ge)-fpc/pic/port:svlan-id-vlan-id

To enable insertion of option 82 information:

1. Specify that you want to configure option 82 support.

```
[edit forwarding-options dhcp-relay]
user@host# edit relay-option-82
```

2. Configure DHCP relay agent to insert the Agent Circuit ID suboption, the Agent Remote ID suboption, or both.

```
[edit forwarding-options dhcp-relay relay-option-82]
user@host# set circuit-id
```

3. (Optional) Configure a prefix that is used in the option 82 information in the DHCP packets

See [“Including a Prefix in DHCP Options” on page 61](#).

4. (Optional) Configure DHCP relay agent to include the interface’s textual description instead of interface identifier in the option 82 information.

See [“Including a Textual Description in DHCP Options” on page 63](#).

Including a Prefix in DHCP Options

When you configure DHCPv4 or DHCPv6 relay agent to include DHCP options in the packets the relay agent sends to a DHCP server, you can specify that the relay agent add a prefix to the DHCP option. You can add a prefix to the following DHCP options:

- DHCPv4 Option 82 Agent Circuit ID (suboption 1)
- DHCPv4 Option 82 Agent Remote ID (suboption 2)
- DHCPv6 Relay Agent Interface-ID (option 18)
- DHCPv6 Relay Agent Remote-ID (option 37)

The prefix is separated from the DHCP option information by a colon (:), and can include any combination of the **host-name**, **logical-system-name**, and **routing-instance-name** options. The DHCP relay agent obtains the values for the **host-name**, **logical-system-name**, and **routing-instance-name** as follows:

- If you include the **host-name** option, the DHCP relay agent uses the hostname of the router configured with the **host-name** statement at the **[edit system]** hierarchy level.
- If you include the **logical-system-name** option, the DHCP relay agent uses the logical system name configured with the **logical-system** statement at the **[edit logical-system]** hierarchy level.
- If you include the **routing-instance-name** option, the DHCP relay agent uses the routing instance name configured with the **routing-instance** statement at the **[edit routing-instances]** hierarchy level or at the **[edit logical-system logical-system-name routing-instances]** hierarchy level.

If you include the hostname and either or both of the logical system name and the routing instance name in the prefix, the hostname is followed by a forward slash (/). If you include both the logical system name and the routing instance name in the prefix, these values are separated by a semicolon (;).

The following examples show several possible formats for the DHCP option information when you specify the **prefix** statement for Fast Ethernet (**fe**) or Gigabit Ethernet (**ge**) interfaces with S-VLANs.

- If you include only the hostname in the prefix for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:

hostname:(fe | ge)-fpc/pic/port:svlan-id-vlan-id

- If you include only the logical system name in the prefix for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:

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

- If you include only the routing instance name in the prefix for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:

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

- If you include both the hostname and the logical system name in the prefix for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:

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

- If you include both the logical system name and the routing instance name in the prefix for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:

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 for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:

```
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 VLANs but not S-VLANs, only the **vlan-id** value appears in the DHCP option 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.

(DHCPv4) To configure a prefix with the option 82 information:

1. Specify that you want to configure option 82 support.

```
[edit forwarding-options dhcp-relay]
user@host# edit relay-option-82
```

2. Configure DHCP relay agent to insert the Agent Circuit ID, the Agent Remote ID, or both.

```
[edit forwarding-options dhcp-relay relay-option-82]
user@host# edit circuit-id
```

3. Specify that the prefix is included in the option 82 information. In this example, the prefix includes the hostname and logical system name

```
[edit forwarding-options dhcp-relay relay-option-82 circuit-id]
user@host# set prefix host-name logical-system-name
```

(DHCPv6) To use a prefix with the DHCPv6 option 18 or option 37 information:

1. Specify that you want to configure DHCPv6 relay agent support.

```
[edit forwarding-options dhcp-relay]
user@host# edit dhcpv6
```

2. Configure DHCPv6 relay agent to insert option 18 (Relay Agent Interface-ID), option 37 (Relay Agent Remote-ID), or both.

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit relay-agent-interface-id
```

3. Specify that the prefix is included in the option information. In this example, the prefix includes the hostname and logical system name

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
user@host# set prefix host-name logical-system-name
```

Including a Textual Description in DHCP Options

By default, when DHCPv4 or DHCPv6 relay agent inserts agent circuit ID or agent remote ID option information in the packets sent to a DHCP server, the options include the interface identifier. However, you can configure the DHCP relay agent to include the textual description that is configured for the interface instead of the interface identifier. You can use the textual description for either the logical interface or the device interface.

You can include the textual interface description in the agent circuit ID or agent remote ID options for static interfaces.

The textual description is configured separately, using the **description** statement at the **[edit interfaces *interface-name*]** hierarchy level. 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.

You can use the textual description with the following DHCP options:

- DHCPv4 Option 82 Agent Circuit ID (suboption 1)
- DHCPv4 Option 82 Agent Remote ID (suboption 2)
- DHCPv6 Relay Agent Interface-ID (option 18)
- DHCPv6 Relay Agent Remote-ID (option 37)

(DHCPv4) To configure the DHCP relay option 82 suboption to include the textual interface description:

1. Specify that you want to configure option 82 support.

```
[edit forwarding-options dhcp-relay]
user@host# edit relay-option-82
```

2. Configure DHCP relay agent to insert the Agent Circuit ID, Agent Remote ID, or both.

```
[edit forwarding-options dhcp-relay relay-option-82]
user@host# edit circuit-id
```

3. Specify that the textual description is included in the option 82 information. In this example, the option 82 information includes the description used for the device interface.

```
[edit forwarding-options dhcp-relay relay-option-82 circuit-id]
user@host# set use-interface-description device
```

(DHCPv6) To use a textual description with the DHCPv6 option 18 or option 37 information:

1. Specify that you want to configure DHCPv6 relay agent support.

```
[edit forwarding-options dhcp-relay]
user@host# edit dhcpv6
```

2. Configure DHCPv6 relay agent to insert option 18 (Relay Agent Interface-ID), option 37 (Relay Agent Remote-ID), or both.

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit relay-agent-interface-id
```

3. Specify that the textual description is included in the option information. In this example, the option 37 information includes the description used for the device interface.

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
user@host# set use-interface-description device
```


Using DHCP Option Information to Selectively Process DHCP Client Traffic

The following procedure describes the steps you use to configure DHCP relay agent to selectively process client traffic—selective processing uses DHCP or DHCPv6 option information to identify, filter, and process client traffic. To configure DHCPv6 support you use the procedure at the **[edit forwarding-options dhcp-relay dhcpv6]** hierarchy level.

To configure DHCP relay agent to use option information to selectively process DHCP client traffic:

1. Specify that you want to configure DHCP relay agent support.

```
[edit forwarding-options]
user@host# edit dhcp-relay
```

2. Specify that you want to use the DHCP option feature to selectively process incoming DHCP traffic.

```
[edit forwarding-options dhcp-relay]
user@host# edit relay-option
```

3. Specify the DHCP or DHCPv6 option number DHCP relay uses to identify and process the client traffic. You can specify options 60 and 77 for DHCP relay agent, and options 15 and 16 for DHCPv6 relay agent.

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

For example, to identify traffic that has DHCP option 60 information:

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

4. (Optional) Configure the default action that DHCP relay uses when the incoming client traffic does not satisfy any configured match or partial match criteria.

For example, to configure DHCP relay to drop traffic by default:

```
[edit forwarding-options dhcp-relay relay-option]
user@host# set default-action drop
```

5. (Optional) Configure an exact match condition that filters the client traffic and specifies the associated action for DHCP relay agent to take.

For example, to select traffic that has an option 60 (configured in the previous step) ASCII string of **video25**, and then forward that traffic to a named local server group:

```
[edit forwarding-options dhcp-relay relay-option]
user@host# set equals ascii video25 local-server-group servergroup-east-video
```

6. (Optional) Configure a partial match condition that filters the client traffic and specifies the associated action.

For example, to select traffic that has an option 60 hexadecimal string that starts with **766964656F** (left to right), and then forward that traffic without creating a new session:

```
[edit forwarding-options dhcp-relay relay-option]
```

```
user@host# edit starts-with hexadecimal 7669646566F forward-only
```

- Related Documentation**
- [DHCP Options and Selective Traffic Processing Overview on page 19](#)
 - [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 79](#)
 - [Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing on page 83](#)

Configuring Server Groups

You can configure a named group of DHCP servers for use by the extended DHCP relay agent on the router or switch.

You specify the name of the DHCP server group and the IP addresses of one or more DHCP servers that belong to this group. You can configure a maximum of five IP addresses per named server group.

To configure a named server group:

1. Specify the name of the server group.

```
[edit forwarding-options dhcp-relay]
user@host# set server-group myServerGroup
```

2. Add the IP addresses of the DHCP servers belonging to the group.

```
[edit forwarding-options dhcp-relay server-group myServerGroup]
user@host# set 192.168.100.50
user@host# set 192.168.100.75
```

- Related Documentation**
- [Extended DHCP Relay Agent Overview on page 4](#)

Configuring Active Server Groups

You can configure an active server group. Using an active server group enables you to apply a common DHCP relay agent configuration to a named group of DHCP server addresses.

Use the statement at the **[edit ... dhcpv6]** hierarchy levels to configure DHCPv6 support.

To configure an active server group:

- Specify the name of the active server group.

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

To create an active server group as a global DHCP relay agent configuration option, include the **active-server-group** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level. To have the group apply only to a named group of interfaces, include the

active-server-group statement at the **[edit forwarding-options dhcp-relay group group-name]** hierarchy level.

Including the **active-server-group** statement at the **[edit forwarding-options dhcp-relay group group-name]** hierarchy level (as a group-specific option) overrides the effect of including the **active-server-group** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level as a global option.

- Related Documentation**
- [Extended DHCP Relay Agent Overview on page 4](#)
 - [Grouping Interfaces with Common DHCP Configurations on page 35](#)

Enabling DHCP Relay Proxy Mode

You can enable DHCP relay proxy mode on all interfaces or a group of interfaces.

To enable DHCP relay proxy mode:

1. Specify that you want to configure override options.

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

2. Enable DHCP relay proxy mode.

```
[edit forwarding-options dhcp-relay overrides]
user@host# set proxy-mode
```

- Related Documentation**
- [DHCP Relay Proxy Overview on page 8](#)
 - [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces

This topic describes how to attach a dynamic profile to a DHCP subscriber interface or a DHCP client interface. When a DHCP subscriber or DHCP client logs in, the specified dynamic profile is instantiated and the services defined in the profile are applied to the interface.

This topic contains the following sections:

- [Attaching a Dynamic Profile to All DHCP Subscriber or All DHCP Client Interfaces on page 67](#)
- [Attaching a Dynamic Profile to a Group of DHCP Subscriber Interfaces or a Group of DHCP Client Interfaces on page 68](#)

Attaching a Dynamic Profile to All DHCP Subscriber or All DHCP Client Interfaces

To attach a dynamic profile to all DHCP subscriber or all DHCP client interfaces:

1. At the DHCP configuration hierarchy, use the **dynamic-profile** statement to specify the name of the dynamic profile to attach to all interfaces.

- For DHCP local server:

```
[edit system services dhcp-local-server]
user@host# set dynamic-profile vod-profile-22
```

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay]
user@host# set dynamic-profile vod-profile-west
```

2. (Routers only) Optionally, you can configure the attribute to use when attaching the specified profile.

You can include either the **aggregate-clients** option to enable multiple DHCP subscribers to share the same VLAN logical interface, or the **use-primary** option to specify that the primary dynamic profile is used. The **aggregate-clients** option does not apply to demux subscriber interfaces. The two options are mutually exclusive.

- To enable multiple subscribers to share the same VLAN logical interface:

```
[edit system services dhcp-local-server dynamic-profile]
user@host# set aggregate-clients merge
```

- To use the primary dynamic profile:

```
[edit forwarding-options dhcp-relay dynamic-profile]
user@host# set use-primary subscriber_profile
```

Attaching a Dynamic Profile to a Group of DHCP Subscriber Interfaces or a Group of DHCP Client Interfaces

Before you begin:

- Configure the interface group.

See [“Grouping Interfaces with Common DHCP Configurations”](#) on page 35.

To attach a dynamic profile to a group of interfaces:

1. At the DHCP configuration hierarchy, specify the name of the interface group and the dynamic profile to attach to the group.

- For DHCP local server:

```
[edit system services dhcp-local-server]
user@host# set group boston dynamic-profile vod-profile-42
```

- For DHCP relay agent:

```
[edit forwarding-options dhcp-relay]
user@host# set group quebec dynamic-profile vod-profile-east
```

2. (Routers only) Optionally, you can configure the attribute to use when attaching the specified profile.

You can include either the **aggregate-clients** option to enable multiple DHCP subscribers to share the same VLAN logical interface, or the **use-primary** option to specify that the primary dynamic profile is used. The **aggregate-clients** option does not apply to demux subscriber interfaces. The two options are mutually exclusive.

- To enable multiple subscribers to share the same VLAN logical interface:

```
[edit system services dhcp-local-server dynamic-profile]
user@host# set aggregate-clients merge
```

- To use the primary dynamic profile:

```
[edit forwarding-options dhcp-relay dynamic-profile]
user@host# set use-primary subscriber_profile
```

Related Documentation

- *Dynamic Profiles Overview*
- [Dynamic Profile Attachment to DHCP Subscriber Interfaces Overview on page 11](#)
- *Example: Configuring Dynamic Subscriber Interfaces on IP Demux Interfaces*

Configuring DHCPv6 Relay Agent Options

You can configure DHCPv6 relay agent to insert optional information in the DHCPv6 packets that the relay receives from clients and forwards to a DHCPv6 server. To configure the optional information, you specify the type of information you want to include in the packets. You use the **relay-agent-interface-id** statement to include the Relay Agent Interface-ID (option 18) in the packets, or the **relay-agent-remote-id** statement to include the Relay Agent Remote-ID (option 37).

When you enable the DHCPv6 options support, you can optionally configure DHCPv6 relay agent to include a prefix or the interface description as part of the option information. If you configure the DHCPv6 options but do not include either the optional prefix or interface description, the format of the Relay Agent Interface-ID or Relay Agent Remote-ID information for Fast Ethernet (**fe**) or Gigabit Ethernet (**ge**) interfaces is one of the following, depending on your network configuration:

- For Fast Ethernet or Gigabit Ethernet interfaces that do not use virtual local area networks (VLANs) or stacked VLANs (S-VLANs):

```
(fe | ge)-fpc/pic/port
```

- For Fast Ethernet or Gigabit Ethernet interfaces that use VLANs:

```
(fe | ge)-fpc/pic/port:vlan-id
```

- For Fast Ethernet or Gigabit Ethernet interfaces that use S-VLANs:

```
(fe | ge)-fpc/pic/port:svlan-id-vlan-id
```

To enable insertion of DHCPv6 options:

1. Specify that you want to configure DHCPv6 relay agent support.

```
[edit forwarding-options dhcp-relay]
user@host# edit dhcpv6
```

2. Configure DHCPv6 relay agent to insert the Relay Agent Interface-ID option, the Relay Agent Remote-ID option, or both.

- To insert the Relay Agent Interface-ID (option 18):

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# set relay-agent-interface-id
```

- To insert the Relay Agent Remote-ID (option 37):

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# set relay-agent-remote-id
```

3. (Optional) Configure a prefix that is used in the DHCPv6 option information in the DHCPv6 packets

See [“Including a Prefix in DHCP Options” on page 61](#).

4. (Optional) Configure DHCPv6 relay agent to include the interface's textual description instead of interface identifier in the DHCPv6 option information.

See [“Including a Textual Description in DHCP Options” on page 63](#).

Related Documentation

- [Inserting DHCPv6 Interface-ID Option \(Option 18\) In DHCPv6 Packets on page 70](#)
- [Inserting DHCPv6 Remote-ID Option \(Option 37\) In DHCPv6 Packets on page 71](#)
- [Including a Prefix in DHCP Options on page 61](#)
- [Including a Textual Description in DHCP Options on page 63](#)

Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets

You can configure DHCPv6 relay agent to insert the DHCPv6 Interface-ID (option 18) in the packets that the relay sends to a DHCPv6 server. You can configure the option 18 support at either the DHCPv6 global or group level.

When you configure option 18 support, you can optionally include the following additional information:

- Prefix—Specify the **prefix** option to add a prefix to the interface identifier. The prefix can be any combination of hostname, logical system name, and routing instance name.
- Interface description—Specify the **use-interface-description** option to include the textual interface description instead of the interface identifier. You can include either the device interface description or the logical interface description.
- Option 82 Agent Circuit ID suboption (suboption 1)—Specify the **use-option-82** option to include the DHCPv4 Option 82 Agent Circuit ID suboption (suboption 1). This configuration is useful in a dual-stack environment, which has both DHCPv4 and DHCPv6 subscribers that reside over the same underlying logical interface. The router checks for the option 82 suboption 1 value and inserts it into the outgoing packets. If no DHCPv4 binding exists or if the binding does not have an option 82 suboption 1 value, the router sends the packets without adding an option 18.



NOTE: If you specify one of the optional configurations, and the specified information does not exist (for example, there is no interface description), DHCPv6 relay ignores the optional configuration and inserts the default interface identifier in the packets.

To insert the DHCPv6 Interface-ID option (option 18) in DHCPv6 packets:

1. Configure the DHCPv6 relay to include option 18.

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit relay-agent-interface-id
```

2. (Optional) Specify the prefix to include in option 18.

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
user@host# set prefix prefix
```

3. (Optional) Specify that option 18 include the textual description of the interface. You can specify either the **logical** interface description or the **device** interface description.

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
user@host# set use-interface-description (logical | device)
```

4. (Optional) Specify that option 18 use the DHCPv4 Option 82 Agent Circuit ID suboption (suboption 1) value.

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
user@host# set use-option-82
```

Related Documentation

- [DHCPv6 Relay Agent Options on page 15](#)
- [Configuring DHCPv6 Relay Agent Options on page 69](#)
- [Including a Prefix in DHCP Options on page 61](#)
- [Including a Textual Description in DHCP Options on page 63](#)

Inserting DHCPv6 Remote-ID Option (Option 37) In DHCPv6 Packets

You can configure DHCPv6 relay agent to insert the DHCPv6 Remote-ID (option 37) in the packets that the relay sends to a DHCPv6 server. You can configure the option 37 support at either the DHCPv6 global or group level.

When you configure option 37 support, you can optionally include the following additional information:

- **Prefix**—Specify the **prefix** option to add a prefix to the interface identifier. The prefix can be any combination of hostname, logical system name, and routing instance name.
- **Interface description**—Specify the **use-interface-description** option to include the textual interface description instead of the interface identifier. You can include either the device interface description or the logical interface description.



NOTE: If you specify one of the optional configurations, and the specified information does not exist (for example, there is no interface description), DHCPv6 relay ignores the optional configuration and inserts the default interface identifier in the packets.

To insert the DHCPv6 Remote-ID option (option 37) in DHCPv6 packets:

1. Configure the DHCPv6 relay to include option 37.

```
[edit forwarding-options dhcp-relay dhcpv6]  
user@host# edit relay-agent-remote-id
```

2. (Optional) Specify the prefix to include with the option 37 information.

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-remote-id]  
user@host# set prefix prefix
```

3. (Optional) Specify that option 37 include the textual description of the interface. You can specify either the **logical** interface description or the **device** interface description.

```
[edit forwarding-options dhcp-relay dhcpv6 relay-agent-remote-id]  
user@host# set use-interface-description (logical | device)
```

**Related
Documentation**

- [DHCPv6 Relay Agent Options on page 15](#)
- [Configuring DHCPv6 Relay Agent Options on page 69](#)

DHCP Liveness Detection Overview

Unlike PPP, DHCP does not define a native keepalive mechanism as part of either the DHCPv4 or DHCPv6 protocols. Without a keepalive mechanism, DHCP local server, DHCP relay, or DHCP relay proxy is unable to quickly detect if it has lost connectivity with a subscriber or a DHCP client; and it must rely on standard DHCP subscriber session or DHCP client session termination messages.

DHCP clients often do not send DHCP release messages prior to exiting the network. The discovery of their absence is dependent on existing DHCP lease time and release request mechanisms. These mechanisms are often considered insufficient when serving as session health checks for clients in a DHCP subscriber access or a DHCP-managed network. Because DHCP lease times are typically too long to provide an adequate response time for a session health failure, and configuring short DHCP lease times can pose an undue burden on control plane processing, implementing a DHCP liveness detection mechanism enables better monitoring of bound DHCP clients. When configured with a liveness detection protocol, if a given subscriber (or client) fails to respond to a configured number of consecutive liveness detection requests, the subscriber (or client) binding is deleted and its resources released.

DHCP liveness detection for DHCP subscriber IP or DHCP client IP sessions utilizes an active liveness detection protocol to institute liveness detection checks for relevant clients. Clients must respond to liveness detection requests within a specified amount of time. If the responses are not received within that time for a given number of

consecutive attempts, then the liveness detection check fails and a failure action is implemented.

Using DHCP liveness detection, IP sessions are acted upon as soon as liveness detection checks fail. This faster response time serves to:

- Provide more accurate time-based accounting of subscriber (or DHCP client) sessions.
- Better preserve router (switch) resources.
- Help to reduce the window of vulnerability to some security attacks.

Examples of liveness detection protocols include Bidirectional Forwarding Detection (BFD) for both DHCPv4 and DHCPv6 subscribers, IPv4 Address Resolution Protocol (ARP) for DHCPv4 subscribers, and IPv6 Neighbor Unreachability Detection for DHCPv6 subscribers.



NOTE: This release supports only BFD for DHCPv4 and DHCPv6 liveness detection.

When configuring BFD liveness detection, keep the following in mind:

- You can configure DHCPv4 and DHCPv6 liveness detection either globally or per DHCPv4 or DHCPv6 group.
- DHCPv4 or DHCPv6 subscriber access clients that do not support BFD are not affected by the liveness detection configuration. These clients can continue to access the network (once validated) even if BFD liveness detection is enabled on the router (or switch).
- When configured, DHCPv4 or DHCPv6 initiates liveness detection checks for relevant clients (that is, clients that support BFD) when those clients enter a bound state.
- After protocol-specific messages are initiated for a BFD client, they are periodically sent to the subscriber (or client) IP address of the client and responses to those liveness detection requests are expected within a configured amount of time.
- If liveness detection responses are not received from clients that support BFD within the configured amount of time for a configured number of consecutive attempts, the liveness detection check is deemed to have failed and a configured failure action is implemented.

Related Documentation

- *Configuring Detection of DHCP Local Server Client Connectivity*
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 73](#)

Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity

Liveness detection for DHCP subscriber IP or DHCP client IP sessions utilizes an active liveness detection protocol to institute liveness detection checks for relevant clients.

Clients must respond to liveness detection requests within a specified amount of time. If the responses are not received within that time for a given number of consecutive attempts, then the liveness detection check fails and a failure action is implemented.



NOTE: You can also configure DHCP liveness detection for DHCP local server.

To configure liveness detection for DHCP relay:

1. Specify that you want to configure liveness detection.

- For DHCP global configuration:

```
[edit forwarding-options dhcp-relay]
user@host# edit liveness-detection
```

- For DHCP group configuration:

```
[edit forwarding-options dhcp-relay group group-name]
user@host# edit liveness-detection
```



NOTE: Liveness detection is also supported for DHCPv6 configurations. To configure DHCPv6 liveness detection, include the **liveness-detection** statement, and any subsequent configuration statements, at the [edit forwarding-options dhcp-relay dhcpv6] or [edit forwarding-options dhcp-relay dhcpv6 group *group-name*] hierarchy level.

2. (Optional) Specify that you want to use DHCP relay proxy mode.

```
[edit forwarding-options dhcp-relay group group-name]
user@host# set overrides proxy-mode
```

3. Specify that you want to configure the liveness detection method.

- For DHCP global configuration:

```
[edit forwarding-options dhcp-relay liveness-detection]
user@host# edit method
```

- For DHCP group configuration:

```
[edit forwarding-options dhcp-relay group group-name liveness-detection]
user@host# edit method
```

4. Specify the liveness detection method that you want DHCP to use.



NOTE: In this release, the only method supported for liveness detection is Bidirectional Forwarding Detection (BFD).

- For DHCP global configuration:

```
[edit forwarding-options dhcp-relay liveness-detection method]
user@host# edit bfd
```

- For DHCP group configuration:

```
[edit forwarding-options dhcp-relay group group-name liveness-detection method]
user@host# edit bfd
```

5. Configure the liveness detection method as desired.

See [“Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients” on page 97](#) for an example of how to globally configure DHCP relay liveness detection.

6. Configure the action the router takes when a liveness detection failure occurs.

- For DHCP global configuration:

```
[edit forwarding-options dhcp-relay liveness-detection]
user@host# edit failure-action action
```

- For DHCP group configuration:

```
[edit forwarding-options dhcp-relay group group-name liveness-detection]
user@host# edit failure-action action
```

Related Documentation

- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCP Liveness Detection Overview on page 72](#)
- *Configuring Detection of DHCP Local Server Client Connectivity*
- *Example: Configuring Group Liveness Detection for DHCP Local Server Clients*
- [Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97](#)

Monitoring DHCP Server Responsiveness

You can configure DHCP relay agent and DHCPv6 relay agent to enable the router to monitor DHCP server responsiveness. To monitor DHCP server responsiveness, you specify the length of time during which the router tracks how DHCP servers respond to relayed packets. If a configured DHCP server within the routing instance fails to respond to all relayed packets during the specified time period, the router generates the `DH_SVC_EXTERN_SERVER_STATE_CHG` system log message. When the DHCP server begins responding successfully, the router generates the log message again to indicate that responsiveness is restored. You can also use **show dhcp relay statistics** and **show dhcpv6 relay statistics** commands to display DHCP server responsiveness statistics.

The following procedure describes how to configure DHCP relay agent to enable the router to monitor DHCP server responsiveness. To configure DHCPv6 server responsiveness, include the **server-response-time** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level.

To monitor DHCP server responsiveness:

1. Specify that you want to configure DHCP relay agent.

```
[edit forwarding-options]
user@host# edit dhcp-relay
```

2.

```
[edit forwarding-options dhcp-relay]
user@host# set server-response-time 86,400
```

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [show dhcp relay statistics on page 243](#)
- [show dhcpv6 relay statistics on page 252](#)

Disabling DHCP Relay

You can disable DHCP relay on all interfaces or a group of interfaces.

To disable DHCP relay agent:

1. Specify that you want to configure override options.

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

2. Disable the DHCP relay agent.

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

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings](#)

CHAPTER 3

Examples

- [Example: Minimum DHCP Relay Agent Configuration on page 77](#)
- [Example: DHCP Relay Agent Configuration with Multiple Clients and Servers on page 78](#)
- [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 79](#)
- [Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing on page 83](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 88](#)
- [Example: Enabling DHCP Snooping Support for DHCPv6 Relay Agent on page 89](#)
- [Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine on page 93](#)
- [Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97](#)

Example: Minimum DHCP Relay Agent Configuration

This example shows the minimum configuration you need to use the extended DHCP relay agent on the router or switch:

```
[edit forwarding-options]
dhcp-relay {
  server-group {
    test 10.0.2.1;
  }
  active-server-group test;
  group all {
    interface fe-0/0/2.0;
  }
}
```



NOTE: The interface type in this topic is just an example. The **fe-** interface type is not supported by EX Series switches.

This example creates a server group and an active server group named **test** with IP address 10.0.2.1. The DHCP relay agent configuration is applied to a group named **all**. Within this group, the DHCP relay agent is enabled on interface fe-0/0/2.0.

Related Documentation • [Extended DHCP Relay Agent Overview on page 4](#)

Example: DHCP Relay Agent Configuration with Multiple Clients and Servers

This example shows an extended DHCP relay agent configuration for a network that includes multiple DHCP clients and DHCP servers. Additional details follow the example.

```
[edit forwarding-options]
dhcp-relay {
  server-group {
    sp-1 {
      10.0.2.1;
      10.0.2.2;
    }
    sp-2 {
      10.33.2.1;
      10.33.2.2;
      10.33.2.3;
    }
  }
  active-server-group sp-1;
  overrides layer2-unicast-replies;
  group clients_a {
    relay-option-82 circuit-id;
    interface fe-1/0/1.1;
    interface fe-1/0/1.2;
    interface fe-1/0/1.3;
  }
  group clients_b {
    relay-option-82 {
      circuit-id {
        prefix routing-instance-name;
      }
    }
    interface fe-1/0/1.4;
    interface fe-1/0/1.5;
    interface fe-1/0/1.6;
  }
  group eth_dslam_relay {
    active-server-group sp-2;
    overrides {
      trust-option-82;
      layer2-unicast-replies;
    }
    interface fe-1/0/1.7;
    interface fe-1/0/1.8;
    interface fe-1/0/1.9;
  }
}
```

This example creates two server-groups: **sp-1**, which includes DHCP server addresses 10.0.2.1 and 10.0.2.2, and **sp-2**, which includes DHCP server addresses 10.33.2.1, 10.33.2.2, and 10.33.2.3. The active server group to which the DHCP relay agent configuration applies

is **sp-1**. A global override is set that causes the DHCP relay agent to use Layer 2 unicast transmission to send DHCP reply packets from the DHCP server to DHCP clients during the discovery process.

The example also creates three groups of subscribers and their associated Fast Ethernet interfaces: **clients_a**, **clients_b**, and **eth_dslam_relay**. These groups are configured to meet different needs, as follows:

- The **clients_a** and **clients_b** groups consist of basic subscribers. The service provider for these groups inserts option 82 information in the DHCP packets that are destined for the DHCP server.
- The subscribers in **eth_dslam_relay** are connected to an Ethernet digital subscriber line access multiplexer (DSLAM) that functions as a Layer 2 DHCP relay agent. The active server group for **eth_dslam_relay** is **sp-2**. Overrides are set for the **eth_dslam_relay** group that enable the DHCP relay agent to trust option 82 information and to use Layer 2 unicast transmission to send DHCP reply packets to DHCP clients during discovery.

**Related
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)

Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings

This example shows how to configure DHCP relay agent to use DHCP option strings to selectively identify, filter, and process client traffic.

- [Requirements on page 79](#)
- [Overview on page 80](#)
- [Configuration on page 80](#)
- [Verification on page 82](#)

Requirements

This example uses the following hardware and software components:

- MX Series 3D Universal Edge Routers or EX Series Switches
- Junos OS Release 12.3 or later or Junos OS Release 12.3R2 for EX Series switches

Before you configure DHCP relay agent selective processing support, be sure you:

- Configure DHCP relay agent.

See [“Extended DHCP Relay Agent Overview” on page 4](#).

- (Optional) Configure a named DHCP local server group if you want to forward client traffic to a server group.

See [“Grouping Interfaces with Common DHCP Configurations” on page 35](#).

Overview

In this example, you configure DHCP relay agent to use DHCP option strings in client packets to selectively identify, filter, and process client traffic. To configure selective processing, you perform the following procedures:

1. Identify the client traffic—Specify the DHCP option that DHCP relay agent uses to identify the client traffic you want to process. The option you specify matches the option in the client traffic.
2. Configure a default action—Specify the default processing action, which DHCP relay uses for identified client traffic that does not satisfy any configured match criteria.
3. Create match filters and associate an action with each filter—Specify match criteria that filter the client traffic. The criteria can be an exact match or a partial match with the option string in the client traffic. Associate a processing action with each match criterion.

Configuration

To configure DHCP relay agent selective processing based on DHCP option information, perform these tasks:

- [Configuring DHCP Relay Agent To Selectively Process Client Traffic Based on DHCP Option Strings on page 80](#)
- [Results on page 81](#)

CLI Quick Configuration

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

```
set forwarding-options dhcp-relay relay-option option-number 60
set forwarding-options dhcp-relay relay-option equals ascii video-gold forward-only
set forwarding-options dhcp-relay relay-option equals ascii video-bronze local-server-group
servergroup-15
set forwarding-options dhcp-relay relay-option starts-with hexadecimal ffff
local-server-group servergroup-east
set forwarding-options dhcp-relay relay-option default-action drop
```

Configuring DHCP Relay Agent To Selectively Process Client Traffic Based on DHCP Option Strings

Step-by-Step Procedure

To configure DHCP relay selective processing:

1. Specify that you want to configure DHCP relay agent support.

```
[edit forwarding-options]
user@host# edit dhcp-relay
```
2. Specify the DHCP option that DHCP relay agent uses to identify incoming client traffic.

```
[edit forwarding-options dhcp-relay]
```



```
user@host# set relay-option option-number 60
```

3. Configure a default action, which DHCP relay agent uses when the incoming client traffic does not satisfy any configured match criteria.

```
[edit forwarding-options dhcp-relay]
user@host# set relay-option default-action drop
```

4. Configure an exact match condition and associated action that DHCP relay uses to process the identified client traffic.

```
[edit forwarding-options dhcp-relay]
user@host# set relay-option equals ascii video-gold forward-only
```

5. Configure a second exact match condition and associated action that DHCP relay uses to process client traffic.

```
[edit forwarding-options dhcp-relay]
user@host# set relay-option equals ascii video-bronze local-server-group
servergroup-15
```

6. Configure a partial match criteria and associated action that DHCP relay uses to process client traffic.

```
[edit forwarding-options dhcp-relay]
user@host# set relay-option starts-with hexadecimal ffff local-server-group
servergroup-east
```

Results

From configuration mode, confirm the results of your configuration by issuing the **show** statement at the **[edit forwarding-options]** hierarchy level. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit forwarding-options]
user@host# show
dhcp-relay {
  relay-option {
    option-number 60;
    equals {
      ascii video-gold {
        forward-only;
      }
    }
    equals {
      ascii video-bronze {
        local-server-group servergroup-15;
      }
    }
  }
  default-action {
    drop;
  }
  starts-with {
    hexadecimal ffff {
      local-server-group servergroup-east;
    }
  }
}
```

```
    }  
  }  
}
```

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

Verification

To verify the status of DHCP relay agent selective traffic processing, perform this task:

- [Verifying the Status of DHCP Relay Agent Selective Traffic Processing on page 82](#)

Verifying the Status of DHCP Relay Agent Selective Traffic Processing

Purpose Verify the DHCP relay agent selective traffic processing status.

Action Display statistics for DHCP relay agent.

```
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
```

Meaning The **Packets forwarded** field in the **show dhcp relay statistics** command output displays the number of client packets that have been forwarded as a result of the selective traffic

processing configuration. In this example, the output indicates the total number of packets that DHCP relay agent has forwarded, as well as a breakdown for the number of **BOOTREQUEST** and **BOOTREPLY** packets forwarded.

Related Documentation

- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCP Options and Selective Traffic Processing Overview on page 19](#)
- [Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65](#)
- [Displaying a Count of DHCP Packets That Are Dropped or Forwarded During Selective Processing That Is Based on DHCP Option Strings on page 225](#)
- [Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing on page 83](#)

Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing

This example shows how to configure named interface group-based support for DHCPv6 relay agent selective processing, which uses DHCP option strings to identify, filter, and process client traffic.

This example describes DHCPv6 relay agent configuration—you can configure the related procedure for DHCP relay agent groups at the **[edit forwarding-options dhcp-relay]** hierarchy level. DHCPv6 selective processing supports DHCPv6 options 15 and 16. DHCP selective processing supports option 60 (MX Series routers only) and option 77.

- [Requirements on page 83](#)
- [Overview on page 84](#)
- [Configuration on page 84](#)
- [Verification on page 86](#)

Requirements

This example uses the following hardware and software components:

- MX Series 3D Universal Edge Routers or PTX Series Packet Transport Routers
- Junos OS Release 12.3 or later.

Before you configure DHCPv6 relay agent selective processing support, be sure you:

- Configure DHCPv6 relay agent.
See [“Extended DHCP Relay Agent Overview” on page 4](#) and [“DHCPv6 Relay Agent Overview” on page 10](#).
- Configure the DHCPv6 named interface groups used for the configuration.
See [“Grouping Interfaces with Common DHCP Configurations” on page 35](#).
- Configure the DHCPv6 server groups used for the processing actions.

See [“Grouping Interfaces with Common DHCP Configurations”](#) on page 35.

Overview

In this example, you configure group-level DHCPv6 relay agent named interface support for selective processing of client packets based on DHCPv6 option strings. To configure selective processing, you perform the following procedures:

1. Identify the client traffic—Specify the DHCPv6 option that DHCPv6 relay agent uses to identify the client traffic you want to process. The DHCPv6 option you specify matches the option in the client traffic.
2. Configure the default action—Specify the default processing action, which DHCPv6 relay uses for identified client traffic that does not satisfy any configured match criteria.
3. Create match filters and associate an action with each filter—Specify match criteria that filters the client traffic. The criteria can be an exact match or a partial match with the DHCPv6 option string in the client traffic. Associate a processing action with each match criteria.

Configuration

To configure group-level DHCPv6 relay agent selective processing based on DHCPv6 option information, perform these tasks:

- [Configuring a DHCPv6 Relay Agent Named Interface Group To Selectively Process Client Traffic Based on DHCPv6 Option Strings](#) on page 84
- [Results](#) on page 85

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them in a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the command into the CLI at the **[edit]** hierarchy level. The quick configuration assumes that the named interface group and the DHCP server groups have been previously configured.

```
set forwarding-options dhcp-relay dhcpv6 group groupv6-east-27
set forwarding-options dhcp-relay dhcpv6 relay-option option-number 15
set forwarding-options dhcp-relay dhcpv6 relay-option equals ascii triple-gold
  relay-server-group relayserver-triple-8
set forwarding-options dhcp-relay dhcpv6 relay-option equals ascii triple-silver
  relay-server-group relayserver-triple-23
set forwarding-options dhcp-relay dhcpv6 relay-option starts-with ascii single
  relay-server-group relayserver-1-aa
set forwarding-options dhcp-relay dhcpv6 relay-option default-action drop
```

[Configuring a DHCPv6 Relay Agent Named Interface Group To Selectively Process Client Traffic Based on DHCPv6 Option Strings](#)

Step-by-Step Procedure

This procedure assumes that you have previously created the named interface group and the DHCPv6 server groups. To configure DHCPv6 relay group-level selective processing:

1. Specify that you want to configure DHCPv6 relay agent support.

```
[edit forwarding-options]
user@host# edit dhcp-relay dhcpv6
```

- Specify that you want to configure group-level DHCPv6 relay agent support.

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit group groupv6-east-27
```

- Specify the DHCPv6 option number that DHCPv6 relay agent uses to identify incoming client traffic.

```
[edit forwarding-options dhcp-relay dhcpv6 group groupv6-east-27]
user@host# set relay-option option-number 15
```

- Configure the default action, which DHCPv6 relay agent uses when the incoming client traffic does not satisfy any configured match criteria.

```
[edit forwarding-options dhcp-relay dhcpv6 group groupv6-east-27]
user@host# set relay-option default-action relay-server-group relayserver-def-4
```

- Configure an exact match condition and associated action that DHCPv6 relay uses to process the identified client traffic.

```
[edit forwarding-options dhcp-relay dhcpv6 group groupv6-east-27]
user@host# set relay-option equals ascii triple-gold relay-server-group
relayserver-triple-8
```

- Configure a second exact match condition and associated action that DHCPv6 relay uses to process client traffic.

```
[edit forwarding-options dhcp-relay dhcpv6 group groupv6-east-27]
user@host# set relay-option equals ascii triple-silver relay-server-group
relayserver-triple-23
```

- Configure a partial match criteria and associated action that DHCPv6 relay uses to process client traffic.

```
[edit forwarding-options dhcp-relay dhcpv6 group groupv6-east-27]
user@host# set relay-option starts-with ascii single relay-server-group
relayserver-1-aa
```

Results

From configuration mode, confirm the results of your configuration by issuing the **show** statement at the **[edit forwarding-options dhcp]** hierarchy level. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
dhcpv6 {
  group test-1 {
    relay-option {
      option-number 15;
      equals {
        ascii triple-gold {
          relay-server-group relayserver-triple-8;
        }
        ascii triple-silver {
          relay-server-group relayserver-triple-23;
        }
      }
    }
  }
}
```

```
    }  
    default-action {  
        relay-server-group relayserver-def-4;  
    }  
    starts-with {  
        ascii single {  
            relay-server-group relayserver-1-aa;  
        }  
    }  
    }  
    interface ge-1/0/0.0 upto ge-1/1/0.0;  
    }  
    server-group {  
        relayserver-1-aa;  
        relayserver-triple-8;  
        relayserver-triple-23;  
        relayserver-def-4;  
    }  
    }
```

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

Verification

To verify the status of DHCPv6 relay agent selective traffic processing, perform this task:

- [Verifying the Status of DHCPv6 Relay Agent Selective Traffic Processing on page 86](#)

Verifying the Status of DHCPv6 Relay Agent Selective Traffic Processing

Purpose Verify the DHCPv6 relay agent selective traffic processing status.

Action Display statistics for DHCPv6 relay agent.

```
user@host> show dhcpv6 relay statistics
```

```
DHCPv6 Packets dropped:
```

```
    Total                0
```

```
Messages received:
```

```
    DHCPV6_DECLINE        0
    DHCPV6_SOLICIT        10
    DHCPV6_INFORMATION_REQUEST 0
    DHCPV6_RELEASE        0
    DHCPV6_REQUEST        10
    DHCPV6_CONFIRM        0
    DHCPV6_RENEW           0
    DHCPV6_REBIND          0
    DHCPV6_RELAY_REPL     0
```

```
Messages sent:
```

```
    DHCPV6_ADVERTISE      0
    DHCPV6_REPLY           0
    DHCPV6_RECONFIGURE     0
    DHCPV6_RELAY_FORW     0
```

```
Packets forwarded:
```

```
    Total                4
    FWD REQUEST          2
    FWD REPLY            2
```

Meaning The **Packets forwarded** field in the **show dhcpv6 relay statistics** command output displays the number of client packets that have been forwarded as a result of the selective traffic processing configuration. In this example, the output indicates the total number of packets that DHCPv6 relay agent has forwarded, as well as a breakdown for the number of **FWD REQUEST** and **FWD REPLY** packets forwarded.

- Related Documentation**
- [Extended DHCP Relay Agent Overview on page 4](#)
 - [DHCPv6 Relay Agent Overview on page 10](#)
 - [DHCP Options and Selective Traffic Processing Overview on page 19](#)
 - [Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65](#)
 - [Grouping Interfaces with Common DHCP Configurations on page 35](#)
 - [Displaying a Count of DHCP Packets That Are Dropped or Forwarded During Selective Processing That Is Based on DHCP Option Strings on page 225](#)
 - [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 79](#)

Example: Configuring DHCP Snooping Support for DHCP Relay Agent

This example shows how to configure DHCP snooping support for DHCP relay agent.

- [Requirements on page 88](#)
- [Overview on page 88](#)
- [Configuration on page 88](#)

Requirements

- Configure DHCP relay agent. See “[Extended DHCP Relay Agent Overview](#)” on page 4.

Overview

In this example, you configure DHCP snooping support for DHCP relay agent by completing the following operations:

- Override the default DHCP snooping configuration and enable DHCP snooping support for the interfaces in group **frankfurt**.
- Configure DHCP relay agent to forward snooped packets to only configured interfaces.



NOTE: By default, DHCP snooping is enabled globally in Junos OS Release 10.0 and earlier and disabled globally in Junos OS Release 10.1 and later.

Configuration

Step-by-Step Procedure

To configure DHCP relay support for DHCP snooping:

1. Specify that you want to configure DHCP relay agent.
`[edit]
user@host# edit forwarding-options dhcp-relay`
2. Specify the named group of interfaces on which DHCP snooping is supported.
`[edit forwarding-options dhcp-relay]
user@host# edit group frankfurt`
3. Specify the interfaces that you want to include in the group. DHCP relay agent considers these as the configured interfaces when determining whether to forward or drop traffic.
`[edit forwarding-options dhcp-relay group frankfurt]
user@host# set interface fe-1/0/1.3 upto fe-1/0/1.9`
4. Specify that you want to override the default configuration for the group.
`[edit forwarding-options dhcp-relay group frankfurt]
user@host# edit overrides`
5. Enable DHCP snooping support for the group.
`[edit forwarding-options dhcp-relay group frankfurt overrides]`


```
user@host# set allow-snooped-clients
```

6. Return to the `[edit forwarding-options dhcp-relay]` hierarchy level to configure the forwarding action and specify that DHCP relay agent forward snooped packets on only configured interfaces:

```
[edit forwarding-options dhcp-relay group frankfurt overrides]
user@host# up 2
```

7. Enable DHCP snooped packet forwarding for DHCP relay agent.

```
[edit forwarding-options dhcp-relay]
user@host# edit forward-snooped-clients
```

8. Specify that snooped packets are forwarded on only configured interfaces (the interfaces in group `frankfurt`).

```
[edit forwarding-options dhcp-relay forward-snooped-clients]
user@host# set configured-interfaces
```

Results From configuration mode, confirm your configuration by entering the `show forwarding-options` command. If the output does not display the intended configuration, repeat the instructions in this example to correct it. The following output also shows a range of configured interfaces in group `frankfurt`.

```
[edit]
regress@montag# show forwarding-options
dhcp-relay {
  forward-snooped-clients configured-interfaces;
  group frankfurt {
    overrides {
      allow-snooped-clients;
    }
    interface fe-1/0/1.3 {
      upto fe-1/0/1.9;
    }
  }
}
```

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

- Related Documentation**
- [DHCP Snooping Support on page 18](#)
 - [Configuring DHCP Snooping for DHCP Relay Agent on page 49](#)

Example: Enabling DHCP Snooping Support for DHCPv6 Relay Agent

Snooping support for DHCPv6 relay agent is disabled on the router by default. This example shows how to override the default DHCPv6 relay agent snooping configuration to explicitly enable DHCPv6 snooping for a named group of interfaces and for a specific interface within a different named group.



NOTE: You can also enable DHCPv6 snooping support globally by using the `allow-snooped-clients` statement at the `[edit forwarding-options dhcp-relay dhcpv6 overrides]` hierarchy level.

- [Requirements on page 90](#)
- [Overview on page 90](#)
- [Configuration on page 90](#)
- [Verification on page 92](#)

Requirements

This example uses the following hardware and software components:

- MX Series 3D Universal Edge Routers
- Junos OS Release 12.1

Before you begin:

- Configure DHCPv6 relay agent.

See [“DHCPv6 Relay Agent Overview” on page 10](#)

- Configure named DHCPv6 relay agent interface groups to which you want to apply a common DHCP configuration.

See [“Grouping Interfaces with Common DHCP Configurations” on page 35](#)

Overview

In this example, you override the default DHCPv6 relay agent snooping configuration to explicitly enable DHCP snooping for both of the following:

- All of the interfaces in the group named **boston**
- Interface **ge-3/2/1.1** in the group named **sunnyvale**

Configuration

To override the default DHCPv6 relay agent snooping configuration to explicitly enable DHCPv6 snooping for a named group of interfaces and for a specific interface within a named group, perform these tasks:

- [Enabling DHCPv6 Snooping Support for a Named Group of Interfaces on page 91](#)
- [Enabling DHCPv6 Snooping Support for a Specific Interface in a Named Group on page 91](#)

CLI Quick Configuration

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

```
set forwarding-options dhcp-relay dhcpv6 group boston overrides allow-snooped-clients
set forwarding-options dhcp-relay dhcpv6 group sunnyside interface ge-3/2/1.1 overrides
allow-snooped-clients
```

Enabling DHCPv6 Snooping Support for a Named Group of Interfaces

Step-by-Step Procedure

To enable DHCPv6 snooping support for a named group of interfaces:

1. Specify that you want to configure DHCPv6 relay agent.

```
[edit]
user@host# edit forwarding-options dhcp-relay dhcpv6
```
2. Specify the named group of interfaces for which you want to enable DHCPv6 snooping.

```
[edit forwarding-options dhcp-relay dhcpv6]
user@host# edit group boston
```
3. Specify that you want to override the default DHCPv6 configuration for the interfaces in that group.

```
[edit forwarding-options dhcp-relay dhcpv6 group boston]
user@host# edit overrides
```
4. Enable DHCPv6 snooping support for all interfaces in group **boston**.

```
[edit forwarding-options dhcp-relay dhcpv6 group boston overrides]
user@host# set allow-snooped-clients
```

Results From configuration mode, confirm the results of your configuration by issuing the **show** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit forwarding-options dhcp-relay]
user@host# show
dhcpv6 {
  group boston {
    overrides {
      allow-snooped-clients;
    }
  }
}
```

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

Enabling DHCPv6 Snooping Support for a Specific Interface in a Named Group

Step-by-Step Procedure

To enable DHCPv6 snooping support for a specific interface within a named group of interfaces:

1. Return to the **[edit forwarding-options dhcp-relay dhcpv6]** hierarchy level to specify that you want to configure DHCPv6 relay agent.

```
[edit forwarding-options dhcp-relay dhcpv6 group boston overrides]
user@host# up 2
```

2. Specify the named group containing the interface.

```
[edit forwarding-options dhcp-relay dhcpv6]  
user@host# edit group sunnyvale
```
3. Specify the interface in group **sunnyvale** for which you want to enable DHCPv6 snooping.

```
[edit forwarding-options dhcp-relay dhcpv6 group sunnyvale]  
user@host# edit interface ge-3/2/1.1
```
4. Specify that you want to override the default DHCPv6 configuration for interface **ge-3/2/1.1** in group **sunnyvale**.

```
[edit forwarding-options dhcp-relay dhcpv6 group sunnyvale interface ge-3/2/1.1]  
user@host# edit overrides
```
5. Enable DHCPv6 snooping support for interface **ge-3/2/1.1** in group **sunnyvale**.

```
[edit forwarding-options dhcp-relay dhcpv6 group sunnyvale interface ge-3/2/1.1  
overrides]  
user@host# set allow-snooped-clients
```

Results From configuration mode, confirm the results of your configuration by issuing the **show** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
[edit forwarding-options dhcp-relay]  
user@host# show  
dhcpv6 {  
  group boston {  
    overrides {  
      allow-snooped-clients;  
    }  
  }  
  group sunnyvale {  
    interface ge-3/2/1.1 {  
      overrides {  
        allow-snooped-clients;  
      }  
    }  
  }  
}
```

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

Verification

To verify the DHCPv6 configuration in a multi-relay topology, perform this task:

- [Verifying the Address Bindings for DHCPv6 Relay Agent Clients on page 92](#)

Verifying the Address Bindings for DHCPv6 Relay Agent Clients

Purpose Verify the DHCPv6 address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.

Action Display detailed information about address bindings for DHCPv6 relay agent clients.

```
user@host > show dhcpv6 relay binding detail
```

```
Session Id: 13
  Client IPv6 Prefix: 3000:0:0:8001::5/128
  Client DUID: LL0x1-00:00:65:03:01:02
  State: BOUND(DHCPV6_RELAY_STATE_BOUND)
  Lease Expires: 2011-11-21 06:14:50 PST
  Lease Expires in: 293 seconds
  Lease Start: 2011-11-21 06:09:50 PST
  Incoming Client Interface: ge-3/2/1.1
  Server Address: unknown
  Next Hop Server Facing Relay: 4000::2
  Server Interface: none
  Client Id Length: 10
  Client Id: /0x00030001/0x00006503/0x0102
```

Meaning The **Server Address** field in the **show dhcpv6 relay binding detail** command output typically displays the IP address of the DHCPv6 server. In this example, the value **unknown** in the **Server Address** field indicates that this is a multi-relay topology in which the DHCPv6 relay agent is not directly adjacent to the DHCPv6 server, and does not detect the IP address of the server.

In that case, the output instead includes the **Next Hop Server Facing Relay** field, which displays the next-hop address in the direction of the DHCPv6 server.

- Related Documentation**
- [DHCPv6 Relay Agent Overview on page 10](#)
 - [DHCP Snooping Support on page 18](#)
 - [Grouping Interfaces with Common DHCP Configurations on page 35](#)
 - [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 50](#)

Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine

This example shows how to configure a firewall filter to ensure that proper DHCP packets can reach the Routing Engine on MX Series routers.

- [Requirements on page 93](#)
- [Overview on page 94](#)
- [Configuration on page 94](#)
- [Verification on page 96](#)

Requirements

This configuration example applies only to routers where DHCP local server and DHCP relay agent services are provided by the `jdhcpd` process rather than the legacy `dhcpd` process or `fud` (UDP forwarding) process. MX Series routers, M120 routers, and M320 routers use `jdhcpd`. For DHCP relay, that means the configuration is required only at the

[edit forwarding-options dhcp-relay] hierarchy level and not at the [edit forwarding-options helpers bootp] hierarchy level.

No special configuration beyond device initialization is required before you can configure this feature.

Overview

Firewall filters that perform some action on DHCP packets at the Routing Engine, such as a filter to protect the Routing Engine by allowing only proper DHCP packets, require that both port 67 (bootps) and port 68 (bootpc) are configured as both source and destination ports.

DHCP packets received on the line cards are encapsulated by jdhcpd with a new UDP header where their source and destination addresses are set to port 68 before being forwarded to the Routing Engine. For DHCP relay and DHCP proxy, packets sent to the DHCP server from the router have both the source and destination UDP ports set to 67. The DHCP server responds using the same ports. However, when the line card receives these DHCP response packets, it changes both port numbers from 67 to 68 before passing the packets to the Routing Engine. Consequently the filter needs to accept port 67 for packets relayed from the client to the server, and port 68 for packets relayed from the server to the client.

In this example, you configure two filter terms, **dhcp-client-accept** and **dhcp-server-accept**. The match conditions for **dhcp-client-accept** specify a source address and destination address for broadcast packets, the UDP protocol used for DHCP packets, and the bootpc (68) source port and bootps (67) destination port. Packets that match these conditions are counted and accepted.

The match conditions for **dhcp-server-accept** specify the UDP protocol used for DHCP packets, and both port 67 and 68 for both source port and destination port. Packets that match these conditions are counted and accepted.



NOTE: This example does not show all possible configuration choices, nor does it show how the filter is applied in your configuration. This example applies to both static application of the filter as well as dynamic application with a dynamic profile.

Configuration

CLI Quick Configuration

To quickly configure the sample Routing Engine DHCP filter, copy the following commands, paste them in a text file, remove any line breaks, and then copy and paste the commands into the CLI.

```
[edit]
edit firewall family inet filter RE-protect
edit term dhcp-client-accept
set from source-address 0.0.0.0/32
set from destination-address 255.255.255.255/32
set from protocol udp
set from source-port 68
```

```

set from destination-port 67
set then count dhcp-client-accept
set then accept
up
edit term dhcp-server-accept
set from protocol udp
set from source-port 67
set from source-port 68
set from destination-port 67
set from destination-port 68
set then count dhcp-server-accept
set then accept
top

```

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

To configure a DHCP firewall filter to protect the Routing Engine:

1. Create or specify a firewall filter.

```

[edit firewall]
user@host# edit family inet filter RE-protect

```
2. Create a filter term for the client.

```

[edit firewall family inet filter RE-protect]
user@host# edit term dhcp-client-accept

```
3. Specify the match conditions for DHCP packets.

```

[edit firewall family inet filter RE-protect term dhcp-client-accept]
user@host# set from source-address 0.0.0.0/32
user@host# set from destination-address 255.255.255.255/32
user@host# set from protocol udp
user@host# set from source-port 68
user@host# set from destination-port 67

```
4. Specify the action to take for matched packets.

```

[edit firewall family inet filter RE-protect term dhcp-client-accept]
user@host# set then count dhcp-client-accept
user@host# set then accept

```
5. Create a filter term for the server.

```

[edit firewall family inet filter RE-protect]
user@host# edit term dhcp-server-accept

```
6. Specify the match conditions for DHCP packets.

```

[edit firewall family inet filter RE-protect term dhcp-server-accept]
user@host# set from protocol udp
user@host# set from source-port [67 68]
user@host# set from destination-port [67 68]

```
7. Specify the action to take for matched packets.

```

[edit firewall family inet filter RE-protect term dhcp-server-accept]

```

```
user@host# set then count dhcp-client-accept
user@host# set then accept
```

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

```
[edit]
user@host# show firewall
family inet {
  filter RE-protect {
    term dhcp-client-accept {
      from {
        source-address {
          0.0.0.0/32;
        }
        destination-address {
          255.255.255.255/32;
        }
        protocol udp;
        source-port 68;
        destination-port 67;
      }
      then {
        count dhcp-client-accept;
        accept;
      }
    }
  }
  term dhcp-server-accept {
    from {
      protocol udp;
      source-port [ 67 68 ];
      destination-port [ 67 68 ];
    }
    then {
      count dhcp-server-accept;
      accept;
    }
  }
}
```

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

Verification

To confirm that the Routing Engine DHCP protection filter is properly passing DHCP packets, perform these tasks:

- [Verifying the DHCP Filter Operation on page 96](#)

Verifying the DHCP Filter Operation

Purpose Verify that both counters increment as DHCP traffic passes to the Routing Engine.

Action From operational mode, enter the **show firewall family inet filter RE-protect** command.

```
user@host> show firewall family inet filter RE-protect
Filter: RE-protect
Counters:
Name                               Bytes      Packets
dhcp-client-accept                 328         1
dhcp-server-accept                 574         1

user@host> show firewall family inet filter RE-protect
Filter: RE-protect
Counters:
Name                               Bytes      Packets
dhcp-client-accept                 660         2
dhcp-server-accept                 1152        2
```

Meaning The output lists both configured counters, dhcp-client-accept and dhcp-server-accept. By issuing the command more than once, you can see that the byte and packet fields both show that traffic is being accepted and counted.

- Related Documentation**
- [Port Number Requirements for DHCP Firewall Filters on page 25](#)
 - [Dynamic Firewall Filters Overview](#)
 - [Firewall Filters Overview](#)
 - [Extended DHCP Local Server Overview](#)
 - [Extended DHCP Relay Agent Overview on page 4](#)

Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients

This example shows how to configure liveness detection for DHCP relay agent subscribers using Bidirectional Forwarding Detection (BFD) as the liveness detection method.

- [Requirements on page 97](#)
- [Overview on page 98](#)
- [Configuration on page 98](#)

Requirements

- Juniper Networks MX Series routers.
- Junos OS Release 12.1R1 or later.
- Configure DHCP relay agent. See “[Extended DHCP Relay Agent Overview](#)” on page 4.

Overview

In this example, you configure liveness detection for DHCP relay agent subscribers by completing the following operations:

1. Enable liveness detection globally for DHCP relay subscribers.
2. Specify BFD as the liveness detection method for all dynamically created DHCP relay subscribers.
3. Configure BFD-specific statements to define how the protocol behaves.
4. Configure the action the router takes when a liveness detection failure occurs.



NOTE: This example explains how to configure liveness detection for a DHCPv4 network. Liveness detection is also supported for DHCPv6 configurations. To configure DHCPv6 liveness detection, include the `liveness-detection` statement, and any subsequent configuration statements, at the `[edit forwarding-options dhcp-relay dhcpv6]` or `[edit forwarding-options dhcp-relay dhcpv6 group group-name]` hierarchy level.

Configuration

Step-by-Step Procedure

To configure liveness detection for DHCP relay:

1. Specify that you want to configure liveness detection.

```
[edit forwarding-options dhcp-relay]  
user@host# edit liveness-detection
```
2. Specify that you want to configure the liveness detection method.

```
[edit forwarding-options dhcp-relay liveness-detection]  
user@host# edit method
```
3. Specify BFD as the liveness detection method that you want DHCP to use.

```
[edit forwarding-options dhcp-relay liveness-detection method]  
user@host# edit bfd
```
4. Configure the detection time threshold (in milliseconds) at which a trap is produced.

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]  
user@host# set detection-time threshold 50000
```
5. Configure the time (in milliseconds) for which BFD holds a session up notification.

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]  
user@host# set holddown-interval 50
```
6. Configure the BFD minimum transmit and receive interval (in milliseconds).

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]  
user@host# set minimum-interval 45000
```
7. Configure the minimum receive interval (in milliseconds).

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]
```

- ```
user@host# set minimum-receive-interval 60000
```
8. Configure a multiplier value for the detection time.
 

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]
user@host# set multiplier 100
```
  9. Disable the ability for BFD interval timers to change or adapt to network situations.
 

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]
user@host# set no-adaptation
```
  10. Configure the BFD session mode.
 

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]
user@host# set session-mode automatic
```
  11. Configure the threshold and minimum interval for the BFD transmit interval.
 

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]
user@host# set transmit-interval threshold 60000 minimum-interval 45000
```
  12. Configure the BFD protocol version you want to detect.
 

```
[edit forwarding-options dhcp-relay liveness-detection method bfd]
user@host# set version automatic
```
  13. Configure the action the router takes when a liveness detection failure occurs. In this example, the failure action is to clear the client session only when a liveness detection failure occurs and the local interface is detected as being up.
 

```
[edit forwarding-options dhcp-relay liveness-detection]
user@host# edit failure-action action
```

**Results** From configuration mode, confirm your configuration by entering the **show forwarding-options** command. If the output does not display the intended configuration, repeat the instructions in this example to correct it. The following output also shows a range of configured interfaces in group frankfurt.

```
[edit]
regress@montag# show forwarding-options
dhcp-relay {
 liveness-detection {
 failure-action clear-binding-if-interface-up;
 method {
 bfd {
 version automatic;
 minimum-interval 45000;
 minimum-receive-interval 60000;
 multiplier 100;
 no-adaptation;
 transmit-interval {
 minimum-interval 45000;
 threshold 60000;
 }
 detection-time {
 threshold 50000;
 }
 session-mode automatic;
 }
 }
 }
}
```

```
 holddown-interval 50;
 }
}
}
```

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

**Related  
Documentation**

- [Extended DHCP Relay Agent Overview on page 4](#)
- [DHCP Liveness Detection Overview on page 72](#)
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 73](#)

## CHAPTER 4

# Configuration Statements

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- [default-action \(DHCP Relay Agent Option\) on page 128](#)
- [delay-authentication \(DHCP Relay Agent\) on page 129](#)
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- [detection-time on page 131](#)
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- [forward-only \(DHCP Relay Agent Option\)](#) on page 148
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- [interface \(DHCP Relay Agent\)](#) on page 154
- [interface-client-limit \(DHCP Relay Agent\)](#) on page 156
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- [local-server-group \(DHCP Relay Agent Option\)](#) on page 161
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- [mac-address \(Dynamic Access-Internal Routes\)](#) on page 164
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- [transmit-interval](#) on page 211
- [trust-option-82](#) on page 212
- [use-interface-description](#) on page 213
- [use-option-82](#) on page 214
- [use-primary](#) (DHCP Relay Agent) on page 215
- [user-prefix](#) (DHCP Relay Agent) on page 217
- [username-include](#) (DHCP Relay Agent) on page 218
- [version](#) (BFD) on page 219

## [\[edit dynamic-profiles\]](#) Hierarchy Level

---

```
dynamic-profiles {
 profile-name {
 class-of-service {
 interfaces {
 interface-name {
 unit logical-unit-number {
 classifiers {
 type (classifier-name | default);
 }
 }
 }
 }
 }
 }
}
```

```

output-traffic-control-profile (profile-name | $junos-cos-traffic-control-profile);
rewrite-rules {
 dscp (rewrite-name | default);
 dscp-ipv6 (rewrite-name | default);
 ieee-802.1 (rewrite-name | default) vlan-tag (outer | outer-and-inner);
 inet-precedence (rewrite-name | default);
}
}
}
}
scheduler-maps {
 map-name {
 forwarding-class class-name scheduler scheduler-name;
 }
}
schedulers {
 (scheduler-name) {
 buffer-size (percent percentage | remainder | temporal microseconds |
 $junos-cos-scheduler-bs);
 drop-profile-map loss-priority (any | low | medium-low | medium-high | high)
 protocol (any | non-tcp | tcp) drop-profile (profile-name | predefined-variable);
 excess-priority (low | high | $junos-cos-scheduler-excess-priority);
 excess-rate (percent percentage | percent $junos-cos-scheduler-excess-rate);
 overhead-accounting (shaping-mode) <bytes (byte-value>;
 priority (priority-level | $junos-cos-scheduler-priority);
 shaping-rate (rate | predefined-variable);
 transmit-rate (rate | percent percentage | remainder | percent percentage
 $junos-cos-scheduler-tx) <exact | rate-limit>;
 }
}
traffic-control-profiles profile-name {
 delay-buffer-rate (percent percentage | rate);
 excess-rate (percent percentage | proportion value | percent
 $junos-cos-excess-rate);
 guaranteed-rate (percent percentage | rate);
 overhead-accounting (shaping-mode) <bytes (byte-value>;
 scheduler-map map-name;
 shaping-rate (percent percentage | rate | predefined-variable);
}
}
firewall {
 family family {
 fast-update-filter filter-name {
 interface-specific;
 match-order [match-order];
 term term-name {
 from {
 match-conditions;
 }
 then {
 action;
 action-modifiers;
 }
 }
 only-at-create;
 }
 filter filter-name {

```



```

interface-specific;
 term term-name {
 from {
 match-conditions;
 }
 then {
 action;
 action-modifiers;
 }
 }
}
policer policer-name {
 filter-specific;
 if-exceeding {
 (bandwidth-limit bps | bandwidth-percent percentage);
 burst-size-limit bytes;
 }
 logical-bandwidth-policer;
 logical-interface-policer;
 physical-interface-policer;
 then {
 policer-action;
 }
}
hierarchical-policer policer-name {
 aggregate {
 if-exceeding {
 bandwidth-limit-limit bps;
 burst-size-limit bytes;
 }
 then {
 policer-action;
 }
 }
 premium {
 if-exceeding {
 bandwidth-limit bps;
 burst-size-limit bytes;
 }
 then {
 policer-action;
 }
 }
}
three-color-policer policer-name {
 action {
 loss-priority high then discard;
 }
 logical-interface-policer;
 single-rate {
 (color-aware | color-blind);
 committed-burst-size bytes;
 committed-information-rate bps;
 excess-burst-size bytes;
 }
 two-rate {
 (color-aware | color-blind);
 }
}

```

```
 committed-burst-size bytes;
 committed-information-rate bps;
 peak-burst-size bytes;
 peak-information-rate bps;
 }
}
}
}
policy-options {
 prefix-list name {
 ip-addresses;
 }
}
interfaces {
 interface-name {
 unit logical-unit-number {
 family family {
 access-concentrator name;
 address address;
 direct-connect;
 duplicate-protection;
 dynamic-profile profile-name;
 filter {
 adf {
 counter;
 input-precedence precedence;
 not-mandatory;
 output-precedence precedence;
 rule rule-value;
 }
 input filter-name {
 precedence precedence;
 shared-name filter-shared-name;
 }
 output filter-name {
 precedence precedence;
 shared-name filter-shared-name;
 }
 }
 }
 max-sessions number;
 max-sessions-vsa-ignore;
 rpf-check {
 fail-filter filter-name;
 mode loose;
 }
 }
 service {
 input {
 service-set service-set-name {
 service-filter filter-name;
 }
 post-service-filter filter-name;
 }
 output {
 service-set service-set-name {
 service-filter filter-name;
 }
 }
 }
 }
}
```

```

 }
 }
 service-name-table table-name;
 short-cycle-protection <lockout-time-min minimum-seconds lockout-time-max
 maximum-seconds>;
 unnumbered-address interface-name <preferred-source-address address>;
}
ppp-options {
 chap;
 pap;
}
vlan-id number;
}
vlan-tagging;
}
interface-set interface-set-name {
 interface interface-name {
 unit logical-unit-number;
 }
}
demux0 {
 unit logical-unit-number {
 demux-options {
 underlying-interface interface-name
 }
 demux-source {
 source-prefix;
 }
 family family {
 access-concentrator name;
 address address;
 direct-connect;
 duplicate-protection;
 dynamic-profile profile-name;
 filter {
 input filter-name;
 output filter-name;
 }
 mac-validate (loose | strict):
 max-sessions number;
 max-sessions-vsa-ignore;
 service-name-table table-name;
 short-cycle-protection <lockout-time-min minimum-seconds lockout-time-max
 maximum-seconds>;
 unnumbered-address interface-name <preferred-source-address address>;
 }
 }
}
pp0 {
 unit logical-unit-number {
 keepalives interval seconds;
 no-keepalives;
 pppoe-options {
 underlying-interface interface-name;
 server;
 }
 }
}

```

```

ppp-options {
 authentication [authentication-protocols];
 chap {
 challenge-length minimum minimum-length maximum maximum-length;
 }
 pap;
}
family inet {
 unnumbered-address interface-name address;
 address address;
 service {
 input {
 service-set service-set-name {
 service-filter filter-name;
 }
 post-service-filter filter-name;
 }
 output {
 service-set service-set-name {
 service-filter filter-name;
 }
 }
 }
 filter {
 input filter-name {
 precedence precedence;
 }
 output filter-name {
 precedence precedence;
 }
 }
}
}
}
protocols {
 igmp {
 interface interface-name {
 accounting;
 disable;
 group-policy;
 immediate-leave;
 no-accounting;
 promiscuous-mode;
 ssm-map ssm-map-name;
 static {
 group group {
 source source;
 }
 }
 version version;
 }
 }
 mld {
 interface interface-name {
 disable;
 (accounting | no-accounting);
 }
 }
}

```

```

group-policy;
immediate-leave;
oif-map;
passive;
ssm-map ssm-map-name;
static {
 group mcast-group-address {
 exclude;
 group-count number;
 group-increment increment;
 source ip-address {
 source-count number;
 source-increment increment;
 }
 }
}
version version;
}
}
router-advertisement {
 interface interface-name {
 current-hop-limit number;
 default-lifetime seconds;
 (managed-configuration | no-managed-configuration);
 max-advertisement-interval seconds;
 min-advertisement-interval seconds;
 (other-stateful-configuration | no-other-stateful-configuration);
 prefix prefix {
 (autonomous | no-autonomous);
 (on-link | no-on-link);
 preferred-lifetime seconds;
 valid-lifetime seconds;
 }
 reachable-time milliseconds;
 retransmit-timer milliseconds;
 }
}
}
}
routing-instances routing-instance-name {
 interface interface-name;
 routing-options {
 access {
 route prefix {
 next-hop next-hop;
 metric route-cost;
 preference route-distance;
 tag route-tag;
 }
 }
 }
 access-internal {
 route subscriber-ip-address {
 qualified-next-hop underlying-interface {
 mac-address address;
 }
 }
 }
}

```

```
 }
 }
 multicast {
 interface interface-name {
 no-qos-adjust;
 }
 }
}
rib routing-table-name {
 access {
 route prefix {
 next-hop next-hop;
 metric route-cost;
 preference route-distance;
 tag route-tag;
 }
 }
 access-internal {
 route subscriber-ip-address {
 qualified-next-hop underlying-interface {
 mac-address address;
 }
 }
 }
}
}
routing-options {
 access {
 route prefix {
 next-hop next-hop;
 metric route-cost;
 preference route-distance;
 tag route-tag;
 }
 }
 access-internal {
 route subscriber-ip-address {
 qualified-next-hop underlying-interface {
 mac-address address;
 }
 }
 }
}
multicast {
 interface interface-name {
 no-qos-adjust;
 }
}
}
variables {
 variable-name {
 default-value default-value;
 equals expression;
 mandatory;
 uid;
 uid-reference;
 }
}
```

```
 }
 }
```

#### Related Documentation

- *Dynamic Profiles Overview*
- *CoS for Subscriber Access Overview*
- *Configuring a Basic Dynamic Profile*
- *Configuring Static Hierarchical Scheduling and Queuing in a Dynamic Profile for Subscriber Access*
- *Two-Color Policer Configuration Overview*
- *Three-Color Policer Configuration Overview*
- *Hierarchical Policer Configuration Overview*
- *Guidelines for Applying Traffic Policers*

### [edit forwarding-options dhcp-relay] Hierarchy Level

```
forwarding-options {
 dhcp-relay {
 active-server-group server-group-name;
 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 {
 active-server-group server-group-name;
 authentication {
 password password-string;
 username-include {
 circuit-type;
 client-id;
 delimiter delimiter-character;
 domain-name domain-name-string;
 interface-name;
 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;
 overrides {
 ...
 }
 relay-option {
 ...
 }
 service-profile dynamic-profile-name;
 trace;
 upto upto-interface-name;
 }
 route-suppression;
 service-profile dynamic-profile-name;
 }
 overrides {
 ...
 }
 relay-agent-interface-id {
 ...
 }
 relay-option {
 ...
 }
 server-group {
 server-group-name {
 server-ip-address;
 }
 }
}
route-suppression;
service-profile dynamic-profile-name;
overrides {
 allow-snooped-clients;
 delay-authentication;
 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);
 use-option-82;
}
server-group {
 server-group-name {
 server-ip-address;
 }
}
}
duplicate-clients-in-subnet (incoming-interface | option-82);
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 {
 active-server-group server-group-name;
 authentication {
 ...
 }
 dynamic-profile profile-name {
 ...
 }
}
interface interface-name {
 exclude;
 overrides {
 ...
 }
 service-profile dynamic-profile-name;
 trace;
 upto upto-interface-name;
}
overrides {
 ...
}
relay-option {
 ...
}
relay-option-82 {
 ...
}
route-suppression;
server-response-time seconds;
service-profile dynamic-profile-name;
}
overrides {
 allow-snooped-clients;
 always-write-giaddr;
 always-write-option-82;
 client-discover-match (option60-and-option82 | incoming-interface);
 delay-authentication;
 disable-relay;
 interface-client-limit number;
 layer2-unicast-replies;
 no-allow-snooped-clients;


```

```
no-bind-on-request;
proxy-mode;
replace-ip-source-with;
send-release-on-delete;
trust-option-82;
}
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);
 }
}
server-group {
 server-group-name {
 server-ip-address;
 }
}
route-suppression;
server-response-time seconds;
service-profile dynamic-profile-name;
}
```

**Related Documentation**


- [Extended DHCP Relay Agent Overview on page 4](#)

## access (Dynamic Access Routes)

|                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                                                                                                                                                                                                                                                                                                     | <pre>access {   route prefix {     next-hop next-hop;     metric route-cost;     preference route-distance;     tag route-tag;   } }</pre>                                                                                                                                                                                                                                                     |
| Hierarchy Level                                                                                                                                                                                                                                                                                            | <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b> rib <i>routing-table-name</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> <b>routing-options</b>]</p>                                            |
| Release Information                                                                                                                                                                                                                                                                                        | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b>] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b> rib <i>routing-table-name</i>] hierarchy levels introduced in Junos OS Release 10.1.</p> |
| Description                                                                                                                                                                                                                                                                                                | Dynamically configure access routes.                                                                                                                                                                                                                                                                                                                                                           |
| <div>  <p><b>BEST PRACTICE:</b> We recommend that you always include the <code>access-internal</code> stanza in the dynamic-profile when the <code>access</code> stanza is present for framed-route support.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                |
| Options                                                                                                                                                                                                                                                                                                    | The remaining statements are explained separately.                                                                                                                                                                                                                                                                                                                                             |
| Required Privilege Level                                                                                                                                                                                                                                                                                   | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                 |
| Related Documentation                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li><i>Configuring Dynamic Access Routes for Subscriber Management</i></li> </ul>                                                                                                                                                                                                                                                                           |

## access-internal (Dynamic Access-Internal Routes)

---

|                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                               | <pre>access-internal {<br/>    route subscriber-ip-address {<br/>        qualified-next-hop underlying-interface {<br/>            mac-address address;<br/>        }<br/>    }<br/>}</pre>                                                                                                                                                                                           |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                      | [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b> ],<br>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b> rib <i>routing-table-name</i> ],<br>[edit dynamic-profiles <b>routing-options</b> ]                                                                   |
| <b>Release Information</b>                                                                                                                                                                                                                                                                  | Statement introduced in Junos OS Release 9.5.<br>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b> ] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance <b>routing-options</b> rib <i>routing-table-name</i> ] hierarchy levels introduced in Junos OS Release 10.1. |
| <b>Description</b>                                                                                                                                                                                                                                                                          | Dynamically configure access-internal routes. Access-internal routes are optional, but are used instead of access routes if the next-hop address is not specified in the Framed-Route Attribute [22] for IPv4 or the Framed-IPv6-Route attribute [99] for IPv6.                                                                                                                       |
| <hr/>                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                       |
| <div> <b>BEST PRACTICE:</b> We recommend that you always include the <b>access-internal</b> stanza in the dynamic-profile when the <b>access</b> stanza is present for framed-route support.</div> <hr/> |                                                                                                                                                                                                                                                                                                                                                                                       |
| The remaining statements are explained separately.                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                             | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"><li>• <i>Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management</i></li><li>• <i>Configuring Dynamic Access-Internal Routes for PPP Subscriber Management</i></li></ul>                                                                                                                                                          |

## active-server-group

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>active-server-group <i>server-group-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay],<br/> [edit forwarding-options dhcp-relay <b>dhcpv6</b>],<br/> [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],<br/> [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dhcpv6</b>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <b>group</b> <i>group-name</i>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <b>group</b> <i>group-name</i> <b>dhcpv6</b>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dhcpv6</b>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay]<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Support at the [edit ... <b>dhcpv6</b>] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <p>Apply a DHCP relay agent configuration to the named group of DHCP server addresses. Use the statement at the [edit ... <b>dhcpv6</b>] hierarchy levels to configure DHCPv6 support.</p> <p>A group-specific configuration overrides a global option.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <b><i>server-group-name</i></b> —Name of the group of DHCP or DHCPv6 server addresses to which the DHCP or DHCPv6 relay agent configuration applies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Configuring Active Server Groups on page 66</a></li> <li>• <a href="#">Group-Specific DHCP Relay Options on page 14</a></li> <li>• <a href="#">dhcp-relay on page 132</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## aggregate-clients (DHCP Relay Agent)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>aggregate-clients (merge   replace);</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>     | <p>[edit forwarding-options dhcp-relay dhcpv6 <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <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 <b>dynamic-profile</b> <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 <b>dynamic-profile</b> <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 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <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 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>]</p> |
| <b>Release Information</b> | <p>Statement introduced in Junos OS Release 9.3.</p> <p>Options <b>merge</b> and <b>replace</b> introduced in Junos OS Release 9.5.</p> <p>Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>         | <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 <b>[edit ... dhcpv6]</b> hierarchy levels to configure DHCPv6 support.</p> <p>M120 and M320 routers do not support DHCPv6.</p> <p>Not supported for IP demux subscriber interfaces.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>             | <p><b>merge</b>—Aggregate multiple client attributes for the same subscriber (logical interface)</p> <p><b>replace</b>—Replace the entire logical interface whenever a new client logs in to the network using the same VLAN logical interface</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | system—To view this statement in the configuration.<br>system-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">dhcp-relay on page 132</a></li> <li>• <i>dhcp-relay (EX Series Switches only)</i></li> <li>• <i>Understanding the Extended DHCP Relay Agent for EX Series Switches</i></li> <li>• <i>Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure)</i></li> <li>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 67</a></li> <li>• <a href="#">Group-Specific DHCP Relay Options on page 14</a></li> </ul> |

## allow-snooped-clients

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | allow-snooped-clients;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>     | <p>[edit forwarding-options dhcp-relay <a href="#">dhcpv6</a> group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">dhcpv6</a> group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">dhcpv6</a> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]</p> |
| <b>Release Information</b> | <p>Statement introduced in Junos OS Release 10.2.</p> <p>Support at the [edit ... <a href="#">dhcpv6</a>] hierarchy levels introduced in Junos OS Release 12.1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>         | <p>Explicitly enable DHCP snooping support on the router.</p> <p>Use the statement at the [edit ... <a href="#">dhcpv6</a>] hierarchy levels to explicitly enable snooping support on the router for DHCPv6 relay agent.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



**NOTE:** In Junos OS Release 10.0 and earlier, DHCP snooping is *enabled* by default. In Release 10.1 and later, DHCP snooping is *disabled* by default.

|                                 |                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li> <li>• <a href="#">DHCP Snooping Support on page 18</a></li> </ul> |

## always-write-giaddr

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>always-write-giaddr;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <code>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],</code><br><code>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</code><br><code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</code><br><code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</code><br><code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code><br><code>forwarding-options dhcp-relay <a href="#">overrides</a>],</code><br><code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code><br><code>forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</code><br><code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</code><br><code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group</code><br><code><i>group-name</i> <a href="#">overrides</a>],</code><br><code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group</code><br><code><i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</code> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.3.<br>Statement introduced in Junos OS Release 12.1 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li><li>• <a href="#">dhcp-relay on page 132</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



## always-write-option-82

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>always-write-option-82;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | <p>Override the DHCP relay agent information option (option 82) in DHCP packets destined for a DHCP server. The use of this option causes the DHCP relay agent to perform one of the following actions, depending on how it is configured:</p> <ul style="list-style-type: none"> <li>• If the DHCP relay agent is configured to add option 82 information to DHCP packets, it clears the existing option 82 values from the DHCP packets and inserts the new values before forwarding the packets to the DHCP server.</li> <li>• If the DHCP relay agent is not configured to add option 82 information to DHCP packets, it clears the existing option 82 values from the packets, but does not add any new values before forwarding the packets to the DHCP server.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## authentication (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <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 &lt;circuit-id&gt; &lt;remote-id&gt;;     relay-agent-interface-id;     relay-agent-remote-id;     relay-agent-subscriber-id;     routing-instance-name;     user-prefix <i>user-prefix-string</i>;   } }</pre>                                                          |
| <b>Hierarchy Level</b>          | <pre> [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay <b>dhcpv6</b>], [edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay <b>group</b> <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> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <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 <b>[edit...dhcpv6]</b> hierarchy levels to configure DHCPv6 support.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">dhcp-relay on page 132</a></li> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                    |

## bfd

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> bfd {   version (0   1   automatic);   minimum-interval <i>milliseconds</i>;   minimum-receive-interval <i>milliseconds</i>;   multiplier <i>number</i>;   no-adaptation;   transmit-interval {     minimum-interval <i>milliseconds</i>;     threshold <i>milliseconds</i>;   }   detection-time {     threshold <i>milliseconds</i>;   }   session-mode (automatic   multihop   singlehop);   holddown-interval <i>milliseconds</i>; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection <a href="#">method</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection <a href="#">method</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection <a href="#">method</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 liveness-detection <a href="#">method</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection <a href="#">method</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection <a href="#">method</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection <a href="#">method</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection <a href="#">method</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | <p>Configure Bidirectional Forwarding Detection (BFD) as the liveness detection method.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.<br/> routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Group Liveness Detection for DHCP Local Server Clients</i></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |


## circuit-id (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>circuit-id {   prefix <i>prefix</i>;   use-interface-description (logical   device); }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | <pre>[edit forwarding-options dhcp-relay relay-option-82], [edit forwarding-options dhcp-relay group <i>group-name</i> relay-option-82], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay relay-option-82], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i>   relay-option-82], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   forwarding-options dhcp-relay relay-option-82], [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], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay   relay-option-82], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group   <i>group-name</i> relay-option-82]</pre>                 |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | <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 <b>circuit-id</b>.</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> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using DHCP Relay Agent Option 82 Information on page 60</a></li> <li>• <a href="#">Configuring Option 82 Information on page 61</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## circuit-type (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | circuit-type;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay ...</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay ...</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay ...</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Specify that the circuit type is concatenated with the username during the subscriber authentication or client authentication process. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li>• <i>Creating Unique Usernames for DHCP Clients</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## client-discover-match (DHCP Relay Agent)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | client-discover-match (option60-and-option82   incoming-interface);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ... <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ... <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group ... <a href="#">overrides</a>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Statement introduced in Junos OS Release 9.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Option <b>incoming-interface</b> introduced in Junos OS Release 13.3.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Configure the match criteria DHCP relay uses to uniquely identify DHCP subscribers or clients when primary identification fails. The options are mutually exclusive.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>incoming-interface</b>—Allow only one client device to connect on the interface. If the client device changes, the router deletes the existing client binding and creates a binding for the newly connected device.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <div style="display: flex; align-items: center;">  <div> <p><b>NOTE:</b> The <b>overrides client-discover-match incoming-interface</b> configuration deletes and replaces the existing binding when a new device connects. This action differs from the <b>overrides interface-client-limit 1</b> statement, which retains the existing binding rejects the newly connected client.</p> </div> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>option60-and-option82</b>—Use option 60 and option 82 information to identify subscribers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li> <li>• <a href="#">DHCP Auto Logout Overview on page 21</a></li> <li>• <a href="#">Allowing Only One DHCP Client Per Interface on page 44</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                              |

## client-id (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | client-id;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ...],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ...],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ...]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 11.4.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Specify that the client ID is concatenated with the username during the subscriber authentication or client authentication process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          |

## default-action (DHCP Relay Agent Option)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>default-action {<br/>    drop;<br/>    forward-only;<br/>    local-server-group local-server-group;<br/>    relay-server-group relay-server-group;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <pre>[edit forwarding-options dhcp-relay relay-option],<br/>[edit forwarding-options dhcp-relay dhcpv6 relay-option],<br/>[edit forwarding-options dhcp-relay group group-name relay-option],<br/>[edit forwarding-options dhcp-relay dhcpv6 group group-name relay-option],<br/>[edit logical-systems logical-system-name forwarding-options dhcp-relay ...],<br/>[edit logical-systems logical-system-name routing-instances routing-instance-name<br/>    forwarding-options dhcp-relay ...],<br/>[edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]</pre> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | <p>Specify the action DHCP relay agent takes when the option string in client traffic does not satisfy any match criteria or when no match criteria are configured.</p> <p>The <b>default-action</b> statement is optional. If the match criteria are not satisfied or not configured and no <b>default-action</b> is specified, DHCP relay processes the traffic in the normal manner.</p> <p>The <b>local-server-group</b> option is not supported for DHCPv6 relay agent.</p> <p>The remaining statements are explained separately.</p>                                                  |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       |



## delay-authentication (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | delay-authentication;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | [edit forwarding-options dhcp-relay ... <a href="#">overrides</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 ... <a href="#">overrides</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ... <a href="#">overrides</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i><br>forwarding-options dhcp-relay ... <a href="#">overrides</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ... <a href="#">overrides</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 13.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Delay authentication of subscribers until the DHCP client sends a Request packet. This conserves managed resources by delaying the authorization process and the creation of an entry in the subscriber database until the DHCP request processing phase.                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                   |

## delimiter (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>delimiter <i>delimiter-character</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Specify the character used as the delimiter between the concatenated components of the username. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Options</b>                  | <b><i>delimiter-character</i></b> —Character that separates components that make up the concatenated username. You cannot use the semicolon (;) as a delimiter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## detection-time

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> detection-time {     threshold milliseconds; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>], [edit forwarding-options<br/> dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method<br/> <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method<br/> <a href="#">bfd</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | <p>Enable failure detection. The BFD failure detection timers are adaptive and can be adjusted to be faster or slower. For example, the timers can adapt to a higher value if the adjacency fails, or a neighbor can negotiate a higher value for a timer than the one configured.</p> <p>The remaining statement is explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.<br/> routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Group Liveness Detection for DHCP Local Server Clients</i></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## dhcp-relay

```
Syntax dhcp-relay {
 active-server-group server-group-name;
 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 {
 active-server-group server-group-name;
 authentication {
 password password-string;
 username-include {
 circuit-type;
 client-id;
 delimiter delimiter-character;
 domain-name domain-name-string;
 interface-name;
 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 {
 ...
}
relay-option {
 ...
}
service-profile dynamic-profile-name;
trace;
upto upto-interface-name;
}
route-suppression:
service-profile dynamic-profile-name;
overrides {
 ...
}
relay-agent-interface-id {
 ...
}
relay-agent-remote-id {
 ...
}
relay-option {
 ...
}
route-suppression;
server-response-time seconds;
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 {
 allow-snooped-clients;
 delay-authentication;
 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);
 use-option-82;
}
relay-agent-remote-id {
 prefix prefix;
 use-interface-description (logical | device);
}
server-group {
 server-group-name {
 server-ip-address;
 }
}
duplicate-clients-in-subnet (incoming-interface | option-82):
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 {
 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-option {
 ...
}
relay-option-82 {
 ...
}
route-suppression:
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 {

```

```
allow-snooped-clients;
always-write-giaddr;
always-write-option-82;
client-discover-match (option60-and-option82 | incoming-interface);
delay-authentication;
disable-relay;
interface-client-limit number;
layer2-unicast-replies;
no-allow-snooped-clients;
no-bind-on-request;
proxy-mode;
replace-ip-source-with;
send-release-on-delete;
trust-option-82;
}
relay-option {
 option-number option-number;
 default-action {
 drop;
 forward-only;
 relay-server-group group-name;
 }
 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;
 local-server-group local-server-group;
 relay-server-group relay-server-group;
 }
}
}
relay-option-82 {
 circuit-id {
 prefix prefix;
 use-interface-description (logical | device);
 }
 remote-id {
 prefix prefix;
 use-interface-description (logical | device);
 }
}
}
server-group {
 server-group-name {
 server-ip-address;
 }
}
}
route-suppression:
server-response-time seconds;
service-profile dynamic-profile-name;
}
```



|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hierarchy Level</b>          | [edit forwarding-options],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.3.<br>Statement introduced in Junos OS Release 12.1 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | <p>Configure extended Dynamic Host Configuration Protocol (DHCP) relay and DHCPv6 relay options on the router or switch and enable the router (or 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.</p> <p>DHCP relay supports the attachment of dynamic profiles and also interacts with the local AAA Service Framework to use back-end authentication servers, such as RADIUS, to provide subscriber authentication or client authentication. You can attach dynamic profiles and configure authentication support on a global basis or for a specific group of interfaces.</p> <p>The extended DHCP and DHCPv6 relay agent options configured with the <b>dhcp-relay</b> and <b>dhcpv6</b> statements are incompatible with the DHCP/BOOTP relay agent options configured with the <b>bootp</b> statement. As a result, the extended DHCP or DHCPv6 relay agent and the DHCP/BOOTP relay agent cannot both be enabled on the router (or switch) at the same time.</p> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li><li>• <a href="#">DHCPv6 Relay Agent Overview on page 10</a></li><li>• <a href="#">DHCP Relay Proxy Overview on page 8</a></li><li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## dhcpcv6 (DHCP Relay Agent)

```
Syntax dhcpcv6 {
 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-agent-remote-id {
 ...
}
relay-option {
 ...
}
route-suppression;
service-profile dynamic-profile-name;
}
liveness-detection {
 ...
}
}
overrides {
 allow-snooped-clients;
 delay-authentication;
 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);
 use-option-82;
}
relay-agent-remote-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;
 }
}
route-suppression;
server-response-time seconds;
service-profile dynamic-profile-name;
}

```

**Hierarchy Level** [edit forwarding-options dhcp-relay],  
 [edit logical-systems *logical-system-name* forwarding-options **dhcp-relay**],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name*  
 forwarding-options dhcp-relay],  
 [edit routing-instances *routing-instance-name* 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** 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.

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.

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**

- [dhcp-relay on page 132](#)
- [DHCPv6 Relay Agent Overview on page 10](#)
- [Using External AAA Authentication Services with DHCP on page 30](#)

## disable-relay

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | disable-relay;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</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> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | Disable DHCP relay on specific interfaces in a group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## domain-name (DHCP Relay Agent)


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>domain-name <i>domain-name-string</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [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> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.<br/> Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | Specify the domain name that is concatenated with the username during the subscriber authentication or client authentication process. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <i>domain-name-string</i> —Domain name formatted string.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## drop (DHCP Relay Agent Option)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | drop;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]</p> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | Drop (discard) specified DHCP client packets when you use DHCP relay agent selective processing. You can configure the drop operation globally or for a group of interfaces, and for either DHCP or DHCPv6 relay agent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## duplicate-clients-in-subnet (DHCP Local Server and DHCP Relay Agent)

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|                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                          | duplicate-clients-in-subnet (incoming-interface   option-82);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                 | <p>[edit forwarding-options <a href="#">dhcp-relay</a>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a>],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a>],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server],<br/>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server],<br/>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server],<br/>[edit system services dhcp-local-server]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                             | Statement introduced in Junos OS Release 13.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>                                                                                                                                                                                                                                                                     | Configure how the router distinguishes between duplicate clients in the same subnet. Duplicate clients are defined as clients that have the same hardware address or client ID.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <div> <b>NOTE:</b> You must configure the duplicate-clients-in-subnet statement identically for both [forwarding-options dhcp-relay] and [system services dhcp-local-server] hierarchy levels.</div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                                                                                                                                                                                                                                                                         | <p><b>incoming-interface</b>—Use the incoming interface information in packets to differentiate between duplicate clients.</p> <p><b>option-82</b>—Use the option 82 information to differentiate between duplicate clients.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                        | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"><li>• <a href="#">DHCP Duplicate Client In Subnet Overview on page 13</a></li><li>• <a href="#">Guidelines for Configuring Support for DHCP Duplicate Clients on page 31</a></li><li>• <a href="#">Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Their Incoming Interfaces on page 33</a></li><li>• <a href="#">Configuring the Router to Distinguish Between DHCP Duplicate Clients Based on Option 82 Information on page 32</a></li></ul>                                                                                                                                                                                                                                                                                            |



## dynamic-profile (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | dynamic-profile <i>profile-name</i> {<br>aggregate-clients (merge   replace);<br>use-primary <i>primary-profile-name</i> ;<br>}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit forwarding-options dhcp-relay],<br>[edit forwarding-options dhcp-relay dhcpv6],<br>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> ],<br>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> interface <i>interface-name</i> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i><br>forwarding-options dhcp-relay ...],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.2.<br>Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.1 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | Specify the dynamic profile that is attached to all interfaces, to a named group of interfaces, or to a specific interface.<br><br>M120 and M320 routers do not support DHCPv6.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <i>profile-name</i> —Name of the dynamic profile.<br><br>The remaining statements are explained separately.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">dhcp-relay on page 132</a></li> <li>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 67</a></li> <li>• <a href="#">Grouping Interfaces with Common DHCP Configurations on page 35</a></li> <li>• <a href="#">Configuring a Default Subscriber Service on page 35</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                             |

## equals (DHCP Relay Agent)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>equals (ascii <i>ascii-string</i>   hexadecimal <i>hexadecimal-string</i>) {<br/>    drop;<br/>    forward-only;<br/>    local-server-group <i>local-server-group</i>;<br/>    relay-server-group <i>relay-server-group</i>;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <pre>[edit forwarding-options dhcp-relay relay-option],<br/>[edit forwarding-options dhcp-relay dhcpv6 relay-option],<br/>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option],<br/>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> relay-option],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i><br/>    forwarding-options dhcp-relay ...],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</pre> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | <p>Configure the exact match criteria used with the DHCP relay agent selective processing feature. DHCP relay agent compares the configured match string with the option-specific string received in DHCP client packets. If there is an exact left-to-right match, DHCP performs the action you define for the match criteria.</p> <p>You can configure an unlimited number of match strings. Match strings do not support wildcard attributes.</p> <p>The <b>local-server-group</b> option is not supported for DHCPv6 relay agent.</p>                                                                                             |
| <b>Options</b>                  | <p><b><i>ascii-string</i></b>—ASCII string of 1 through 255 alphanumeric characters.</p> <p><b><i>hexadecimal-string</i></b>—Hexadecimal string of 1 through 255 hexadecimal characters (0 through 9, a through f, A through F).</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## failure-action

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | failure-action (clear-binding   clear-binding-if-interface-up   log-only);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>          | [edit system services dhcp-local-server <a href="#">liveness-detection</a> ],<br>[edit system services dhcp-local-server dhcpv6 <a href="#">liveness-detection</a> ],<br>[edit forwarding-options dhcp-relay <a href="#">liveness-detection</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 <a href="#">liveness-detection</a> ],<br>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">liveness-detection</a> ],<br>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">liveness-detection</a> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">liveness-detection</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">liveness-detection</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.1.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Configure the action the router (or switch) takes when a liveness detection failure occurs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <p><b>clear-binding</b>—The client session is cleared when a liveness detection failure occurs.</p> <p><b>clear-binding-if-interface-up</b>—The client session is cleared only when a liveness detection failure occurs and the local interface is detected as being up.</p> <p><b>log-only</b>—A message is logged to indicate the event; no action is taken and DHCP is left to manage the failure.</p>                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">DHCP Liveness Detection Overview on page 72</a></li> <li>• <a href="#">Configuring Detection of DHCP Local Server Client Connectivity</a></li> <li>• <a href="#">Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 73</a></li> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                            |

## forward-only (DHCP Relay Agent Option)

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|                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                             | forward-only;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                    | <p>[edit forwarding-options dhcp-relay relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                | Statement introduced in Junos OS Release 12.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                        | Forward specified DHCP client packets, without creating a new subscriber session, when you use DHCP relay selective processing feature. You can configure the forwarding operation globally or for a group of interfaces, and for either DHCP or DHCPv6 relay agent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <hr/>                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <div> <b>NOTE:</b> When you use the <a href="#">forward-only</a> action, the only configured <a href="#">overrides</a> operation supported is the <a href="#">trust-option-82</a> option. DHCP relay agent ignores all other configured <a href="#">overrides</a> options.</div> <hr/> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                           | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"><li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## forward-snooped-clients (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | forward-snooped-clients (all-interfaces   configured-interfaces   non-configured-interfaces);                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options <a href="#">dhcp-relay</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a>]</p>                                                                                   |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 10.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | <p>Configure how DHCP relay agent handles DHCP snooped packets on specific interfaces. The router or switch determines the DHCP snooping action to perform based on a combination of the <b>forward-snooped-clients</b> configuration and the configuration of either the <b>allow-snooped-clients</b> statement or the <b>no-allow-snooped-clients</b> statement.</p> <p>The router (or switch) also uses this statement to determine how to handle snooped BOOTREPLY packets received on nonconfigured interfaces.</p> |
| <b>Options</b>                  | <p><b>all-interfaces</b>—Perform the action on all interfaces.</p> <p><b>configured-interfaces</b>—Perform the action only on configured interfaces.</p> <p><b>non-configured-interfaces</b>—Perform the action only on nonconfigured interfaces.</p>                                                                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">DHCP Snooping Support on page 18</a></li> <li>• <a href="#">Configuring DHCP Snooping for DHCP Relay Agent on page 49</a></li> </ul>                                                                                                                                                                                                                                                                                                                                |

## 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 | incoming-interface);
 disable-relay;
 interface-client-limit number;
 layer2-unicast-replies;
 no-allow-snooped-clients;
 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);
 use-option-82;
}
relay-agent-remote-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);
 use-option-82;
 }
 remote-id {
 prefix prefix;
 use-interface-description (logical | device);
 }
}

```

```
 }
 }
 route-suppression;
 service-profile dynamic-profile-name;
}
```

**Hierarchy Level** [edit forwarding-options dhcp-relay],  
[edit forwarding-options dhcp-relay **dhcpv6**],  
[edit logical-systems *logical-system-name* forwarding-options **dhcp-relay** ...],  
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name*  
forwarding-options **dhcp-relay** ...],  
[edit routing-instances *routing-instance-name* 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**

- [dhcp-relay on page 132](#)
- [Extended DHCP Relay Agent Overview on page 4](#)
- [Group-Specific DHCP Relay Options on page 14](#)
- [Grouping Interfaces with Common DHCP Configurations on page 35](#)
- [Using External AAA Authentication Services with DHCP on page 30](#)
- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 67](#)



## holddown-interval

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>holddown-interval <i>milliseconds</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>], [edit forwarding-options<br/> dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method<br/> <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method<br/> <a href="#">bfd</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | Configure the time (in milliseconds) for which Bidirectional Forwarding Detection (BFD) holds a session up notification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>                  | <p><b><i>milliseconds</i></b>—Interval specifying how long a BFD session must remain up before a state change notification is sent.</p> <p><b>Range:</b> 0 through 255,000</p> <p><b>Default:</b> 0</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## interface (DHCP Relay Agent)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> interface <i>interface-name</i> {   exclude;   overrides {     allow-snooped-clients;     always-write-giaddr;     always-write-option-82;     client-discover-match &lt;option60-and-option82&gt;;     disable-relay;     interface-client-limit <i>number</i>;     layer2-unicast-replies;     no-allow-snooped-clients;     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>                                       |
| <b>Hierarchy Level</b>     | <pre> [edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   forwarding-options <b>dhcp-relay</b> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] </pre>                                                                              |
| <b>Release Information</b> | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Options <b>upto</b> and <b>exclude</b> introduced in Junos OS Release 9.1.</p> <p>Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                    |
| <b>Description</b>         | <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 <b>interface</b> <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 <b>[edit ... dhcpv6]</b> 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 *Configuring Integrated Routing and Bridging for Bridge Domains*.

**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 on page 4](#)
  - [dhcp-relay on page 132](#)
  - *dhcp-relay (EX Series Switches only)*
  - *Understanding the Extended DHCP Relay Agent for EX Series Switches*
  - *Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure)*
  - [Grouping Interfaces with Common DHCP Configurations on page 35](#)
  - [Using External AAA Authentication Services with DHCP on page 30](#)

## interface-client-limit (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>interface-client-limit <i>number</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [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> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.2.<br/> Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.<br/> Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | <p>Set the maximum number of DHCP (or DHCPv6) subscribers or clients 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 <b>[edit ... dhcpv6]</b> hierarchy levels to configure DHCPv6 support.</p> <p>M120 and M320 routers do not support DHCPv6.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Default</b>                  | No limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Options</b>                  | <p><i>number</i>—Maximum number of clients allowed.<br/> <b>Range:</b> 1 through 500,000</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

- Related Documentation**
- [dhcp-relay on page 132](#)
  - [Extended DHCP Relay Agent Overview on page 4](#)
  - [Group-Specific DHCP Relay Options on page 14](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 38](#)

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## interface-delete (Subscriber Management or DHCP Client Management)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | interface-delete;                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | [edit system services subscriber-management <a href="#">maintain-subscriber</a> ]                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p>On router—Configure the router to maintain, rather than log out, subscribers when the subscriber interface is deleted. By default, the router logs out subscribers when the subscriber interface is deleted.</p> <p>On switch—Configure the switch to maintain rather than log out DHCP clients when the client interface is deleted. By default, the switch logs out DHCP clients when the client interface is deleted.</p> |
| <b>Required Privilege Level</b> | system—To view this statement in the configuration.<br>system-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | • <a href="#">Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events on page 47</a>                                                                                                                                                                                                                                                                                                                 |

## interface-name (DHCP Relay Agent)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | interface-name;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | [edit forwarding-options dhcp-relay authentication <a href="#">username-include</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.4<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | Specify that the interface name is concatenated with the username during the subscriber authentication or client authentication process. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Creating Unique Usernames for DHCP Clients</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## layer2-unicast-replies

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | layer2-unicast-replies;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</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> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">dhcp-relay on page 132</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## liveness-detection

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> 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;     }   } } </pre> |
| <b>Hierarchy Level</b>          | <pre> [edit system services dhcp-local-server], [edit system services dhcp-local-server dhcpv6], [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay dhcpv6], [edit system services dhcp-local-server group group-name], [edit system services dhcp-local-server dhcpv6 group group-name], [edit forwarding-options dhcp-relay group group-name], [edit forwarding-options dhcp-relay dhcpv6 group group-name] </pre>                                                                                                                                             |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | <p>Configure bidirectional failure detection timers and authentication criteria for static routes.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">DHCP Liveness Detection Overview on page 72</a></li> <li>• <a href="#">Configuring Detection of DHCP Local Server Client Connectivity</a></li> <li>• <a href="#">Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 73</a></li> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> </ul>                                                                                                                                                      |



- [Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97](#)

## local-server-group (DHCP Relay Agent Option)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>local-server-group <i>local-server-group</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (<a href="#">default-action</a>   <a href="#">equals</a>   <a href="#">starts-with</a>)],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.3.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | <p>Forward DHCP client packets to the specified group of DHCP local servers when you use the DHCP relay selective processing feature. You can configure the forwarding operation globally or for a group of interfaces.</p> <p>The <b>local-server-group</b> option is not supported for DHCPv6 relay agent.</p>                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <i>local-server-group</i> —Name of DHCP local server group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## logical-system-name (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | logical-system-name;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | <p>Specify that the logical system name is concatenated with the username during the subscriber authentication or client authentication process. No logical system name is concatenated if the configuration is in the default logical system. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## mac-address (DHCP Relay Agent)


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | mac-address;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | Specify that the MAC address from the client PDU be concatenated with the username during the subscriber authentication or client authentication process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## mac-address (Dynamic Access-Internal Routes)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>mac-address address;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access-internal route <i>subscriber-ip-address</i> <b>qualified-next-hop</b> <i>underlying-interface</i> ],<br>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access-internal route <i>subscriber-ip-address</i> <b>qualified-next-hop</b> <i>underlying-interface</i> ],<br>[edit dynamic-profiles routing-options <b>access-internal route</b> <i>subscriber-ip-address</i> <b>qualified-next-hop</b> <i>underlying-interface</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.5.<br>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options route <i>subscriber-ip-address</i> <b>qualified-next-hop</b> <i>underlying-interface</i> ] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> route <i>subscriber-ip-address</i> <b>qualified-next-hop</b> <i>underlying-interface</i> ] hierarchy levels introduced in Junos OS Release 10.1.                                                                        |
| <b>Description</b>              | Dynamically configure the MAC address variable for an access-internal route for unnumbered interfaces such as DHCP subscriber interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <i>address</i> —Either the specific MAC address you want to assign to the access-internal route or the MAC address variable (\$junos-subscriber-mac-address). The MAC address variable is dynamically replaced with the value supplied by DHCP when a subscriber logs in.                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## **maintain-subscriber (Subscriber Management)**

|                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                    | <code>maintain-subscriber {<br/>    interface-delete;<br/>}</code>                                                                                                |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                           | [edit system services <a href="#">subscriber-management</a> ]                                                                                                     |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                       | Statement introduced in Junos OS Release 11.1.                                                                                                                    |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                               | Configure the router to maintain, rather than log out, subscribers when the specified type of event occurs (such as when an interface is deleted).                |
| <div>  <p><b>NOTE:</b> The <code>maintain-subscriber</code> statement and <code>remove-when-no-subscribers</code> statement are mutually exclusive. You cannot specify that dynamically configured VLAN interfaces are removed when no subscribers exist when the router is also configured to maintain subscribers.</p> </div> |                                                                                                                                                                   |
| The remaining statement is explained separately.                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                   |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                  | system—To view this statement in the configuration.<br>system-control—To add this statement to the configuration.                                                 |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• <a href="#">Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events on page 47</a></li> </ul> |

## method

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> 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;   } } </pre>                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <p> [edit system services dhcp-local-server <a href="#">liveness-detection</a>],<br/> [edit system services dhcp-local-server dhcpv6 <a href="#">liveness-detection</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">liveness-detection</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 <a href="#">liveness-detection</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> <a href="#">liveness-detection</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">liveness-detection</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">liveness-detection</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">liveness-detection</a>] </p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | <p>Configure the liveness detection method.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## metric (Dynamic Access-Internal Routes)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>metric route-cost;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access <i>route prefix</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access <i>route prefix</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-options access <i>route prefix</i>]</p>                                                                                                                                                                              |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access <i>route prefix</i>] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access <i>route prefix</i>] hierarchy levels introduced in Junos OS Release 10.1.</p>                                                                                                                                                       |
| <b>Description</b>              | Dynamically configure the cost for an access route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <p><i>route-cost</i>—Either the specific cost you want to assign to the access route or either of the following cost variables:</p> <ul style="list-style-type: none"> <li>• <b>\$junos-framed-route-cost</b>—Cost of an IPv4 access route; the variable is dynamically replaced with the metric value (Subattribute 3) from the RADIUS Framed-Route attribute [22].</li> <li>• <b>\$junos-framed-route-ipv6-cost</b>—Cost of an IPv6 access route; the variable is dynamically replaced with the metric value (Subattribute 3) from the RADIUS Framed-IPv6-Route attribute [99].</li> </ul> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring Dynamic Access Routes for Subscriber Management</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## minimum-interval

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>minimum-interval <i>milliseconds</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p>Configure the minimum intervals at which the local routing device transmits hello packets and then expects to receive a reply from a neighbor with which it has established a BFD session. This value represents the minimum interval at which the local routing device transmits hello packets as well as the minimum interval that the routing device expects to receive a reply from a neighbor with which it has established a BFD session. Optionally, instead of using this statement, you can specify the minimum transmit and receive intervals separately using the <a href="#">transmit-interval</a> <a href="#">minimal-interval</a> and <a href="#">minimum-receive-interval</a> statements.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <p><b><i>milliseconds</i></b> — Specify the minimum interval value for BFD liveliness detection.<br/> <b>Range:</b> 1 through 255,000</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.<br/> routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



## minimum-receive-interval

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>minimum-receive-interval <i>milliseconds</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>], [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | Configure the minimum interval at which the local routing device (or switch) must receive a reply from a neighbor with which it has established a BFD session.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                  | <p><i>milliseconds</i> — Specify the minimum receive interval value.<br/> <b>Range:</b> 1 through 255,000</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.<br/> routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## multiplier

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>multiplier <i>number</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a> ],<br>[edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a> ],<br>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ],<br>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.1.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>              | Configure the number of hello packets not received by the neighbor before Bidirectional Forwarding Detection (BFD) declares the neighbor down.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <b>number</b> —Maximum allowable number of hello packets missed by the neighbor.<br><b>Range:</b> 1 through 255<br><b>Default:</b> 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## next-hop (Dynamic Access-Internal Routes)


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>next-hop <i>next-hop</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access <i>route prefix</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access <i>route prefix</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-options <i>access route prefix</i>]</p>                                                                                                                                                                                         |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access <i>route prefix</i>] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access <i>route prefix</i>] hierarchy levels introduced in Junos OS Release 10.1.</p>                                                                                                                                                                  |
| <b>Description</b>              | Dynamically configure the next-hop address for an access route. Access routes are typically unnumbered interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Options</b>                  | <p><i>next-hop</i>—Either the specific next-hop address you want to assign to the access route or one of the following next-hop address predefined variables.</p> <ul style="list-style-type: none"> <li>For IPv4 access routes, use the variable, <b>\$junos-framed-route-nexthop</b>. The route prefix variable is dynamically replaced with the value in Framed-Route RADIUS attribute [22].</li> <li>For IPv6 access routes, use the variable, <b>\$junos-framed-route-ipv6-nexthop</b>. The variable is dynamically replaced with the value in Framed-IPv6-Route RADIUS attribute [99].</li> </ul> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>Configuring Dynamic Access Routes for Subscriber Management</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## no-adaptation


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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | no-adaptation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a> ],<br>[edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a> ],<br>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ],<br>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ],<br>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.1.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>              | Configure Bidirectional Forwarding Detection (BFD) sessions to not adapt to changing network conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring Group Liveness Detection for DHCP Local Server Clients</i></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## no-allow-snooped-clients

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                  | no-allow-snooped-clients;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                         | <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> interface <i>interface-name</i> <b>overrides</b>],</p> <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> <b>overrides</b>],</p> <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> <b>overrides</b>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <b>overrides</b>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> <b>overrides</b>],</p> <p>[edit forwarding-options dhcp-relay <b>overrides</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b> ...],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b> ...],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b> ...]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                     | <p>Statement introduced in Junos OS Release 10.2.</p> <p>Support at the [edit ... <b>dhcpv6</b>] hierarchy levels introduced in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>                                                                                                                                                                                                                                                             | <p>Explicitly disable DHCP snooping support on the router or switch.</p> <p>Use the statement at the [edit ... <b>dhcpv6</b>] hierarchy levels to explicitly disable snooping support on the router or switch for DHCPv6 relay agent.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <div>  <p><b>NOTE:</b> In Junos OS Release 10.0 and earlier, DHCP snooping is <i>enabled</i> by default. In Release 10.1 and later, DHCP snooping is <i>disabled</i> by default.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li> <li>• <a href="#">DHCP Snooping Support on page 18</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## no-bind-on-request (DHCP Relay Agent)


|                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                    | no-bind-on-request;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                           | <p>[edit forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [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> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                       | <p>Statement introduced in Junos OS Release 10.4.<br/> Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.<br/> Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>                                                                                                                                                                                                                                                                                                               | <p>Explicitly disable automatic binding of received DHCP request messages that have no entry in the database (<i>stray</i> requests). Use the statement at the <b>[edit ... dhcpv6]</b> hierarchy levels to configure DHCPv6 support.</p> <p>M120 and M320 routers do not support DHCPv6.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <div>  <p><b>NOTE:</b> Beginning with Junos OS Release 10.4, automatic binding of stray requests is enabled by default. In Junos OS Release 10.3 and earlier releases, automatic binding of stray requests is disabled by default.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                  | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

- Related Documentation**
- [Extended DHCP Relay Agent Overview on page 4](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 38](#)
  - [Disabling Automatic Binding of Stray DHCP Requests on page 58](#)

## option-60 (DHCP Relay Agent)


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | option-60;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/>         [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/>         [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/>         [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/>         [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/>         [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/>         [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/>         [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Specify that the payload of the Option 60 (Vendor Class Identifier) from the client PDU is concatenated with the username during the subscriber authentication or client authentication process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## option-82 (DHCP Relay Agent)

|                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                         | <code>option-82 &lt;circuit-id&gt; &lt;remote-id&gt;;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                            | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>                                                                                                                                                                                                                                    | Specify the option 82 that is concatenated with the username during the subscriber authentication or client authentication process. You can specify either, both, or neither the Agent Circuit ID and the Agent Remote ID suboptions. If you specify both, the Agent Circuit ID is supplied first, followed by a delimiter, and then the Agent Remote ID. If neither suboption is supplied, the raw payload of option 82 is concatenated to the username.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <div>  <p><b>NOTE:</b> The option 82 value used in creating the username is based on the option 82 value that is encoded in the outgoing (relayed) PDU.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>                                                                                                                                                                                                                                        | <p><b>circuit-id</b>—(Optional) The string for the Agent Circuit ID suboption (suboption 1).</p> <p><b>remote-id</b>—(Optional) The string for the Agent Remote ID suboption (suboption 2).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                       | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li><a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



## option-number (DHCP Relay Agent Option)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <code>option-number option-number;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>[edit forwarding-options <a href="#">dhcp-relay relay-option</a>],</p> <p>[edit forwarding-options <a href="#">dhcp-relay dhcpv6 relay-option</a>],</p> <p>[edit forwarding-options dhcp-relay <a href="#">group group-name relay-option</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 <a href="#">group group-name relay-option</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay ...</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay ...</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay ...</a>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Statement introduced in Junos OS Release 12.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <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 <a href="#">[edit forwarding-options dhcp-relay dhcpv6]</a> hierarchy level to configure the DHCPv6 relay agent support.</p>                                                                                                                                                                                                                                                                                                      |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>option-number</i> —The DHCP or DHCPv6 option in the incoming traffic.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <div>  <b>NOTE:</b> EX Series switches do not support the User Class Options.         </div>                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>15 (DHCPv6 only)—Use DHCPv6 option 15 (User Class Option) in packets</li> <li>16 (DHCPv6 only)—(MX Series routers and EX Series switches only) Use DHCPv6 option 16 (Vendor Class Option) in packets</li> <li>60 (DHCPv4 only)—(MX Series routers and EX Series switches only) Use DHCP option 60 (Vendor Class Identifier) in DHCP packets</li> <li>77 (DHCPv4 only)—Use DHCP option 77 (User Class Identifier) in packets</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li><a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li> <li><a href="#">Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure)</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## overrides (DHCP Relay Agent)

---

**Syntax**    overrides {  
              allow-snooped-clients;  
              always-write-giaddr;  
              always-write-option-82;  
              client-discover-match (option60-and-option82 | incoming-interface);  
              delay-authentication;  
              disable-relay;  
              interface-client-limit *number*;  
              layer2-unicast-replies;  
              no-allow-snooped-clients;  
              no-bind-on-request;  
              proxy-mode;  
              replace-ip-source-with;  
              send-release-on-delete;  
              trust-option-82;  
          }

**Hierarchy Level**    [edit forwarding-options dhcp-relay],  
                          [edit forwarding-options dhcp-relay **dhcpv6**],  
                          [edit forwarding-options dhcp-relay **group** *group-name*],  
                          [edit forwarding-options dhcp-relay **group** *group-name* **interface** *interface-name*],  
                          [edit forwarding-options dhcp-relay dhcpv6 **group** *group-name*],  
                          [edit forwarding-options dhcp-relay dhcpv6 **group** *group-name* **interface** *interface-name*],  
                          [edit logical-systems *logical-system-name* forwarding-options **dhcp-relay** ...],  
                          [edit logical-systems *logical-system-name* routing-instances *routing-instance-name*  
                              forwarding-options **dhcp-relay** ...],  
                          [edit routing-instances *routing-instance-name* 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**            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.

M120 and M320 routers do not support DHCPv6.

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.

- **allow-snooped-clients**
- **interface-client-limit**
- **no-allow-snooped-clients**
- **no-bind-on-request**
- **send-release-on-delete**

The remaining statements are explained separately.

|                              |                                                                                                                                                                                                                                                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege</b>    | interface—To view this statement in the configuration.                                                                                                                                                                                                                                                                                     |
| <b>Level</b>                 | interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li><li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li><li>• <i>Deleting DHCP Local Server and DHCP Relay Override Settings</i></li><li>• <a href="#">dhcp-relay on page 132</a></li></ul> |

## password (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>password password-string;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <a href="#">authentication</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],<br/> [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> <a href="#">authentication</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">authentication</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">authentication</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the [edit ... <a href="#">dhcpv6</a>] hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | Configure the password that is sent to the external AAA authentication server for subscriber authentication or client authentication. Use the statement at the [edit ... <a href="#">dhcpv6</a> ] hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <i>password-string</i> —Authentication password.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li>• <a href="#">Configuring Passwords for Usernames</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## preference (Subscriber Management)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>preference route-distance</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access <i>route prefix</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access <i>route prefix</i>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-options <i>access route prefix</i>]</p>                                                                                                                                                                                                                                       |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Support at [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access route <i>prefix</i>] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access route <i>prefix</i>] hierarchy levels introduced in Junos OS Release 10.1.</p>                                                                                                                                                                                                                    |
| <b>Description</b>              | Dynamically configure the distance for an access route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Options</b>                  | <p><b><i>route-distance</i></b>—Either the specific distance you want to assign to the access route or either of the following distance variables:</p> <ul style="list-style-type: none"> <li>• <b><i>\$junos-framed-route-distance</i></b>—Distance of an IPv4 access route; the variable is dynamically replaced with the preference value (Subattribute 5) from the RADIUS Framed-Route attribute [22].</li> <li>• <b><i>\$junos-framed-route-ipv6-distance</i></b>—Distance of an IPv6 access route; the variable is dynamically replaced with the preference value (Subattribute 5) from the RADIUS Framed-IPv6-Route attribute [99].</li> </ul> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring Dynamic Access Routes for Subscriber Management</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## prefix (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>prefix <i>prefix</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit forwarding-options dhcp-relay relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)],</p> <p>[edit logical-systems <i>logical-system-name</i> ... forwarding-options dhcp-relay <b>dhcpv6</b> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit logical-systems <i>logical-system-name</i> ... forwarding-options dhcp-relay ... relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ... relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Support at the [edit ... <b>dhcpv6</b>] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p> <p>Support at the [edit ... <b>relay-agent-remote-id</b>] and [edit ... <b>remote-id</b>] hierarchy levels introduced in Junos OS Release 14.1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <p>Add a prefix to the DHCP base option 82 Agent Circuit ID (suboption 1) or Agent Remote ID (suboption 2) information, or to the DHCPv6 option 18 (Relay Agent Interface-ID) or option 37 (Relay Agent Remote-ID) information in DHCP packets that DHCP relay agent sends to a DHCP server. The prefix can consist of any combination of the hostname, logical system name, and routing instance name.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <p><i>prefix</i>—Any of the following:</p> <ul style="list-style-type: none"> <li>• <b>host-name</b>—Prepend the hostname of the router configured with the <b>host-name</b> statement at the [edit <b>system</b>] hierarchy level to the DHCP option information.</li> <li>• <b>logical-system-name</b>—Prepend the name of the logical system to the option information.</li> <li>• <b>routing-instance-name</b>—Prepend the name of the routing instance to the option information.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Including a Prefix in DHCP Options on page 61</a></li> <li>• <a href="#">Using DHCP Relay Agent Option 82 Information on page 60</a></li> <li>• <a href="#">Configuring DHCPv6 Relay Agent Options on page 69</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## proxy-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | proxy-mode;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</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> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | <p>Enable DHCP relay proxy mode on the extended DHCP relay. Proxy mode supports all extended DHCP relay functionality.</p> <p>The extended DHCP relay proxy is not supported for the J Series routers DHCP server. Also, you cannot configure both the DHCP relay proxy and the extended DHCP local server on the same interface.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">DHCP Relay Proxy Overview on page 8</a></li> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Enabling DHCP Relay Proxy Mode on page 67</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## qualified-next-hop (Subscriber Management)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>qualified-next-hop <i>interface-name</i> {<br/>    <i>mac-address</i> <i>address</i>;<br/>}</code>                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access-internal <b>route</b> <i>subscriber-ip-address</i> ],<br>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access-internal <b>route</b> <i>subscriber-ip-address</i> ],<br>[edit dynamic-profiles <i>profile-name</i> routing-options <b>access-internal route</b> <i>subscriber-ip-address</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.5.<br>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options route <i>subscriber-ip-address</i> ] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> route <i>subscriber-ip-address</i> ] hierarchy levels introduced in Junos OS Release 10.1.                                                    |
| <b>Description</b>              | Dynamically configure the qualified next-hop and the MAC address for an access-internal route for DHCP and PPP subscriber interfaces.                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <b><i>interface-name</i></b> —Either the specific interface you want to assign to the access route or the variable, or the <b>\$junos-interface-name</b> variable. The variable is dynamically replaced with the value supplied by DHCP or PPP when a subscriber logs in.<br><br>The remaining statement is explained separately.                                                                                                                                                                |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management</i></li></ul>                                                                                                                                                                                                                                                                                                                                                               |



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

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> relay-agent-interface-id {   prefix <i>prefix</i>;   use-interface-description (logical   device);   use-option-82; } </pre>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <pre> [edit forwarding-options dhcp-relay <b>dhcpv6</b>], [edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay dhcpv6</b> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   forwarding-options dhcp-relay <b>dhcpv6</b> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> ...] </pre> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | <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>                                                                                                                                                                                                                                                                                                                          |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">dhcp-relay on page 132</a></li> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">DHCPv6 Relay Agent Overview on page 10</a></li> <li>• <a href="#">Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets on page 70</a></li> </ul>                                                                                                                                                             |

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

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | relay-agent-interface-id;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/>[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> authentication <a href="#">username-include</a>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Specify that the DHCPv6 Relay Agent Interface-ID option (option 18) in the client PDU name is concatenated with the username during the subscriber authentication process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">DHCPv6 Relay Agent Overview on page 10</a></li><li>• <i>Creating Unique Usernames for DHCP Clients</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## relay-agent-remote-id (DHCPv6 Relay Agent Username)

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|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | relay-agent-remote-id;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [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> authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>For MX Series routers only, <b>enterprise-id</b> and <b>remote-id</b> options introduced in Junos OS Release 12.3R3.</p> <p>For MX Series routers only, the <b>enterprise-id</b> and <b>remote-id</b> options are obsoleted starting in Junos OS Releases 12.3R7, 13.2R4, 13.3R2, and 14.1R1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>              | Specify that the DHCPv6 Relay Agent Remote-ID option (option 37) in the client PDU name is concatenated with the username during the subscriber authentication or client authentication process. In order to generate an ASCII version of the username, the router concatenates only the remote-id portion of option 37 to the username, and ignores the enterprise number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">DHCPv6 Relay Agent Overview on page 10</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## relay-agent-remote-id (DHCPv6 Relay Agent)

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|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>relay-agent-remote-id {<br/>    <i>prefix</i> <i>prefix</i>;<br/>    <i>use-interface-description</i> (logical   device);<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | <pre>[edit forwarding-options dhcp-relay <i>dhcpv6</i>],<br/>[edit forwarding-options dhcp-relay <i>dhcpv6</i> <i>group</i> <i>group-name</i>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <i>dhcpv6</i> ... ],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i><br/>    forwarding-options dhcp-relay <i>dhcpv6</i> ... ],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <i>dhcpv6</i> ... ]</pre> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 14.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | <p>Specify that the DHCPv6 relay agent include the Relay Agent Remote-ID (option 37) in DHCPv6 packets destined for a DHCPv6 server. Optionally specify that the option includes a prefix or interface textual description, or both.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li><li>• <a href="#">DHCPv6 Relay Agent Overview on page 10</a></li><li>• <a href="#">DHCPv6 Relay Agent Options on page 15</a></li><li>• <a href="#">Configuring DHCPv6 Relay Agent Options on page 69</a></li></ul>                                                                                                                                                                                                             |

## relay-agent-subscriber-id (DHCPv6 Relay Agent)

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|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | relay-agent-subscriber-id;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [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> authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | Specify that the DHCPv6 Relay Agent Subscriber-ID option (option 38) in the client PDU name is concatenated with the username during the subscriber authentication process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">DHCPv6 Relay Agent Overview on page 10</a></li> <li>• <i>Creating Unique Usernames for DHCP Clients</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## relay-option (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <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> |
| <b>Hierarchy Level</b>          | <pre> [edit forwarding-options dhcp-relay], [edit forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>], [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   forwarding-options <b>dhcp-relay</b> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b> ...] </pre>               |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.3.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | <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>                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## relay-option-82

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> relay-option-82 {   circuit-id {     prefix <i>prefix</i>;     use-interface-description (logical   device);   }   remote-id {     prefix <i>prefix</i>;     use-interface-description (logical   device);   } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay],<br/> [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>]</p>                                 |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.<br/> Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | <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>To enable insertion of option 82 information in DHCP packets, you must specify at least one of the <b>circuit-id</b> or <b>remote-id</b> statements.</p> <p>You can use the <b>relay-option-82</b> statement and its subordinate statements at the <b>[edit forwarding-options dhcp-relay]</b> hierarchy level to control insertion of option 82 information globally, or at the <b>[edit forwarding-options dhcp-relay group group-name]</b> 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 <b>delete relay-option-82</b> statement.</p> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using DHCP Relay Agent Option 82 Information on page 60</a></li> <li>• <a href="#">dhcp-relay on page 132</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## relay-server-group (DHCP Relay Agent Option)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>relay-server-group <i>relay-server-group</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <code>[edit forwarding-options dhcp-relay relay-option (default-action   equals   starts-with),</code><br><code>[edit forwarding-options dhcp-relay dhcpv6 relay-option (default-action   equals  </code><br><code>starts-with),</code><br><code>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (default-action   equals</code><br><code>  starts-with),</code><br><code>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> relay-option (default-action</code><br><code>  equals   starts-with),</code><br><code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],</code><br><code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code><br><code>forwarding-options dhcp-relay ...],</code><br><code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</code> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.3.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | Relay DHCP client packets to the specified group of DHCP servers when you use the DHCP relay selective processing feature. You can configure the relay operation globally or for a group of interfaces, and for either DHCP or DHCPv6 relay agent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                  | <i>relay-server-group</i> —Name of DHCP server group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



## remote-id (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | remote-id {<br><a href="#">prefix</a> <i>prefix</i> ;<br><a href="#">use-interface-description</a> (logical   device);<br>}                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | [edit forwarding-options dhcp-relay <a href="#">relay-option-82</a> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">relay-option-82</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ... <a href="#">relay-option-82</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ... <a href="#">relay-option-82</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ... <a href="#">relay-option-82</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 14.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | Specify that the DHCP relay agent include the Agent Remote ID suboption (suboption 2) of the DHCP relay agent information option (option 82) in DHCP packets destined for a DHCP server. Optionally, specify that the DHCP relay agent includes a prefix or textual description, or both, in the suboption information.<br><br>The remaining statements are explained separately.                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using DHCP Relay Agent Option 82 Information on page 60</a></li> <li>• <a href="#">Configuring Option 82 Information on page 61</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |

## replace-ip-source-with

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | replace-ip-source-with giaddr;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | [edit forwarding-options dhcp-relay <a href="#">overrides</a> ],<br>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.6.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Replace the IP source address in DHCP relay request and release packets with the gateway IP address (giaddr).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li><li>• <a href="#">Replacing the DHCP Relay Request and Release Packet Source Address on page 40</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## route (Access)


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>route prefix {     next-hop next-hop;     metric route-cost;     preference route-distance;     tag route-tag; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options <b>access</b>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> <b>access</b>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-options <b>access</b>]</p>                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options <b>access</b>] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> <b>access</b>] hierarchy levels introduced in Junos OS Release 10.1.</p>                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Dynamically configure the parameters for access routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <p><i>prefix</i>—Either the specific route prefix that you want to assign to the access route or one of the following route prefix variables.</p> <ul style="list-style-type: none"> <li>For IPv4 access routes, use the variable, <b>\$junos-framed-route-ip-address-prefix</b>. The route prefix variable is dynamically replaced with the value in Framed-Route RADIUS attribute [22].</li> <li>For IPv6 access routes, use the variable, <b>\$junos-framed-route-ipv6-address-prefix</b>. The variable is dynamically replaced with the value in Framed-IPv6-Route RADIUS attribute [99].</li> </ul> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>Configuring Dynamic Access Routes for Subscriber Management</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## route (Access Internal)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>route <i>subscriber-ip-address</i> {<br/>    next-hop <i>next-hop</i>;<br/>    qualified-next-hop <i>underlying-interface</i> {<br/>        mac-address <i>address</i>;<br/>    }<br/>}</pre>                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options <a href="#">access-internal</a>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> <a href="#">access-internal</a>],</p> <p>[edit dynamic-profiles <i>profile-name</i> routing-options <a href="#">access-internal</a>]</p>                   |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Support at the [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options <a href="#">access-internal</a>] and [edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> <a href="#">access-internal</a>] hierarchy levels introduced in Junos OS Release 10.1.</p> |
| <b>Description</b>              | <p>Dynamically configure parameters for an access-internal route.</p>                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <p><i>subscriber-ip-address</i>—Either the specific IP address you want to assign to the access-internal route or the subscriber IP address variable (\$junos-subscriber-ip-address). The subscriber IP address variable is dynamically replaced with the value supplied by DHCP or PPP when a subscriber logs in.</p> <p>The remaining statements are explained separately.</p>                                                                 |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management</i></li><li>• <i>Configuring Dynamic Access-Internal Routes for PPP Subscriber Management</i></li></ul>                                                                                                                                                                                                                     |

## route-suppression (DHCP Local Server and Relay Agent)

|                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                      | route-suppression (access   access-internal   destination);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                             | <p>[edit forwarding-options <a href="#">dhcp-relay</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">dhcpv6</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">group group-name</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 <a href="#">group group-name</a>],<br/> [edit logical-systems <i>logical-system-name</i> ...],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>...],<br/> [edit routing-instances <i>routing-instance-name</i> ...],<br/> [edit system services dhcp-local-server],<br/> [edit system services dhcp-local-server dhcpv6],<br/> [edit system services dhcp-local-server group <i>group-name</i>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                         | Statement introduced in Junos OS Release 13.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                 | Configure the jdhcpd process to suppress the installation of access, access-internal, or destination routes during client binding.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <div>  <p><b>NOTE:</b> You cannot suppress access-internal routes when the subscriber is configured with both IA_NA and IA_PD addresses over IP demux interfaces—the IA_PD route relies on the IA_NA route for next hop connectivity.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                     | <p><b>access</b>—(DHCPv6 only) Suppress installation of access routes. You can use the <b>access</b> and <b>access-internal</b> options in the same statement for DHCPv6.</p> <p><b>access-internal</b>—In a DHCPv4 hierarchy, suppress installation of both access-internal and destination routes. In a DHCPv6 hierarchy, suppress access-internal routes only. Can be configured in the same statement with the <b>access</b> option.</p> <p><b>destination</b>—(DHCPv4 only) Suppress installation of destination routes. This option and the <b>access-internal</b> option are mutually exclusive; however, the <b>access-internal</b> option also suppresses destination routes.</p>                                                                                                   |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                    | <p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• <a href="#">Preventing DHCP from Installing Access, Access-Internal, and Destination Routes by Default</a> on page 42</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## routing-options (Dynamic Profiles)

```
Syntax routing-options {
 access {
 route prefix {
 metric route-cost;
 next-hop next-hop;
 preference route-distance;
 tag route-tag;
 }
 }
 access-internal {
 route subscriber-ip-address {
 qualified-next-hop underlying-interface {
 mac-address address;
 }
 }
 }
 multicast {
 interface interface-name {
 no-qos-adjust;
 }
 }
 rib routing-table-name {
 access {
 route prefix {
 metric route-cost;
 next-hop next-hop;
 preference route-distance;
 tag route-tag;
 }
 }
 access-internal {
 route subscriber-ip-address {
 qualified-next-hop underlying-interface {
 mac-address address;
 }
 }
 }
 }
 }
```

**Hierarchy Level** [edit dynamic-profiles *profile-name*],  
[edit dynamic-profiles *profile-name* routing-instances \$junos-routing-instance]

**Release Information** Statement introduced in Junos OS Release 9.6.  
Support at the [edit dynamic-profiles *profile-name* routing-instances \$junos-routing-instance] hierarchy level introduced in Junos OS Release 10.1.

**Description** Configure protocol-independent routing properties in a dynamic profile.

The remaining statements are explained separately.

|                              |                                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege</b>    | routing—To view this statement in the configuration.                                                                                                                                                            |
| <b>Level</b>                 | routing-control—To add this statement to the configuration.                                                                                                                                                     |
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <i>Configuring Dynamic Access Routes for Subscriber Management</i></li><li>• <i>Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management</i></li></ul> |

## routing-instance-name (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | routing-instance-name;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</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> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Specify that the routing instance name is concatenated with the username during the subscriber authentication or client authentication process. No routing instance name is concatenated if the configuration is in the default routing instance. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> <li><a href="#">Creating Unique Usernames for DHCP Clients</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |



## send-release-on-delete (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | send-release-on-delete;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [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> <a href="#">overrides</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 10.2.</p> <p>Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | <p>Send a release message to the DHCP (or DHCPv6) server whenever DHCP relay or relay proxy deletes a client. Use the statement at the <b>[edit ... dhcpv6]</b> hierarchy levels to configure DHCPv6 support.</p> <p>M120 and M320 routers do not support DHCPv6.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li> <li>• <a href="#">Sending Release Messages When Clients Are Deleted on page 57</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## server-group

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|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                   | <pre>server-group {<br/>    server-group-name {<br/>        server-ip-address;<br/>    }<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Hierarchy Level          | [edit forwarding-options dhcp-relay],<br>[edit forwarding-options <a href="#">dhcp-relay dhcpv6</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ],<br>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ],<br>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ] |
| Release Information      | Statement introduced in Junos OS Release 8.3.<br>Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.1 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Description              | Specify the name of a group of DHCP server addresses for use by the extended DHCP relay agent. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Options                  | <b><i>server-group-name</i></b> —Name of the group of DHCP or DHCPv6 server addresses.<br><br><b><i>server-ip-address</i></b> —IP address of the DHCP server belonging to this named server group.<br>Use IPv6 addresses when configuring DHCPv6 support. You can configure a maximum of five IP addresses in each named server group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Required Privilege Level | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Related Documentation    | <ul style="list-style-type: none"><li>• <a href="#">dhcp-relay on page 132</a></li><li>• <a href="#">Extended DHCP Relay Agent Overview on page 4</a></li><li>• <a href="#">Configuring Server Groups on page 66</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## server-response-time (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>server-response-time seconds;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options <a href="#">dhcp-relay</a>],</p> <p>[edit forwarding-options dhcp-relay <a href="#">dhcpv6</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]</p> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 13.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | Configure the timeframe during which the router monitors DHCP server responsiveness within the routing instance. The router generates a system log message when the DHCP server does not respond to relayed packets during the specified timeframe.                                                                                                                                                                                                                                                                    |
| <b>Options</b>                  | <p><b>seconds</b>—Number of seconds the DHCP server is monitored.</p> <p><b>Range:</b> 30 through 4,294,967,295 seconds</p> <p><b>Default:</b> 0 (no limit)</p>                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Monitoring DHCP Server Responsiveness on page 75</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |

## service-profile (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>service-profile <i>dynamic-profile-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay],<br/> [edit forwarding-options dhcp-relay <b>dhcpv6</b>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b> ...],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i><br/> forwarding-options <b>dhcp-relay</b> ...],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</p>                                                                                                                          |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 11.2.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.<br/> Support at the [edit ... <b>dhcpv6</b> ...] hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <p>Specify the default subscriber service (or the default DHCP client management service), which is activated when the subscriber (or client) logs in and no other service is activated by a RADIUS server or a provisioning server.</p> <ul style="list-style-type: none"> <li>To specify the default service for all DHCP relay agent clients, include the <b>service-profile</b> statement at the [edit forwarding-options dhcp relay] hierarchy level.</li> <li>To specify the default service for a named group of interfaces, include the <b>service-profile</b> statement at the [edit forwarding-options dhcp relay group <i>group-name</i>] hierarchy level.</li> <li>To specify the default service for a particular interface within a named group of interfaces, include the <b>service-profile</b> statement at the [edit forwarding-options dhcp relay group <i>group-name</i> interface <i>interface-name</i>] hierarchy level.</li> </ul> |
| <b>Options</b>                  | <i>dynamic-profile-name</i> —Name of the dynamic profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">dhcp-relay on page 132</a></li> <li><a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 67</a></li> <li><a href="#">Grouping Interfaces with Common DHCP Configurations on page 35</a></li> <li><a href="#">Default Subscriber Service Overview on page 12</a></li> <li><a href="#">Configuring a Default Subscriber Service on page 35</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## session-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>session-mode (automatic   multihop   singlehop);</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay liveness-detection], [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Configure the session mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <p><b>automatic</b>—Configure single-hop BFD sessions if the peer is directly connected to the router interface and multihop BFD sessions if the peer is not directly connected to the router interface.</p> <p><b>multihop</b>—Configure multihop BFD sessions.</p> <p><b>single-hop</b>—Configure single hop BFD sessions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Group Liveness Detection for DHCP Local Server Clients</i></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## starts-with (DHCP Relay Agent Option)

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|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                   | <pre>starts-with (ascii <i>ascii-string</i>   hexadecimal <i>hexadecimal-string</i>) {<br/>    drop;<br/>    forward-only;<br/>    local-server-group <i>local-server-group</i>;<br/>    relay-server-group <i>relay-server-group</i>;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Hierarchy Level          | <pre>[edit forwarding-options dhcp-relay <i>relay-option</i>],<br/>[edit forwarding-options dhcp-relay dhcpv6 <i>relay-option</i>],<br/>[edit forwarding-options dhcp-relay group <i>group-name</i> <i>relay-option</i>],<br/>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>relay-option</i>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i><br/>    forwarding-options dhcp-relay ...],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</pre>                                                                                                                                                                                                                                                                                                                                                |
| Release Information      | Statement introduced in Junos OS Release 12.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description              | <p>Configure a partial match criteria used with the DHCP relay agent selective processing feature. DHCP relay agent compares the configured partial match string with the option-specific string received in DHCP client packets. If there is an partial left-to-right match, DHCP performs the action you define for the match criteria.</p> <p>The option-specific string in the DHCP client packets can contain a superset of the specified ASCII or hexadecimal match string, provided that the leftmost characters of the option-specific string entirely match the characters in the configured match string.</p> <p>You can configure an unlimited number of match strings. If you have multiple partial match configurations, the longest match rule applies. For example, DHCP relay agent matches the string “test123” before it matches the string “test”. Match strings do not support wildcard attributes.</p> <p>The <b>local-server-group</b> option is not supported for DHCPv6 relay agent.</p> |
| Options                  | <p><b><i>ascii-string</i></b>—ASCII string of 1 through 255 alphanumeric characters.</p> <p><b><i>hexadecimal-string</i></b>—Hexadecimal string of 1 through 255 hexadecimal characters (0 through 9, a through f, A through F).</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"><li>• <a href="#">Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## subscriber-management (Subscriber Management)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> subscriber-management {   enforce-strict-scale-limit-license;   gres-route-flush-delay;   maintain-subscriber {     interface-delete;   }   traceoptions {     file <i>filename</i> &lt;files <i>number</i>&gt; &lt;match <i>regular-expression</i> &gt; &lt;size <i>maximum-file-size</i>&gt;       &lt;world-readable   no-world-readable&gt;;     flag <i>flag</i>;   } } </pre>                                                                                       |
| <b>Hierarchy Level</b>          | [edit system services]                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | <p>Configure global services for subscriber management, such as maintaining subscribers and tracing operations.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | <p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring the Router to Strictly Enforce the Subscriber Scaling License</i></li> <li>• <i>Delaying Removal of Access Routes and Access-Internal Routes After Graceful Routing Engine Switchover</i></li> <li>• <a href="#">Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events on page 47</a></li> <li>• <i>Tracing Subscriber Management Database Operations for Subscriber Access</i></li> </ul> |


## tag (Access)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>tag route-tag;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | <code>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access <i>route prefix</i>],</code><br><code>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access <i>route prefix</i>],</code><br><code>[edit dynamic-profiles <i>profile-name</i> routing-options access <i>route prefix</i>]</code>                                                                                                                                                                                     |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 10.2.<br>Support at the <code>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options access route <i>prefix</i>]</code> and <code>[edit dynamic-profiles <i>profile-name</i> routing-instances \$junos-routing-instance routing-options rib <i>routing-table-name</i> access route <i>prefix</i>]</code> hierarchy levels introduced in Junos OS Release 10.1.                                                                                                                                                                      |
| <b>Description</b>              | Dynamically configure the tag for an access route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <b><i>route-tag</i></b> —Either the specific tag you want to assign to the access route or either of the following tag variables: <ul style="list-style-type: none"><li>• <b><i>\$junos-framed-route-tag</i></b>—Tag assigned to an IPv4 access route; the variable is dynamically replaced with the preference value (Subattribute 6) from the RADIUS Framed-Route attribute [22].</li><li>• <b><i>\$junos-framed-route-ipv6-tag</i></b>—Tag assigned to an IPv6 access route; the variable is dynamically replaced with the preference value (Subattribute 6) from the RADIUS Framed-IPv6-Route attribute [99].</li></ul> |
| <b>Required Privilege Level</b> | <code>routing</code> —To view this statement in the configuration.<br><code>routing-control</code> —To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Dynamic Access Routes for Subscriber Management</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |




## threshold (detection-time)

|                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                            | <code>threshold <i>milliseconds</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                   | <p>[edit system services dhcp-local-server liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                                               | <p>Statement introduced in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>                                                                                                                                                                                                                                       | Specify the threshold for the adaptation of the detection time. When the BFD session detection time adapts to a value equal to or greater than the threshold, a single trap and a single system log message are sent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <div>  <p><b>NOTE:</b> The threshold time must be greater than or equal to the <code>minimum-interval</code> or the <code>minimum-receive-interval</code>.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                                                                                                                                                                                                                                           | <p><i>milliseconds</i>— Value for the detection time adaptation threshold.</p> <p><b>Range:</b> 1 through 255,000</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                          | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## threshold (transmit-interval)

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|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                           | <code>threshold <i>milliseconds</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                  | <code>[edit system services dhcp-local-server liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],</code><br><code>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>]</code> |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                              | Statement introduced in Junos OS Release 12.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                      | Specify the threshold for detecting the adaptation of the transmit interval. When the BFD session transmit interval adapts to a value greater than the threshold, a single trap and a single system message are sent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                          | <i>milliseconds</i> — Threshold value.<br><b>Range:</b> 0 through 4,294,967,295 ( $2^{32} - 1$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <hr/> <div> <b>NOTE:</b> The threshold value specified in the <code>threshold</code> statement must be greater than the value specified in the <code>minimum-interval</code> statement for the <code>transmit-interval</code> statement.</div> <hr/> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                         | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## transmit-interval


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>transmit-interval {     threshold milliseconds;     minimum-interval milliseconds; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],<br/>         [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/>         [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>], [edit forwarding-options<br/>         dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],<br/>         [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/>         [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method<br/> <a href="#">bfd</a>],<br/>         [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],<br/>         [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method<br/> <a href="#">bfd</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.<br/>         Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | <p>Configure the Bidirectional Forwarding Detection (BFD) transmit interval.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.<br/>         routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Group Liveness Detection for DHCP Local Server Clients</i></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## trust-option-82

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | trust-option-82;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],<br/>[edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> interface <i>interface-name</i> <a href="#">overrides</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | Enable processing of DHCP client packets that have a gateway IP address (giaddr) of 0 (zero) and contain option 82 information. By default, the DHCP relay agent treats such packets as if they originated at an untrusted source, and drops them without further processing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Trusting Option 82 Information on page 41</a></li><li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 38</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## use-interface-description

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>use-interface-description (logical   device);</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit forwarding-options dhcp-relay relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)],</p> <p>[edit logical-systems <i>logical-system-name</i> ... forwarding-options dhcp-relay <b>dhcpv6</b> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit logical-systems <i>logical-system-name</i> ... forwarding-options dhcp-relay ... relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> (<b>relay-agent-interface-id</b>   <b>relay-agent-remote-id</b>)],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ... relay-option-82 (<b>circuit-id</b>   <b>remote-id</b>)]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.6.</p> <p>Support at the [edit ... <b>dhcpv6</b>] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p> <p>Support at the [edit ... <b>relay-agent-remote-id</b>] and [edit ... <b>remote-id</b>] hierarchy levels introduced in Junos OS Release 14.1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <p>Use the textual interface description instead of the interface identifier in the DHCP base option 82 Agent Circuit ID (suboption 1) or Agent Remote ID (suboption 2) information, or to the DHCPv6 option 18 (Relay Agent Interface-ID) or option 37 (Relay Agent Remote-ID) information in DHCP packets that DHCP relay agent sends to a DHCP server.</p> <p>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 <b>description</b> statement at the [edit <b>interfaces</b> <i>interface-name</i>] hierarchy level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                 | <p> <b>NOTE:</b> 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>                  | <p><b>logical</b>—Use the textual description that is configured for the logical interface.</p> <p><b>device</b>—Use the textual description that is configured for the device interface.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p><b>interface</b>—To view this statement in the configuration.</p> <p><b>interface-control</b>—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

- Related Documentation**
- [Including a Textual Description in DHCP Options on page 63](#)
  - [Using DHCP Relay Agent Option 82 Information on page 60](#)
  - [Configuring DHCPv6 Relay Agent Options on page 69](#)

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## use-option-82

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>use-option-82;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | <code>[edit forwarding-options dhcp-relay <b>dhcpv6</b> relay-agent-interface-id],</code><br><code>[edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> relay-agent-interface-id],</code><br><code>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> ...</code><br><code>    <b>relay-agent-interface-id</b>],</code><br><code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code><br><code>    forwarding-options dhcp-relay <b>dhcpv6</b> ... <b>relay-agent-interface-id</b>],</code><br><code>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> ...</code><br><code>    <b>relay-agent-interface-id</b>]</code> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 13.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | Specify that, in dual-stack environments, the DHCPv6 relay agent uses an Interface-ID option (option 18) that is based on the DHCPv4 relay agent information option (option 82). When you include this statement, the DHCPv6 relay agent checks for the option 82 Agent Circuit ID suboption (suboption 1) and inserts it into the outgoing RELAY-FORW message.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Using DHCP Relay Agent Option 82 Information on page 60</a></li><li>• <a href="#">Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets on page 70</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## use-primary (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>use-primary <i>primary-profile-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <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 <b>dynamic-profile</b> <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 <b>dynamic-profile</b> <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 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <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 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.3.</p> <p>Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <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 <b>[edit ... dhcpv6]</b> hierarchy levels to configure DHCPv6 support.</p> <p>EX Series switches do not support DHCPv6.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <b><i>primary-profile-name</i></b> —Name of the dynamic profile to configure as the primary dynamic profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b> | <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 or DHCP Client Interfaces on page 67](#)



## user-prefix (DHCP Relay Agent)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>user-prefix <i>user-prefix-string</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [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> authentication <a href="#">username-include</a>],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],<br/> [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.1.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.<br/> Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | Specify the user prefix that is concatenated with the username during the subscriber authentication or client authentication process. Use the statement at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels to configure DHCPv6 support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <i>user-prefix-string</i> —User prefix string.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.<br/> interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## username-include (DHCP Relay Agent)

---

**Syntax**    username-include {  
              circuit-type;  
              client-id;  
              delimiter *delimiter-character*;  
              domain-name *domain-name-string*;  
              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 *user-prefix-string*;  
              }

**Hierarchy Level**    [edit forwarding-options dhcp-relay [authentication](#)],  
                          [edit forwarding-options dhcp-relay dhcpv6 [authentication](#)],  
                          [edit forwarding-options dhcp-relay dhcpv6 group *group-name* [authentication](#)],  
                          [edit forwarding-options dhcp-relay group *group-name* [authentication](#)],  
                          [edit logical-systems *logical-system-name* forwarding-options dhcp-relay ...],  
                          [edit logical-systems *logical-system-name* routing-instances *routing-instance-name*  
                              forwarding-options dhcp-relay ...],  
                          [edit routing-instances *routing-instance-name* forwarding-options dhcp-relay ...]

**Release Information**    Statement introduced in Junos OS Release 9.1.  
                              Statement introduced in Junos OS Release 12.3R2 for EX Series switches.  
                              Support at the [\[edit ... dhcpv6\]](#) hierarchy levels introduced in Junos OS Release 11.4.

**Description**    Configure the username that the router (or switch) passes to the external AAA server. You must include at least one of the optional statements for the username to be valid. If you do not configure a username, the router (or switch) accesses the local authentication service only and does not use external authentication services, such as RADIUS. Use the statement at the [\[edit...dhcpv6\]](#) hierarchy levels to configure DHCPv6 support.

The following statements are not supported in the DHCPv6 hierarchy levels:

- mac-address
- option-60
- option-82

The following statements are supported in the DHCPv6 hierarchy levels only:

- relay-agent-interface-id
- relay-agent-remote-id
- relay-agent-subscriber-id

The remaining statements are explained separately.

|                                 |                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Creating Unique Usernames for DHCP Clients</a></li> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 30</a></li> </ul> |

## version (BFD)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | version (0   1   automatic);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> protocols ldp oam bfd-liveness-detection],<br/>         [edit logical-systems <i>logical-system-name</i> protocols ldp oam fec address bfd-liveness-detection],<br/>         [edit system services dhcp-local-server liveness-detection method <b>bfd</b>],<br/>         [edit system services dhcp-local-server dhcpv6 liveness-detection method <b>bfd</b>],<br/>         [edit forwarding-options dhcp-relay liveness-detection method <b>bfd</b>],<br/>         [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <b>bfd</b>],<br/>         [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <b>bfd</b>],<br/>         [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <b>bfd</b>],<br/>         [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <b>bfd</b>],<br/>         [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <b>bfd</b>],<br/>         [edit protocols ldp oam bfd-liveness-detection],<br/>         [edit protocols ldp oam fec address bfd-liveness-detection]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Configure the BFD protocol version to detect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Options</b>                  | <p><b>0</b>—Use BFD protocol version 0.</p> <p><b>1</b>—Use BFD protocol version 1.</p> <p><b>automatic</b>—Autodetect the BFD protocol version.</p> <p><b>Default:</b> automatic</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients on page 97</a></li> <li>• <a href="#">Configuring BFD for LDP LSPs</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |



## PART 3

# Administration

- [Verifying and Managing Configurations on page 223](#)
- [Monitoring Commands on page 227](#)



## CHAPTER 5

# Verifying and Managing Configurations

- [Clearing DHCP Bindings for Subscriber Access on page 223](#)
- [Displaying a Count of DHCP Packets That Are Dropped or Forwarded During Selective Processing That Is Based on DHCP Option Strings on page 225](#)
- [Verifying and Managing DHCP Relay Configuration on page 225](#)
- [Verifying and Managing DHCPv6 Relay Configuration on page 225](#)
- [Verifying and Managing the DHCP Maintain Subscribers Feature on page 226](#)

### Clearing DHCP Bindings for Subscriber Access

---

This topic provides the procedure you use to display current DHCP bindings, clear selected bindings, and verify that the specified bindings are successfully cleared.

Subscriber management enables you to clear DHCP bindings at several different levels for DHCP local server and DHCP relay agent. For example, you can clear the DHCP bindings on all interfaces, a group of interfaces, or a specific interface. You can also clear DHCP bindings based on IP address, MAC address, session-ID, DHCPv6 prefix, DHCPv6 Client ID, FPC, PIC, port, VLAN, or stacked VLAN (S-VLAN).

This topic includes examples to show several variations of the clear DHCP binding feature. The examples use DHCP local server commands; however, the procedure and commands are similar for DHCP relay agent, DHCPv6 local server, and DHCPv6 relay agent.

To clear bindings and verify the results for a specific IP address:

1. Display current bindings. Issue the appropriate variation of the **show dhcp server binding** command.

```
user@host> show dhcp server binding
2 clients, (2 bound, 0 selecting, 0 renewing, 0 rebinding)

IP address Hardware address Type Lease expires at
192.168.32.1 90:00:00:01:00:01 active 2011-10-17 11:38:47 PST
192.168.32.3 90:00:00:02:00:01 active 2011-00-17 11:38:41 PST
```

2. Clear the binding you want to remove.

```
user@host> clear dhcp server binding 192.168.32.1
```

3. Verify that the binding has been cleared.

```
user@host> show dhcp server binding
1 clients, (1 bound, 0 selecting, 0 renewing, 0 rebinding)

IP address Hardware address Type Lease expires at
192.168.32.3 90:00:00:02:00:01 active 2011-00-17 11:38:41 PST
```

The following examples show variations of the clear DHCP binding feature. The examples use the DHCP local server version of the commands.



**NOTE:** IP demux interfaces are not supported by the show and clear DHCP bindings commands for DHCP local server and DHCP relay agent.

To clear all bindings:

```
user@host> clear dhcp server binding all
```

To clear bindings on a specific interface:

```
user@host> clear dhcp server binding interface fe-0/0/2
```

To clear all bindings over an interface. This example uses the wildcard option.

```
user@host> clear dhcp server binding ge-1/0/0. *
```

To clear bindings on top of a specific VLAN. This example clears all bindings on top of VLAN 100.

```
user@host> clear dhcp server binding ge-1/0/0:100
```

To clear bindings for a specific S-VLAN. This example clears bindings on S-VLAN 100-200.

```
user@host> clear dhcp server binding ge-1/0/0:100-200
```

To clear all bindings on top of all demux VLANs:

```
user@host> clear dhcp server binding demux0
```

To clear all bindings on top of an underlying interface. This example clears the bindings on all demux VLANs on top of interface ae0:

```
user@host> clear dhcp server binding ae0
```

To clear PPP bindings. This example uses the wildcard feature and clears the PPP bindings over interface pp0.100 and pp0.200.

```
user@host> clear dhcp server binding pp0.*
```

To clear all bindings on an FPC. This example uses the wildcard feature and clears all DHCP bindings on FPC 1.

```
user@host> clear dhcp server binding ge-1/*
```

To clear all bindings on a PIC. This example uses the wildcard feature and clears all DHCP bindings on FPC 1, PIC 0.

```
user@host> clear dhcp server binding ge-1/0/*
```



To clear all bindings on a port. This example uses the wildcard feature and clears all DHCP bindings on FPC 1, PIC 0, port 0.

```
user@host> clear dhcp server binding ge-1/0/0.*
```

**Related  
Documentation**

- [DHCP Auto Logout Overview on page 21](#)
- [Automatically Logging Out DHCP Clients on page 45](#)

## Displaying a Count of DHCP Packets That Are Dropped or Forwarded During Selective Processing That Is Based on DHCP Option Strings

To display the number of DHCP or DHCPv6 client packets that are dropped or forwarded during selective processing, use the following operational commands:

- [show dhcp relay statistics](#)
- [show dhcpv6 relay statistics](#)

**Related  
Documentation**

- [DHCP Options and Selective Traffic Processing Overview on page 19](#)
- [Using DHCP Option Information to Selectively Process DHCP Client Traffic on page 65](#)
- [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 79](#)

## Verifying and Managing DHCP Relay Configuration

**Purpose** View or clear address bindings or statistics for extended DHCP relay agent clients:

**Action**

- To display the address bindings for extended DHCP relay agent clients:  

```
user@host> show dhcp relay binding routing-instance customer routing instance
```
- To display extended DHCP relay agent statistics:  

```
user@host> show dhcp relay statistics routing-instance customer routing instance
```
- To clear the binding state of DHCP relay agent clients:  

```
user@host> clear dhcp relay binding routing-instance customer routing instance
```
- To clear all extended DHCP relay agent statistics:  

```
user@host> clear dhcp relay statistics routing-instance customer routing instance
```

**Related  
Documentation**

- [CLI Explorer](#)

## Verifying and Managing DHCPv6 Relay Configuration

**Purpose** View or clear address bindings or statistics for extended DHCPv6 relay agent clients:

**Action**

- To display the address bindings for extended DHCPv6 relay agent clients:

user@host> [show dhcpv6 relay binding](#)

- To display extended DHCPv6 relay agent statistics:

user@host> [show dhcpv6 relay statistics](#)

- To clear the binding state of DHCPv6 relay agent clients:

user@host> [clear dhcpv6 relay binding](#)

- To clear all extended DHCPv6 relay agent statistics:

user@host> [clear dhcpv6 relay statistics](#)

**Related Documentation**

- [CLI Explorer](#)

---

## Verifying and Managing the DHCP Maintain Subscribers Feature

---

**Purpose** Display information related to the DHCP maintain-subscribers feature and explicitly log out maintained clients.

**Action**

- To display DHCP local server binding information for the DHCP maintain subscribers feature:

user@host>[show dhcp server binding detail](#)

- To display DHCPv6 local server binding information for the DHCP maintain subscribers feature:

user@host>[show dhcpv6 server binding detail](#)

- To display DHCP relay binding information for the DHCP maintain subscribers feature:

user@host>[show dhcp relay binding detail](#)

- To explicitly log out a DHCP local server subscriber when the maintain subscriber feature is enabled:

user@host>[clear dhcp server binding \*binding-type\*](#)

- To explicitly log out a DHCPv6 local server subscriber when the maintain subscriber feature is enabled:

user@host>[clear dhcpv6 server binding \*binding-type\*](#)

- To explicitly log out a DHCP relay subscriber when the maintain subscriber feature is enabled:

user@host>[clear dhcp relay binding \*binding-type\*](#)

**Related Documentation**

- [Subscriber Binding Retention During Interface Delete Events on page 23](#)
- [Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events on page 47](#)

## CHAPTER 6

# Monitoring Commands

- `clear dhcp relay binding`
- `clear dhcp relay statistics`
- `clear dhcpv6 relay binding`
- `clear dhcpv6 relay statistics`
- `show dhcp relay binding`
- `show dhcp relay statistics`
- `show dhcpv6 relay binding`
- `show dhcpv6 relay statistics`
- `show route extensive`
- `show route protocol`

## clear dhcp relay binding

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <b>clear dhcp relay binding</b><br><b>&lt;address&gt;</b><br><b>&lt;all&gt;</b><br><b>&lt;interface <i>interface-name</i>&gt;</b><br><b>&lt;interfaces-vlan&gt;</b><br><b>&lt;interfaces-wildcard&gt;</b><br><b>&lt;logical-system <i>logical-system-name</i>&gt;</b><br><b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Command introduced in Junos OS Release 8.3.<br>Options <b>all</b> and <b>interface</b> added in Junos OS Release 8.4.<br>Options <b>interfaces-vlan</b> and <b>interfaces-wildcard</b> added in Junos OS Release 12.1.<br>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Options</b>                  | <p><b>address</b>—(Optional) Clear the binding state for the DHCP client, using one of the following entries:</p> <ul style="list-style-type: none"><li>• <b>ip-address</b>—The specified IP address.</li><li>• <b>mac-address</b>—The specified MAC address.</li><li>• <b>session-id</b>—The specified session ID.</li></ul> <p><b>all</b>—(Optional) Clear the binding state for all DHCP clients.</p> <p><b>interface <i>interface-name</i></b>—(Optional) Clear the binding state for DHCP clients on the specified interface.</p> <p><b>interfaces-vlan</b>—(Optional) Clear the binding state on the interface VLAN ID and S-VLAN ID.</p> <p><b>interfaces-wildcard</b>—(Optional) The set of interfaces on which to clear bindings. This option supports the use of the wildcard character (*).</p> <p><b>logical-system <i>logical-system-name</i></b>—(Optional) Clear the binding state for DHCP clients on the specified logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Clear the binding state for DHCP clients on the specified routing instance.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Clearing DHCP Bindings for Subscriber Access on page 223</a></li><li>• <a href="#">show dhcp relay binding on page 238</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**List of Sample Output** [clear dhcp relay binding on page 229](#)  
[clear dhcp relay binding all on page 229](#)  
[clear dhcp relay binding interface on page 229](#)  
[clear dhcp relay binding <interfaces-vlan> on page 229](#)  
[clear dhcp relay binding <interfaces-wildcard> on page 229](#)

**Output Fields** See [show dhcp relay binding](#) for an explanation of output fields.

## Sample Output

### clear dhcp relay binding

The following sample output displays the address bindings in the DHCP client table before and after the **clear dhcp relay binding** command is issued.

```
user@host> show dhcp relay binding
IP address Hardware address Type Lease expires at
100.20.32.1 90:00:00:01:00:01 active 2007-02-08 16:41:17 EST
192.168.14.8 90:00:01:01:02:01 active 2007-02-10 10:01:06 EST
```

```
user@host> clear dhcp relay binding 100.20.32.1
```

```
user@host> show dhcp relay binding
IP address Hardware address Type Lease expires at
192.168.14.8 90:00:01:01:02:01 active 2007-02-10 10:01:06 EST
```

### clear dhcp relay binding all

The following command clears all DHCP relay agent bindings:

```
user@host> clear dhcp relay binding all
```

### clear dhcp relay binding interface

The following command clears DHCP relay agent bindings on a specific interface:

```
user@host> clear dhcp relay binding interface fe-0/0/3
```

### clear dhcp relay binding <interfaces-vlan>

The following command uses the *interfaces-vlan* option to clear all DHCP relay agent bindings on top of the underlying interface **ae0**, which clears DHCP bindings on all demux VLANs on top of **ae0**:

```
user@host> clear dhcp relay binding interface ae0
```

### clear dhcp relay binding <interfaces-wildcard>

The following command uses the *interfaces-wildcard* option to clear all DHCP relay agent bindings over a specific interface:

```
user@host> clear dhcp relay binding ge-1/0/0.*
```

## clear dhcp relay statistics

---

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                   | <code>clear dhcp relay statistics</code><br><code>&lt;logical-system <i>logical-system-name</i>&gt;</code><br><code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>                                                                                                                                                                                                                                                                                                                 |
| Syntax                   | Syntax for EX Series switches:<br><br><code>show dhcp relay statistics</code><br><code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>                                                                                                                                                                                                                                                                                                                                              |
| Release Information      | Command introduced in Junos OS Release 8.3.<br>Statement introduced in Junos OS Release 12.1 for EX Series switches.<br>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.                                                                                                                                                                                                                                                                                |
| 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.<br><br><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"><li>• <a href="#">show dhcp relay statistics on page 243</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                         |
| List of Sample Output    | <a href="#">clear dhcp relay statistics on page 231</a>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Output Fields            | <a href="#">Table 8 on page 231</a> lists the output fields for the <code>clear dhcp relay statistics</code> command.                                                                                                                                                                                                                                                                                                                                                                            |

Table 8: clear dhcp relay statistics Output Fields

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

## 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 1
 Lease Time Violated 1

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 dhcpv6 relay binding

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>clear dhcpv6 relay binding &lt;address&gt; &lt;all&gt; &lt;interface interface-name&gt; &lt;interfaces-vlan&gt; &lt;interfaces-wildcard&gt; &lt;logical-system logical-system-name&gt; &lt;routing-instance routing-instance-name&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 11.4.</p> <p>Command introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Options <i>interfaces-vlan</i> and <i>interfaces-wildcard</i> added in Junos OS Release 12.1.</p> <p>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | Clear the binding state of Dynamic Host Configuration Protocol for IPv6 (DHCPv6) clients from the client table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                  | <p><b>address</b>—(Optional) Clear the binding state for the DHCPv6 client, using one of the following entries:</p> <ul style="list-style-type: none"> <li>• <i>CID</i>—The specified Client ID (CID).</li> <li>• <i>ipv6-prefix</i>—The specified IPv6 prefix.</li> <li>• <i>session-id</i>—The specified session ID.</li> </ul> <p><b>all</b>—(Optional) Clear the binding state for all DHCPv6 clients.</p> <p><b>interfaces-vlan</b>—(Optional) Clear the binding state on the interface VLAN ID and S-VLAN ID.</p> <p><b>interfaces-wildcard</b>—(Optional) The set of interfaces on which to clear bindings. This option supports the use of the wildcard character (*).</p> <p><b>interface interface-name</b>—(Optional) Clear the binding state for DHCPv6 clients on the specified interface.</p> <p><b>logical-system logical-system-name</b>—(Optional) Clear the binding state for DHCPv6 clients on the specified logical system.</p> <p><b>routing-instance routing-instance-name</b>—(Optional) Clear the binding state for DHCPv6 clients on the specified routing instance.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Clearing DHCP Bindings for Subscriber Access on page 223</a></li> <li>• <a href="#">show dhcpv6 relay binding on page 246</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

- List of Sample Output**
- [clear dhcpv6 relay binding on page 234](#)
  - [clear dhcpv6 relay binding <prefix> on page 234](#)
  - [clear dhcpv6 relay binding all on page 234](#)
  - [clear dhc6p relay binding interface on page 234](#)
  - [clear dhcpv6 relay binding <interfaces-vlan> on page 235](#)
  - [clear dhcpv6 relay binding <interfaces-wildcard> on page 235](#)

**Output Fields** See [show dhcpv6 relay binding](#) for an explanation of output fields.

## Sample Output

### clear dhcpv6 relay binding

The following sample output displays the DHCPv6 bindings before and after the **clear dhcpv6 relay binding** command is issued.

```
user@host> show dhcpv6 relay binding
```

| Prefix                                  | Session Id | Expires | State | Interface  | Client DUID |
|-----------------------------------------|------------|---------|-------|------------|-------------|
| 2001:bd8:3c4d:15::/64                   | 1          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01 |            |         |       |            |             |
| 2001:bd8:3c4d:16::/64                   | 2          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:02 |            |         |       |            |             |
| 2001:bd8:3c4d:17::/64                   | 3          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:03 |            |         |       |            |             |
| 2001:bd8:3c4d:18::/64                   | 4          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:04 |            |         |       |            |             |
| 2001:bd8:3c4d:19::/64                   | 5          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:05 |            |         |       |            |             |
| 2001:bd8:3c4d:20::/64                   | 6          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:06 |            |         |       |            |             |

### clear dhcpv6 relay binding <prefix>

```
user@host> clear dhcpv6 relay binding 2001:bd8:3c4d:15::/64
```

```
user@host> show dhcpv6 relay binding
```

| Prefix                                  | Session Id | Expires | State | Interface  | Client DUID |
|-----------------------------------------|------------|---------|-------|------------|-------------|
| 2001:bd8:3c4d:16::/64                   | 2          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:02 |            |         |       |            |             |
| 2001:bd8:3c4d:17::/64                   | 3          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:03 |            |         |       |            |             |
| 2001:bd8:3c4d:18::/64                   | 4          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:04 |            |         |       |            |             |
| 2001:bd8:3c4d:19::/64                   | 5          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:05 |            |         |       |            |             |
| 2001:bd8:3c4d:20::/64                   | 6          | 83720   | BOUND | ge-1/0/0.0 |             |
| LL_TIME0x1-0x4bfa26af-00:10:94:00:00:06 |            |         |       |            |             |

### clear dhcpv6 relay binding all

The following command clears all DHCP relay agent bindings:

```
user@host> clear dhcpv6 relay binding all
```

### clear dhc6p relay binding interface

The following command clears DHCPv6 relay agent bindings on a specific interface:

```
user@host> clear dhcpv6 relay binding interface fe-0/0/2
```

#### clear dhcpv6 relay binding <interfaces-vlan>

The following command uses the *interfaces-vlan* option to clear all DHCPv6 relay agent bindings on top of the underlying interface **ae0**, which clears DHCPv6 bindings on all demux VLANs on top of **ae0**:

```
user@host> clear dhcpv6 relay binding interface ae0
```

#### clear dhcpv6 relay binding <interfaces-wildcard>

The following command uses the *interfaces-wildcard* option to clear all DHCPv6 relay agent bindings over a specific interface:

```
user@host> clear dhcpv6 relay binding ge-1/0/0.*
```

## clear dhcpv6 relay statistics

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <b>clear dhcpv6 relay statistics</b><br><b>&lt;logical-system <i>logical-system-name</i>&gt;</b><br><b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b>                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>      | Command introduced in Junos OS Release 11.4.<br>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | Clear all Dynamic Host Configuration Protocol for IPv6 (DHCPv6) relay statistics.                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                  | <b>logical-system <i>logical-system-name</i></b> —(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.<br><br><b>routing-instance <i>routing-instance-name</i></b> —(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. |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>List of Sample Output</b>    | <a href="#">clear dhcpv6 relay statistics on page 236</a>                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Output Fields</b>            | See <a href="#">show dhcpv6 relay statistics</a> for an explanation of output fields.                                                                                                                                                                                                                                                                                                                                                                              |

## Sample Output

### clear dhcpv6 relay statistics

The following sample output displays the DHCPv6 relay statistics before and after the **clear dhcpv6 relay statistics** command is issued.

```
user@host> show dhcpv6 relay statistics
DHCPv6 Packets dropped:
 Total 0
 Lease Time Violated 1

Messages received:
 DHCPV6_DECLINE 0
 DHCPV6_SOLICIT 10
 DHCPV6_INFORMATION_REQUEST 0
 DHCPV6_RELEASE 0
 DHCPV6_REQUEST 10
 DHCPV6_CONFIRM 0
 DHCPV6_RENEW 0
 DHCPV6_REBIND 0
 DHCPV6_RELAY_REPL 0

Messages sent:
 DHCPV6_ADVERTISE 0
 DHCPV6_REPLY 0
 DHCPV6_RECONFIGURE 0
 DHCPV6_RELAY_FORW 0
```

```
user@host> clear dhcpv6 relay statistics
user@host> show dhcpv6 relay statistics
DHCPv6 Packets dropped:
 Total 0

Messages received:
 DHCPV6_DECLINE 0
 DHCPV6_SOLICIT 0
 DHCPV6_INFORMATION_REQUEST 0
 DHCPV6_RELEASE 0
 DHCPV6_REQUEST 0
 DHCPV6_CONFIRM 0
 DHCPV6_RENEW 0
 DHCPV6_REBIND 0
 DHCPV6_RELAY_REPL 0

Messages sent:
 DHCPV6_ADVERTISE 0
 DHCPV6_REPLY 0
 DHCPV6_RECONFIGURE 0
 DHCPV6_RELAY_FORW 0
```

## show dhcp relay binding

---

**Syntax**    **show dhcp relay binding**  
              <address>  
              <brief>  
              <detail>  
              <interface *interface-name*>  
              <interfaces-vlan>  
              <interfaces-wildcard>  
              <ip-address | mac-address>  
              <logical-system *logical-system-name*>  
              <routing-instance *routing-instance-name*>  
              <summary>

**Release Information**    Command introduced in Junos OS Release 8.3.  
                              Options **interface** and **mac-address** added in Junos OS Release 8.4.  
                              Options **interfaces-vlan** and **interfaces-wildcard** added in Junos OS Release 12.1.  
                              Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.

**Description**    Display the address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.

**Options**    **address**—(Optional) Display DHCP binding information for a specific client identified by one of the following entries:

- *ip-address*—The specified IP address.
- *mac-address*—The specified MAC address.
- *session-id*—The specified session ID.

**brief**—(Optional) Display brief information about the active client bindings. This is the default, and produces the same output as **show dhcp relay binding**.

**detail**—(Optional) Display detailed client binding information.

**interface *interface-name***—(Optional) Perform this operation on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.

**interfaces-vlan**—(Optional) Show the binding state information on the interface VLAN ID and S-VLAN ID.

**interfaces-wildcard**—(Optional) The set of interfaces on which to show binding state information. This option supports the use of the wildcard character (\*).

**logical-system *logical-system-name***—(Optional) Perform this operation on the specified logical system.

**routing-instance *routing-instance-name***—(Optional) Perform this operation on the specified routing instance.

**summary**—(Optional) Display a summary of DHCP client information.

**Required Privilege Level** view

**Related Documentation**

- [Clearing DHCP Bindings for Subscriber Access on page 223](#)
- [clear dhcp relay binding on page 228](#)

**List of Sample Output**

- [show dhcp relay binding on page 240](#)
- [show dhcp relay binding detail on page 241](#)
- [show dhcp relay binding interface on page 241](#)
- [show dhcp relay binding interface vlan-id on page 241](#)
- [show dhcp relay binding interface svlan-id on page 241](#)
- [show dhcp relay binding ip-address on page 242](#)
- [show dhcp relay binding mac-address on page 242](#)
- [show dhcp relay binding session-id on page 242](#)
- [show dhcp relay binding <interfaces-vlan> on page 242](#)
- [show dhcp relay binding <interfaces-wildcard> on page 242](#)
- [show dhcp relay binding summary on page 242](#)

**Output Fields** Table 9 on page 239 lists the output fields for the **show dhcp relay binding** command. Output fields are listed in the approximate order in which they appear.

**Table 9: show dhcp relay binding Output Fields**

| Field Name                                                                                                                                                                                     | Field Description                                                                                | Level of Output    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------|
| <i>number</i> clients, ( <i>number</i> init, <i>number</i> bound, <i>number</i> selecting, <i>number</i> requesting, <i>number</i> renewing, <i>number</i> rebinding, <i>number</i> releasing) | Summary counts of the total number of DHCP clients and the number of DHCP clients in each state. | <b>summary</b>     |
| IP address                                                                                                                                                                                     | IP address of the DHCP client.                                                                   | <b>briefdetail</b> |
| Session Id                                                                                                                                                                                     | Session ID of the subscriber session.                                                            | <b>briefdetail</b> |
| Generated Remote ID                                                                                                                                                                            | Remote ID generated by the Option 82 Agent Remote ID (suboption 1)                               | <b>detail</b>      |
| Hardware address                                                                                                                                                                               | Hardware address of the DHCP client.                                                             | <b>briefdetail</b> |
| Expires                                                                                                                                                                                        | Number of seconds in which the lease expires.                                                    | <b>briefdetail</b> |

Table 9: show dhcp relay binding Output Fields (*continued*)

| Field Name                       | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Level of Output    |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>State</b>                     | State of the DHCP relay address binding table on the DHCP client: <ul style="list-style-type: none"> <li>• <b>BOUND</b>—Client has an active IP address lease.</li> <li>• <b>INIT</b>—Initial state.</li> <li>• <b>REBINDING</b>—Client is broadcasting a request to renew the IP address lease.</li> <li>• <b>RELEASE</b>—Client is releasing the IP address lease.</li> <li>• <b>RENEWING</b>—Client is sending a request to renew the IP address lease.</li> <li>• <b>REQUESTING</b>—Client is requesting a DHCP server.</li> <li>• <b>SELECTING</b>—Client is receiving offers from DHCP servers.</li> </ul> | <b>briefdetail</b> |
| <b>Interface</b>                 | Incoming client interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | brief              |
| <b>Lease Expires</b>             | Date and time at which the client's IP address lease expires.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | detail             |
| <b>Lease Expires in</b>          | Number of seconds in which the lease expires.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | detail             |
| <b>Lease Start</b>               | Date and time at which the client's IP address lease started.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | detail             |
| <b>Lease time violated</b>       | Lease time violation has occurred.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | detail             |
| <b>Incoming Client Interface</b> | Client's incoming interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | detail             |
| <b>Server IP Address</b>         | IP address of the DHCP server.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | detail             |
| <b>Server Interface</b>          | Interface of the DHCP server.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | detail             |
| <b>Bootp Relay Address</b>       | IP address of BOOTP relay.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | detail             |
| <b>Type</b>                      | Type of DHCP packet processing performed on the router: <ul style="list-style-type: none"> <li>• <b>active</b>—Router actively processes and relays DHCP packets.</li> <li>• <b>passive</b>—Router passively snoops DHCP packets passing through the router.</li> </ul>                                                                                                                                                                                                                                                                                                                                          | All levels         |
| <b>Lease expires at</b>          | Date and time at which the client's IP address lease expires.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | All levels         |

## Sample Output

### show dhcp relay binding

```

user@host> show dhcp relay binding
IP address Session Id Hardware address Expires State Interface
100.20.32.11 41 00:10:94:00:00:01 86371 BOUND ge-1/0/0.0
100.20.32.12 42 00:10:94:00:00:02 86371 BOUND ge-1/0/0.0

```



|              |    |                   |       |       |            |
|--------------|----|-------------------|-------|-------|------------|
| 100.20.32.13 | 43 | 00:10:94:00:00:03 | 86371 | BOUND | ge-1/0/0.0 |
| 100.20.32.14 | 44 | 00:10:94:00:00:04 | 86371 | BOUND | ge-1/0/0.0 |
| 100.20.32.15 | 45 | 00:10:94:00:00:05 | 86371 | BOUND | ge-1/0/0.0 |

### show dhcp relay binding detail

```
user@host> show dhcp relay binding detail
```

```
Client IP Address: 100.20.32.11
 Hardware Address: 00:10:94:00:00:01
 State: BOUND(DHCP_RELAY_STATE_BOUND_ON_INTF_DELETE)
 Lease Expires: 2009-07-21 11:00:06 PDT
 Lease Expires in: 86361 seconds
 Lease Start: 2009-07-20 11:00:06 PDT
 Lease time violated: yes
 Last Packet Received: 2009-07-20 11:00:06 PDT
 Incoming Client Interface: ge-1/0/0.0
 Server Ip Address: 100.20.22.2
 Server Interface: none
 Bootp Relay Address: 100.20.32.2
 Session Id: 41
```

```
Client IP Address: 100.20.32.12
 Hardware Address: 00:10:94:00:00:02
 State: BOUND(DHCP_RELAY_STATE_BOUND_ON_INTF_DELETE)
 Lease Expires: 2009-07-21 11:00:06 PDT
 Lease Expires in: 86361 seconds
 Lease Start: 2009-07-20 11:00:06 PDT
 Last Packet Received: 2009-07-20 11:00:06 PDT
 Incoming Client Interface: ge-1/0/0.0
 Server Ip Address: 100.20.22.2
 Server Interface: none
 Bootp Relay Address: 100.20.32.2
 Session Id: 42
 Generated Remote ID: host:ge-1/0/0:100
```

### show dhcp relay binding interface

```
user@host> show dhcp relay binding interface fe-0/0/2
```

| IP address  | Hardware address  | Type   | Lease expires at        |
|-------------|-------------------|--------|-------------------------|
| 100.20.32.1 | 90:00:00:01:00:01 | active | 2007-03-27 15:06:20 EDT |

### show dhcp relay binding interface vlan-id

```
user@host> show dhcp relay binding interface ge-1/1/0:100
```

| IP address   | Session Id | Hardware address  | Expires | State | Interface    |
|--------------|------------|-------------------|---------|-------|--------------|
| 200.20.20.15 | 6          | 00:10:94:00:00:01 | 86124   | BOUND | ge-1/1/0:100 |

### show dhcp relay binding interface svlan-id

```
user@host> show dhcp relay binding interface ge-1/1/0:10-100
```

| IP address | Session Id | Hardware address | Expires | State | Interface |
|------------|------------|------------------|---------|-------|-----------|
|------------|------------|------------------|---------|-------|-----------|

|                 |   |                   |       |       |
|-----------------|---|-------------------|-------|-------|
| 200.20.20.16    | 7 | 00:10:94:00:00:02 | 86124 | BOUND |
| ge-1/1/0:10-100 |   |                   |       |       |

#### show dhcp relay binding ip-address

```
user@host> show dhcp relay binding 100.20.32.13
```

| IP address   | Session Id | Hardware address  | Expires | State | Interface  |
|--------------|------------|-------------------|---------|-------|------------|
| 100.20.32.13 | 43         | 00:10:94:00:00:03 | 86293   | BOUND | ge-1/0/0.0 |

#### show dhcp relay binding mac-address

```
user@host> show dhcp relay binding 00:10:94:00:00:05
```

| IP address   | Session Id | Hardware address  | Expires | State | Interface  |
|--------------|------------|-------------------|---------|-------|------------|
| 100.20.32.15 | 45         | 00:10:94:00:00:05 | 86279   | BOUND | ge-1/0/0.0 |

#### show dhcp relay binding session-id

```
user@host> show dhcp relay binding 41
```

| IP address   | Session Id | Hardware address  | Expires | State | Interface  |
|--------------|------------|-------------------|---------|-------|------------|
| 100.20.32.11 | 41         | 00:10:94:00:00:01 | 86305   | BOUND | ge-1/0/0.0 |

#### show dhcp relay binding <interfaces-vlan>

```
user@host> show dhcp relay binding ge-1/0/0:100-200
```

| IP address   | Session Id | Hardware address  | Expires | State | Interface           |
|--------------|------------|-------------------|---------|-------|---------------------|
| 192.168.0.17 | 42         | 00:10:94:00:00:02 | 86346   | BOUND | ge-1/0/0.1073741827 |
| 192.168.0.16 | 41         | 00:10:94:00:00:01 | 86346   | BOUND |                     |

#### show dhcp relay binding <interfaces-wildcard>

```
user@host> show dhcp relay binding ge-1/3/*
```

| IP address  | Session Id | Hardware address  | Expires | State | Interface    |
|-------------|------------|-------------------|---------|-------|--------------|
| 192.168.0.9 | 24         | 00:10:94:00:00:04 | 86361   | BOUND | ge-1/3/0.110 |
| 192.168.0.8 | 23         | 00:10:94:00:00:03 | 86361   | BOUND |              |
| 192.168.0.7 | 22         | 00:10:94:00:00:02 | 86361   | BOUND | ge-1/3/0.110 |

#### show dhcp relay binding summary

```
user@host> show dhcp relay binding summary
```

3 clients, (2 init, 1 bound, 0 selecting, 0 requesting, 0 renewing, 0 rebinding, 0 releasing)

## show dhcp relay statistics

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show dhcp relay statistics &lt;logical-system <i>logical-system-name</i>&gt; &lt;routing-instance <i>routing-instance-name</i>&gt;</pre>                                                                                                                                                                                                                                                                                                                                                 |
| <b>Syntax</b>                   | <p>Syntax for EX Series switches:</p> <pre>show dhcp relay statistics &lt;routing-instance <i>routing-instance-name</i>&gt;</pre>                                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 8.3.</p> <p>Command introduced in Junos OS Release 12.1 for EX Series switches.</p> <p>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.</p>                                                                                                                                                                                                                                                                |
| <b>Description</b>              | Display Dynamic Host Configuration Protocol (DHCP) relay statistics.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <p><b>logical-system <i>logical-system-name</i></b>—(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.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(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.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">clear dhcp relay statistics on page 230</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>List of Sample Output</b>    | <a href="#">show dhcp relay statistics on page 245</a>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Output Fields</b>            | <p><a href="#">Table 10 on page 244</a> lists the output fields for the <b>show dhcp relay statistics</b> command. Output fields are listed in the approximate order in which they appear.</p>                                                                                                                                                                                                                                                                                                |

Table 10: show dhcp relay statistics Output Fields

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

Table 10: show dhcp relay statistics Output Fields (*continued*)

| Field Name               | Field Description                                 |
|--------------------------|---------------------------------------------------|
| External Server Response | State of the external DHCP server responsiveness. |

## Sample Output

### show dhcp relay statistics

```

user@host> show dhcp relay statistics
Packets dropped:
 Total 34
 Bad hardware address 1
 Bad opcode 1
 Bad options 3
 Invalid server address 5
 Lease Time Violation 1
 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

External Server Response:
 State Responding

```

## show dhcpv6 relay binding

---

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                   | <b>show dhcpv6 relay binding</b><br><b>&lt;address&gt;</b><br><b>&lt;brief&gt;</b><br><b>&lt;detail&gt;</b><br><b>&lt;interface <i>interface-name</i>&gt;</b><br><b>&lt;interfaces-vlan&gt;</b><br><b>&lt;interfaces-wildcard&gt;</b><br><b>&lt;logical-system <i>logical-system-name</i>&gt;</b><br><b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b><br><b>&lt;summary&gt;</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Release Information      | Command introduced in Junos OS Release 11.4.<br><i>interfaces-vlan</i> and <i>interfaces-wildcard</i> options introduced in Junos OS Release 12.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description              | Display the DHCPv6 address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Options                  | <p><b>address</b>—(Optional) One of the following identifiers for the DHCPv6 client whose binding state you want to show:</p> <ul style="list-style-type: none"><li>• <i>CID</i>—The specified Client ID (CID).</li><li>• <i>ipv6-prefix</i>—The specified IPv6 prefix.</li><li>• <i>session-id</i>—The specified session ID.</li></ul> <p><b>brief</b>—(Optional) Display brief information about the active client bindings. This is the default, and produces the same output as <b>show dhcpv6 relay binding</b>.</p> <p><b>detail</b>—(Optional) Display detailed client binding information.</p> <p><b>interface <i>interface-name</i></b>—(Optional) Perform this operation on the specified interface. You can optionally filter on VLAN ID and S-VLAN ID.</p> <p><b>interfaces-vlan</b>—(Optional) Interface VLAN ID or S-VLAN ID interface on which to show binding state information.</p> <p><b>interfaces-wildcard</b>—(Optional) Set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).</p> <p><b>logical-system <i>logical-system-name</i></b>—(Optional) Perform this operation on the specified logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Perform this operation on the specified routing instance.</p> <p><b>summary</b>—(Optional) Display a summary of DHCPv6 client information.</p> |
| Required Privilege Level | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

- Related Documentation**
- [Clearing DHCP Bindings for Subscriber Access on page 223](#)
  - [clear dhcpv6 relay binding on page 233](#)

- List of Sample Output**
- [show dhcpv6 relay binding on page 248](#)
  - [show dhcpv6 relay binding \(Address\) on page 249](#)
  - [show dhcpv6 relay binding detail \(Client ID\) on page 249](#)
  - [show dhcpv6 relay binding detail on page 249](#)
  - [show dhcpv6 relay binding detail \(Multi-Relay Topology\) on page 250](#)
  - [show dhcpv6 relay binding \(Session ID\) on page 250](#)
  - [show dhcpv6 relay binding \(Interfaces VLAN\) on page 250](#)
  - [show dhcpv6 relay binding \(Interfaces Wildcard\) on page 250](#)
  - [show dhcpv6 relay binding \(Interfaces Wildcard\) on page 251](#)
  - [show dhcpv6 relay binding summary on page 251](#)

**Output Fields** Table 11 on page 247 lists the output fields for the **show dhcpv6 relay binding** command. Output fields are listed in the approximate order in which they appear.

Table 11: show dhcpv6 relay binding Output Fields

| Field Name                                                                                                                                   | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Level of Output     |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <i>number clients, (number init, number bound, number selecting, number requesting, number renewing, number rebinding, number releasing)</i> | Summary counts of the total number of DHCPv6 clients and the number of DHCPv6 clients in each state.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>summary</b>      |
| Client IPv6 Prefix                                                                                                                           | Prefix of the DHCPv6 client.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>brief detail</b> |
| Client DUID                                                                                                                                  | DHCP for IPv6 Unique Identifier (DUID) of the client.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>brief detail</b> |
| Session Id                                                                                                                                   | Session ID of the subscriber session.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>brief detail</b> |
| Expires                                                                                                                                      | Number of seconds in which the lease expires.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>brief detail</b> |
| State                                                                                                                                        | State of the DHCPv6 relay address binding table on the DHCPv6 client: <ul style="list-style-type: none"> <li>• <b>BOUND</b>—Client has an active IP address lease.</li> <li>• <b>INIT</b>—Initial state.</li> <li>• <b>REBINDING</b>—Client is broadcasting a request to renew the IP address lease.</li> <li>• <b>RELEASE</b>—Client is releasing the IP address lease.</li> <li>• <b>RENEWING</b>—Client is sending a request to renew the IP address lease.</li> <li>• <b>REQUESTING</b>—Client is requesting a DHCPv6 server.</li> <li>• <b>SELECTING</b>—Client is receiving offers from DHCPv6 servers.</li> </ul> | <b>brief detail</b> |
| Interface                                                                                                                                    | Incoming client interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>brief</b>        |
| Lease Expires                                                                                                                                | Date and time at which the client's IP address lease expires.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail</b>       |

Table 11: show dhcpv6 relay binding Output Fields (*continued*)

| Field Name                            | Field Description                                                                                                                                                                                                                                                                                                | Level of Output |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Lease Expires in                      | Number of seconds in which the lease expires.                                                                                                                                                                                                                                                                    | detail          |
| Preferred Lease Expires               | Date and UTC time at which the client's IPv6 prefix expires.                                                                                                                                                                                                                                                     | detail          |
| Preferred Lease Expires in            | Number of seconds at which the client's IPv6 prefix expires.                                                                                                                                                                                                                                                     | detail          |
| Lease Start                           | Date and time at which the client's IP address lease started.                                                                                                                                                                                                                                                    | detail          |
| Lease time violated                   | Lease time violation has occurred.                                                                                                                                                                                                                                                                               | detail          |
| Incoming Client Interface             | Client's incoming interface.                                                                                                                                                                                                                                                                                     | detail          |
| Server Address                        | IP address of the DHCPv6 server.<br><br>Displays <b>unknown</b> for a DHCPv6 relay agent in a multi-relay topology that is not directly adjacent to the DHCPv6 server and does not detect the IP address of the server. In that case, the output instead displays the <b>Next Hop Server Facing Relay</b> field. | detail          |
| Next Hop Server Facing Relay          | Next-hop address in the direction of the DHCPv6 server.                                                                                                                                                                                                                                                          | detail          |
| Server Interface                      | Interface of the DHCPv6 server.                                                                                                                                                                                                                                                                                  | detail          |
| Relay Address                         | IP address of the relay.                                                                                                                                                                                                                                                                                         | detail          |
| Client Pool Name                      | Address pool that granted the client lease.                                                                                                                                                                                                                                                                      | detail          |
| Client ID Length                      | Length of client ID.                                                                                                                                                                                                                                                                                             | All levels      |
| Client Id                             | Client ID.                                                                                                                                                                                                                                                                                                       | All levels      |
| Generated Circuit ID                  | Circuit ID generated by the DHCPv6 Interface-ID option (option 18)                                                                                                                                                                                                                                               | detail          |
| Generated Remote ID Enterprise Number | The Juniper Networks IANA private enterprise number                                                                                                                                                                                                                                                              | detail          |
| Generated Remote ID                   | Remote ID generated by the DHCPv6 Remote-ID option (option 37)                                                                                                                                                                                                                                                   | detail          |

## Sample Output

### show dhcpv6 relay binding

```

user@host> show dhcpv6 relay binding
Prefix Session Id Expires State Interface Client DUID
2001:bd8:3c4d:15::/64 1 83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
2001:bd8:3c4d:16::/64 2 83720 BOUND ge-1/0/0.0

```



```

LL_TIME0x1-0x4bfa26af-00:10:94:00:00:02
2001:bd8:3c4d:17::/64 3 83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:03
2001:bd8:3c4d:18::/64 4 83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:04
2001:bd8:3c4d:19::/64 5 83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:05
2001:bd8:3c4d:20::/64 6 83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:06

```

### show dhcpv6 relay binding (Address)

```

user@host> show dhcpv6 relay binding 2001:bd8:1111:2222::/64 detail
Session Id: 1
 Client IPv6 Prefix: 2001:bd8:3c4d:15::/64
 Client DUID: LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01

 State: BOUND(RELAY_STATE_BOUND)
 Lease Expires: 2011-05-25 07:12:09 PDT
 Lease Expires in: 77115 seconds
 Preferred Lease Expires: 2012-07-24 00:18:14 UTC
 Preferred Lease Expires in: 600 seconds
 Lease Start: 2011-05-24 07:12:09 PDT
 Incoming Client Interface: ge-1/0/0.0
 Server Address: 2008:aaaa:bbbb::1
 Server Interface: none
 Relay Address: 2001:bd8:1111:2222::
 Client Pool Name: pool-25
 Client Id Length: 14
 Client Id:
 /0x00010001/0x4bfa26af/0x00109400/0x0001

```

### show dhcpv6 relay binding detail (Client ID)

```

user@host> show dhcpv6 relay binding 14/0x00010001/0x4bfa26af/0x00109400/0x0001
detail
Session Id: 1
 Client IPv6 Prefix: 2001:bd8:3c4d:15::/64
 Client DUID: LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01

 State: BOUND(RELAY_STATE_BOUND)
 Lease Expires: 2011-05-25 07:12:09 PDT
 Lease Expires in: 77115 seconds
 Preferred Lease Expires: 2012-07-24 00:18:14 UTC
 Preferred Lease Expires in: 600 seconds
 Lease Start: 2011-05-24 07:12:09 PDT
 Lease time violated: yes
 Incoming Client Interface: ge-1/0/0.0
 Server Address: 2008:aaaa:bbbb::1
 Server Interface: none
 Relay Address: 2001:bd8:1111:2222::
 Client Pool Name: pool-25
 Client Id Length: 14
 Client Id:
 /0x00010001/0x4bfa26af/0x00109400/0x0001

```

### show dhcpv6 relay binding detail

```

user@host> show dhcpv6 relay binding detail
Session Id: 1
 Client IPv6 Prefix: 2001:bd8:3c4d:15::/64

```

```

Client DUID: LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01

State: BOUND(RELAY_STATE_BOUND)
Lease Expires: 2011-05-25 07:12:09 PDT
Lease Expires in: 77115 seconds
Preferred Lease Expires: 2012-07-24 00:18:14 UTC
Preferred Lease Expires in: 600 seconds
Lease Start: 2011-05-24 07:12:09 PDT
Lease time violated: yes
Incoming Client Interface: ge-1/0/0.0
Server Address: 2008:aaaa:bbbb::1
Server Interface: none
Relay Address: 2001:bd8:1111:2222::
Client Pool Name: pool-25
Client Id Length: 14
Client Id: /0x00010001/0x4bfa26af/0x00109400/0x0001
Generated Remote ID Enterprise Number: 1411
Generated Remote ID: host:ge-1/0/0:100

```

#### show dhcpv6 relay binding detail (Multi-Relay Topology)

```

user@host > show dhcpv6 relay binding detail
Session Id: 13
Client IPv6 Prefix: 3000:0:0:8001::5/128
Client DUID: LL0x1-00:00:65:03:01:02
State: BOUND(DHCPV6_RELAY_STATE_BOUND)
Lease Expires: 2011-11-21 06:14:50 PST
Lease Expires in: 293 seconds
Preferred Lease Expires: 2012-07-24 00:18:14 UTC
Preferred Lease Expires in: 600 seconds
Lease Start: 2011-11-21 06:09:50 PST
Incoming Client Interface: ge-1/0/0.0
Server Address: unknown
Next Hop Server Facing Relay: 4000::2
Server Interface: none
Client Id Length: 10
Client Id: /0x00030001/0x00006503/0x0102

```

#### show dhcpv6 relay binding (Session ID)

```

user@host> show dhcpv6 relay binding 41
Prefix Session Id Expires State Interface Client DUID
2001:bd8:3c4d:15::/64 41 78837 BOUND ge-1/0/0.0 LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01

```

#### show dhcpv6 relay binding (Interfaces VLAN)

```

user@host> show dhcpv6 relay binding ge-1/0/0:100-200
Prefix Session Id Expires State Interface Client DUID
2001:DB8::/32 11 87583 BOUND ge-1/0/0.1073741827 LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB9::/32 12 87583 BOUND ge-1/0/0.1073741827 LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01

```

#### show dhcpv6 relay binding (Interfaces Wildcard)

```

user@host> show dhcpv6 relay binding demux0
Prefix Session Id Expires State Interface Client DUID
2001:DB8::/32 30 79681 BOUND demux0.1073741824 LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB9::/32 31 79681 BOUND demux0.1073741825

```

```

LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:CB9::/32 32 79681 BOUND demux0.1073741826
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01

```

#### show dhcpv6 relay binding (Interfaces Wildcard)

```

user@host> show dhcpv6 relay binding ge-1/3/*
Prefix Session Id Expires State Interface Client DUID
2001:DB8::/32 22 79681 BOUND ge-1/3/0.110
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB9::/32 33 79681 BOUND ge-1/3/0.110
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:CB9::/32 24 79681 BOUND ge-1/3/0.110
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01

```

#### show dhcpv6 relay binding summary

```

user@host> show dhcpv6 relay binding summary
5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)

```

## show dhcpv6 relay statistics

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <b>show dhcpv6 relay statistics</b><br><code>&lt;logical-system <i>logical-system-name</i>&gt;</code><br><code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Command introduced in Junos OS Release 11.4.<br>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.<br>Command introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                         |
| <b>Description</b>              | Display Dynamic Host Configuration Protocol for IPv6 (DHCPv6) relay statistics.                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Options</b>                  | <p><b>logical-system <i>logical-system-name</i></b>—(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.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(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.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">clear dhcpv6 relay statistics on page 236</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |
| <b>List of Sample Output</b>    | <a href="#">show dhcpv6 relay statistics on page 253</a>                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Output Fields</b>            | Table 12 on page 252 lists the output fields for the <b>show dhcpv6 relay statistics</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                   |

Table 12: show dhcpv6 relay statistics Output Fields

| Field Name             | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DHCPv6 Packets dropped | <p>Number of packets discarded by the extended DHCPv6 relay agent application due to errors. Only nonzero statistics appear in the <b>Packets dropped</b> output. When all of the Packets dropped statistics are 0 (zero), only the <b>Total</b> field appears.</p> <ul style="list-style-type: none"> <li><b>Total</b>—Total number of packets discarded by the DHCPv6 relay agent application.</li> <li><b>Bad options</b>—Number of packets discarded because invalid options were specified.</li> <li><b>Bad send</b>—Number of packets that the extended DHCP relay application could not send.</li> <li><b>Bad src address</b>—Number of packets discarded because the family type was not AF_INET6.</li> <li><b>No client id</b>—Number of packets discarded because they could not be matched to a client.</li> <li><b>Lease Time Violation</b>—Number of packets discarded because of a lease time violation</li> <li><b>No safd</b>—Number of packets discarded because they arrived on an unconfigured interface.</li> <li><b>Short packet</b>—Number of packets discarded because they were too short.</li> <li><b>Relay hop count</b>—Number of packets discarded because the hop count in the packet exceeded 32.</li> </ul> |

Table 12: show dhcpv6 relay statistics Output Fields (*continued*)

| Field Name                      | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Messages received</b>        | <p>Number of DHCPv6 messages received.</p> <ul style="list-style-type: none"> <li><b>DHCPV6_DECLINE</b>—Number of DHCPv6 PDUs of type DECLINE received</li> <li><b>DHCPV6_SOLICIT</b>—Number of DHCPv6 PDUs of type SOLICIT received</li> <li><b>DHCPV6_INFORMATION_REQUEST</b>—Number of DHCPv6 PDUs of type INFORMATION-REQUEST received</li> <li><b>DHCPV6_RELEASE</b>—Number of DHCPv6 PDUs of type RELEASE received</li> <li><b>DHCPV6_REQUEST</b>—Number of DHCPv6 PDUs of type REQUEST received</li> <li><b>DHCPV6_CONFIRM</b>—Number of DHCPv6 PDUs of type CONFIRM received</li> <li><b>DHCPV6_RENEW</b>—Number of DHCPv6 PDUs of type RENEW received</li> <li><b>DHCPV6_REBIND</b>—Number of DHCPv6 PDUs of type REBIND received</li> <li><b>DHCPV6_RELAY_REPL</b>—Number of DHCPv6 PDUs of type RELAY-REPL received</li> </ul> |
| <b>Messages sent</b>            | <p>Number of DHCPv6 messages sent.</p> <ul style="list-style-type: none"> <li><b>DHCPV6_ADVERTISE</b>—Number of DHCPv6 ADVERTISE PDUs transmitted</li> <li><b>DHCP_REPLY</b>—Number of DHCPv6 REPLY PDUs transmitted</li> <li><b>DHCP_RECONFIGURE</b>—Number of DHCPv6 RECONFIGURE PDUs transmitted</li> <li><b>DHCP_RELAY_FORW</b>—Number of DHCPv6 RELAY-FORW PDUs transmitted</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Packets forwarded</b>        | <p>Number of packets forwarded by the extended DHCPv6 relay agent application.</p> <ul style="list-style-type: none"> <li><b>FWD REQUEST</b>—Number of DHCPv6 REQUEST packets forwarded</li> <li><b>FWD REPLY</b>—Number of DHCPv6 REPLY packets forwarded</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>External Server Response</b> | State of the external DHCP server responsiveness.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Sample Output

### show dhcpv6 relay statistics

```

user@host> show dhcpv6 relay statistics
DHCPv6 Packets dropped:
 Total 1
 Lease Time Violation 1

Messages received:
 DHCPV6_DECLINE 0
 DHCPV6_SOLICIT 10
 DHCPV6_INFORMATION_REQUEST 0
 DHCPV6_RELEASE 0
 DHCPV6_REQUEST 10
 DHCPV6_CONFIRM 0
 DHCPV6_RENEW 0
 DHCPV6_REBIND 0
 DHCPV6_RELAY_REPL 0

Messages sent:
 DHCPV6_ADVERTISE 0
 DHCPV6_REPLY 0

```

|                           |            |
|---------------------------|------------|
| DHCPV6_RECONFIGURE        | 0          |
| DHCPV6_RELAY_FORW         | 0          |
| Packets forwarded:        |            |
| Total                     | 4          |
| FWD REQUEST               | 2          |
| FWD REPLY                 | 2          |
| External Server Response: |            |
| State                     | Responding |

## show route extensive

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                      | show route extensive<br><destination-prefix><br><logical-system (all   logical-system-name)>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Syntax (EX Series Switches)</b> | show route extensive<br><destination-prefix>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>                 | Display extensive information about the active entries in the routing tables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                     | <p><b>none</b>—Display all active entries in the routing table.</p> <p><b>destination-prefix</b>—(Optional) Display active entries for the specified address or range of addresses.</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>List of Sample Output</b>       | <a href="#">show route extensive on page 262</a><br><a href="#">show route extensive (Access Route) on page 268</a><br><a href="#">show route extensive (BGP PIC Edge) on page 269</a><br><a href="#">show route extensive (FRR and LFA) on page 269</a><br><a href="#">show route extensive (Route Reflector) on page 270</a><br><a href="#">show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 270</a><br><a href="#">show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 271</a> |
| <b>Output Fields</b>               | Table 13 on page 255 describes the output fields for the <b>show route extensive</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                         |

**Table 13: show route extensive Output Fields**

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i>  | Name of the routing table (for example, inet.0).                                                                                                                                                                                                                                                                                                                   |
| <i>number destinations</i> | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                            |
| <i>number routes</i>       | Number of routes in the routing table and total number of routes in the following states: <ul style="list-style-type: none"> <li><b>active</b> (routes that are active).</li> <li><b>holddown</b> (routes that are in the pending state before being declared inactive).</li> <li><b>hidden</b> (routes that are not used because of a routing policy).</li> </ul> |

Table 13: show route extensive Output Fields (*continued*)

| Field Name                                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>route-destination</b><br>(entry, announced) | <p>Route destination (for example: 10.0.0.1/24). The <b>entry</b> value is the number of route for this destination, and the <b>announced</b> value is the number of routes being announced for this destination. Sometimes the route destination is presented in another format, such as:</p> <ul style="list-style-type: none"> <li>• <b>MPLS-label</b> (for example, 80001).</li> <li>• <b>interface-name</b> (for example, ge-1/0/2).</li> <li>• <b>neighbor-address:control-word-status:encapsulation type:vc-id:source</b> (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96).</li> <li>• <b>neighbor-address</b>—Address of the neighbor.</li> <li>• <b>control-word-status</b>—Whether the use of the control word has been negotiated for this virtual circuit: <b>NoCtrlWord</b> or <b>CtrlWord</b>.</li> <li>• <b>encapsulation type</b>—Type of encapsulation, represented by a number: (1) Frame Relay DLCI, (2) ATM AAL5 VCC transport, (3) ATM transparent cell transport, (4) Ethernet, (5) VLAN Ethernet, (6) HDLC, (7) PPP, (8) ATM VCC cell transport, (10) ATM VPC cell transport.</li> <li>• <b>vc-id</b>—Virtual circuit identifier.</li> <li>• <b>source</b>—Source of the advertisement: <b>Local</b> or <b>Remote</b>.</li> </ul> |
| <b>TSI</b>                                     | Protocol header information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>label stacking</b>                          | <p>(Next-to-the-last-hop routing device for MPLS only) Depth of the MPLS label stack, where the label-popping operation is needed to remove one or more labels from the top of the stack. A pair of routes is displayed, because the pop operation is performed only when the stack depth is two or more labels.</p> <ul style="list-style-type: none"> <li>• <b>S=0 route</b> indicates that a packet with an incoming label stack depth of two or more exits this router with one fewer label (the label-popping operation is performed).</li> <li>• If there is no <b>S=</b> information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>[protocol, preference]</b>                  | <p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> <li>• <b>+</b>—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</li> <li>• <b>-</b>—A hyphen indicates the last active route.</li> <li>• <b>*</b>—An asterisk indicates that the route is both the active and the last active route. An asterisk before a <b>to</b> line indicates the best subpath to the route.</li> </ul> <p>In every routing metric except for the BGP <b>LocalPref</b> attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the <b>LocalPref</b> value in the <b>Preference2</b> field. For example, if the <b>LocalPref</b> value for Route 1 is 100, the <b>Preference2</b> value is -101. If the <b>LocalPref</b> value for Route 2 is 155, the <b>Preference2</b> value is -156. Route 2 is preferred because it has a higher <b>LocalPref</b> value and a lower <b>Preference2</b> value.</p>                                                                                                                                                                                  |
| <b>Level</b>                                   | <p>(IS-IS only). In IS-IS, a single autonomous system (AS) can be divided into smaller groups called areas. Routing between areas is organized hierarchically, allowing a domain to be administratively divided into smaller areas. This organization is accomplished by configuring Level 1 and Level 2 intermediate systems. Level 1 systems route within an area. When the destination is outside an area, they route toward a Level 2 system. Level 2 intermediate systems route between areas and toward other ASs.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Route Distinguisher</b>                     | IP subnet augmented with a 64-bit prefix.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



Table 13: show route extensive Output Fields (*continued*)

| Field Name                                           | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PMSI</b>                                          | Provider multicast service interface (MVPN routing table).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Next-hop type</b>                                 | Type of next hop. For a description of possible values for this field, see the Output Field table in the <i>show route detail</i> command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Next-hop reference count</b>                      | Number of references made to the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Flood nexthop branches exceed maximum message</b> | Indicates that the number of flood next-hop branches exceeded the system limit of 32 branches, and only a subset of the flood next-hop branches were installed in the kernel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Source</b>                                        | IP address of the route source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Next hop</b>                                      | Network layer address of the directly reachable neighboring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>via</b>                                           | <p>Interface used to reach the next hop. If there is more than one interface available to the next hop, the name of the interface that is actually used is followed by the word <b>Selected</b>. This field can also contain the following information:</p> <ul style="list-style-type: none"> <li>• <b>Weight</b>—Value used to distinguish primary, secondary, and fast reroute backup routes. Weight information is available when MPLS label-switched path (LSP) link protection, node-link protection, or fast reroute is enabled, or when the standby state is enabled for secondary paths. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.</li> <li>• <b>Balance</b>—Balance coefficient indicating how traffic of unequal cost is distributed among next hops when a routing device is performing unequal-cost load balancing. This information is available when you enable BGP multipath load balancing.</li> </ul> |
| <b>Label-switched-path<br/><i>lsp-path-name</i></b>  | Name of the LSP used to reach the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Label operation</b>                               | MPLS label and operation occurring at this routing device. The operation can be <b>pop</b> (where a label is removed from the top of the stack), <b>push</b> (where another label is added to the label stack), or <b>swap</b> (where a label is replaced by another label).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Offset</b>                                        | Whether the metric has been increased or decreased by an offset value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Interface</b>                                     | (Local only) Local interface name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Protocol next hop</b>                             | Network layer address of the remote routing device that advertised the prefix. This address is used to recursively derive a forwarding next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b><i>label-operation</i></b>                        | MPLS label and operation occurring at this routing device. The operation can be <b>pop</b> (where a label is removed from the top of the stack), <b>push</b> (where another label is added to the label stack), or <b>swap</b> (where a label is replaced by another label).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Table 13: show route extensive Output Fields (*continued*)

| Field Name                | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Indirect next hops</b> | <p>When present, a list of nodes that are used to resolve the path to the next-hop destination, in the order that they are resolved.</p> <p>When BGP PIC Edge is enabled, the output lines that contain <b>Indirect next hop: weight</b> follow next hops that the software can use to repair paths where a link failure occurs. The next-hop weight has one of the following values:</p> <ul style="list-style-type: none"><li>• 0x1 indicates active next hops.</li><li>• 0x4000 indicates passive next hops.</li></ul> |
| <b>State</b>              | State of the route (a route can be in more than one state). See the Output Field table in the <i>show route detail</i> command.                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Session ID</b>         | The BFD session ID number that represents the protection using MPLS fast reroute (FRR) and loop-free alternate (LFA).                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Weight</b>             | <p>Weight for the backup path. If the weight of an indirect next hop is larger than zero, the weight value is shown.</p> <p>For sample output, see <b>show route table</b>.</p>                                                                                                                                                                                                                                                                                                                                           |

Table 13: show route extensive Output Fields (*continued*)

| Field Name      | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inactive reason | <p>If the route is inactive, the reason for its current state is indicated. Typical reasons include:</p> <ul style="list-style-type: none"> <li>• <b>Active preferred</b>—Currently active route was selected over this route.</li> <li>• <b>Always compare MED</b>—Path with a lower multiple exit discriminator (MED) is available.</li> <li>• <b>AS path</b>—Shorter AS path is available.</li> <li>• <b>Cisco Non-deterministic MED selection</b>—Cisco nondeterministic MED is enabled and a path with a lower MED is available.</li> <li>• <b>Cluster list length</b>—Path with a shorter cluster list length is available.</li> <li>• <b>Forwarding use only</b>—Path is only available for forwarding purposes.</li> <li>• <b>IGP metric</b>—Path through the next hop with a lower IGP metric is available.</li> <li>• <b>IGP metric type</b>—Path with a lower OSPF link-state advertisement type is available.</li> <li>• <b>Interior &gt; Exterior &gt; Exterior via Interior</b>—Direct, static, IGP, or EBGp path is available.</li> <li>• <b>Local preference</b>—Path with a higher local preference value is available.</li> <li>• <b>Next hop address</b>—Path with a lower metric next hop is available.</li> <li>• <b>No difference</b>—Path from a neighbor with a lower IP address is available.</li> <li>• <b>Not Best in its group</b>—Occurs when multiple peers of the same external AS advertise the same prefix and are grouped together in the selection process. When this reason is displayed, an additional reason is provided (typically one of the other reasons listed).</li> <li>• <b>Number of gateways</b>—Path with a higher number of next hops is available.</li> <li>• <b>Origin</b>—Path with a lower origin code is available.</li> <li>• <b>OSPF version</b>—Path does not support the indicated OSPF version.</li> <li>• <b>RIB preference</b>—Route from a higher-numbered routing table is available.</li> <li>• <b>Route distinguisher</b>—64-bit prefix added to IP subnets to make them unique.</li> <li>• <b>Route metric or MED comparison</b>—Route with a lower metric or MED is available.</li> <li>• <b>Route preference</b>—Route with a lower preference value is available.</li> <li>• <b>Router ID</b>—Path through a neighbor with a lower ID is available.</li> <li>• <b>Unusable path</b>—Path is not usable because of one of the following conditions: the route is damped, the route is rejected by an import policy, or the route is unresolved.</li> <li>• <b>Update source</b>—Last tiebreaker is the lowest IP address value.</li> </ul> |
| Local AS        | Autonomous system (AS) number of the local routing device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Age             | How long the route has been known.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| AIGP            | Accumulated interior gateway protocol (AIGP) BGP attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric          | Cost value of the indicated route. For routes within an AS, the cost is determined by IGP and the individual protocol metrics. For external routes, destinations, or routing domains, the cost is determined by a preference value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MED-plus-IGP    | Metric value for BGP path selection to which the IGP cost to the next-hop destination has been added.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| TTL-Action      | <p>For MPLS LSPs, state of the TTL propagation attribute. Can be enabled or disabled for all RSVP-signaled and LDP-signaled LSPs or for specific VRF routing instances.</p> <p>For sample output, see <b>show route table</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Table 13: show route extensive Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Task                    | Name of the protocol that has added the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Announcement bits       | List of protocols that announce this route. <b>n-Resolve inet</b> indicates that the route is used for route resolution for next hops found in the routing table. <b>n</b> is an index used by Juniper Networks customer support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| AS path                 | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• <b>I</b>—IGP.</li> <li>• <b>E</b>—EGP.</li> <li>• <b>Recorded</b>—The AS path is recorded by the sample process (sampled).</li> <li>• <b>?</b>—Incomplete; typically, the AS path was aggregated.</li> </ul> <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> <li>• <b>[ ]</b>—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the routing device, or if AS path prepending is configured.</li> <li>• <b>{ }</b>—Braces enclose AS sets, which are groups of AS numbers in which the order does not matter. A set commonly results from route aggregation. The numbers in each AS set are displayed in ascending order.</li> <li>• <b>( )</b>—Parentheses enclose a confederation.</li> <li>• <b>( [ ] )</b>—Parentheses and brackets enclose a confederation set.</li> </ul> <p><b>NOTE:</b> In Junos OS Release 10.3 and later, the AS path field displays an unrecognized attribute and associated hexadecimal value if BGP receives attribute 128 (attribute set) and you have not configured an independent domain in any routing instance.</p> |
| validation-state        | <p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> <li>• <b>Invalid</b>—Indicates that the prefix is found, but either the corresponding AS received from the EBGP peer is not the AS that appears in the database, or the prefix length in the BGP update message is longer than the maximum length permitted in the database.</li> <li>• <b>Unknown</b>—Indicates that the prefix is not among the prefixes or prefix ranges in the database.</li> <li>• <b>Unverified</b>—Indicates that origin validation is not enabled for the BGP peers.</li> <li>• <b>Valid</b>—Indicates that the prefix and autonomous system pair are found in the database.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FECs bound to route     | Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| AS path: I <Originator> | (For route reflected output only) Originator ID attribute set by the route reflector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Primary Upstream        | When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| RPF Nexthops            | When multipoint LDP with MoFRR is configured, the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Table 13: show route extensive Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Label                   | Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.                      |
| weight                  | Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.                                                                                                                                               |
| VC Label                | MPLS label assigned to the Layer 2 circuit virtual connection.                                                                                                                                                                                                                                                   |
| MTU                     | Maximum transmission unit (MTU) of the Layer 2 circuit.                                                                                                                                                                                                                                                          |
| VLAN ID                 | VLAN identifier of the Layer 2 circuit.                                                                                                                                                                                                                                                                          |
| Cluster list            | (For route reflected output only) Cluster ID sent by the route reflector.                                                                                                                                                                                                                                        |
| Originator ID           | (For route reflected output only) Address of router that originally sent the route to the route reflector.                                                                                                                                                                                                       |
| Prefixes bound to route | Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.                                                                                                                                                                                                               |
| Communities             | Community path attribute for the route. See the Output Field table in the <i>show route detail</i> command for all possible values for this field.                                                                                                                                                               |
| Layer2-info: encaps     | Layer 2 encapsulation (for example, VPLS).                                                                                                                                                                                                                                                                       |
| control flags           | Control flags: <b>none</b> or Site Down.                                                                                                                                                                                                                                                                         |
| mtu                     | Maximum transmission unit (MTU) information.                                                                                                                                                                                                                                                                     |
| Label-Base, range       | First label in a block of labels and label block size. A remote PE routing device uses this first label when sending traffic toward the advertising PE routing device.                                                                                                                                           |
| status vector           | Layer 2 VPN and VPLS network layer reachability information (NLRI).                                                                                                                                                                                                                                              |
| Localpref               | Local preference value included in the route.                                                                                                                                                                                                                                                                    |
| Router ID               | BGP router ID as advertised by the neighbor in the open message.                                                                                                                                                                                                                                                 |
| Primary Routing Table   | In a routing table group, the name of the primary routing table in which the route resides.                                                                                                                                                                                                                      |
| Secondary Tables        | In a routing table group, the name of one or more secondary tables in which the route resides.                                                                                                                                                                                                                   |
| Originating RIB         | Name of the routing table whose active route was used to determine the forwarding next-hop entry in the resolution database. For example, in the case of inet.0 resolving through inet.0 and inet.3, this field indicates which routing table, inet.0 or inet.3, provided the best path for a particular prefix. |
| Node path count         | Number of nodes in the path.                                                                                                                                                                                                                                                                                     |

Table 13: show route extensive Output Fields (*continued*)

| Field Name                 | Field Description                                                                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Forwarding nexthops</b> | Number of forwarding next hops. The forwarding next hop is the network layer address of the directly reachable neighboring system (if applicable) and the interface used to reach it. |

## Sample Output

### show route extensive

```

user@host> show route extensive
inet.0: 22 destinations, 23 routes (21 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.10.0.0/16 -> {192.168.71.254}
 *Static Preference: 5
 Next-hop reference count: 29
 Next hop: 192.168.71.254 via fxp0.0, selected
 State: <Active NoReadvrt Int Ext>
 Local AS: 69
 Age: 1:34:06
 Task: RT
 Announcement bits (2): 0-KRT 3-Resolve tree 2
 AS path: I

10.31.1.0/30 (2 entries, 1 announced)
 *Direct Preference: 0
 Next hop type: Interface
 Next-hop reference count: 2
 Next hop: via so-0/3/0.0, selected
 State: <Active Int>
 Local AS: 69
 Age: 1:32:40
 Task: IF
 Announcement bits (1): 3-Resolve tree 2
 AS path: I
 OSPF Preference: 10
 Next-hop reference count: 1
 Next hop: via so-0/3/0.0, selected
 State: <Int>
 Inactive reason: Route Preference
 Local AS: 69
 Age: 1:32:40 Metric: 1
 Area: 0.0.0.0
 Task: OSPF
 AS path: I

10.31.1.1/32 (1 entry, 1 announced)
 *Local Preference: 0
 Next hop type: Local
 Next-hop reference count: 7
 Interface: so-0/3/0.0
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:32:43
 Task: IF
 Announcement bits (1): 3-Resolve tree 2
 AS path: I

```

```

...

10.31.2.0/30 (1 entry, 1 announced)
TSI:
KRT in-kerne1 10.31.2.0/30 -> {10.31.1.6}
 *OSPF Preference: 10
 Next-hop reference count: 9
 Next hop: via so-0/3/0.0
 Next hop: 10.31.1.6 via ge-3/1/0.0, selected
 State: <Active Int>
 Local AS: 69
 Age: 1:32:19 Metric: 2
 Area: 0.0.0.0
 Task: OSPF
 Announcement bits (2): 0-KRT 3-Resolve tree 2
 AS path: I

...

224.0.0.2/32 (1 entry, 1 announced)
TSI:
KRT in-kerne1 224.0.0.2/32 -> {}
 *PIM Preference: 0
 Next-hop reference count: 18
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:34:08
 Task: PIM Recv
 Announcement bits (2): 0-KRT 3-Resolve tree 2
 AS path: I

...

224.0.0.22/32 (1 entry, 1 announced)
TSI:
KRT in-kerne1 224.0.0.22/32 -> {}
 *IGMP Preference: 0
 Next-hop reference count: 18
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:34:06
 Task: IGMP
 Announcement bits (2): 0-KRT 3-Resolve tree 2
 AS path: I

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

10.255.70.103/32 (1 entry, 1 announced)
State: <FlashAll>
 *RSVP Preference: 7
 Next-hop reference count: 6
 Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1, selected
 Label-switched-path green-r1-r3
 Label operation: Push 100096
 State: <Active Int>
 Local AS: 69
 Age: 1:28:12 Metric: 2
 Task: RSVP
 Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
 AS path: I

```

```

10.255.71.238/32 (1 entry, 1 announced)
 State: <FlashAll>
 *RSVP Preference: 7
 Next-hop reference count: 6
 Next hop: via so-0/3/0.0 weight 0x1, selected
 Label-switched-path green-r1-r2
 State: <Active Int>
 Local AS: 69
 Age: 1:28:12 Metric: 1
 Task: RSVP
 Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
 AS path: I

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

...

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

47.0005.80ff.f800.0000.0108.0001.0102.5507.1052/152 (1 entry, 0 announced)
 *Direct Preference: 0
 Next hop type: Interface
 Next-hop reference count: 1
 Next hop: via lo0.0, selected
 State: <Active Int>
 Local AS: 69
 Age: 1:34:07
 Task: IF
 AS path: I

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

0 (1 entry, 1 announced)
TSI:
KRT in-kernel 0 /36 -> {}
 *MPLS Preference: 0
 Next hop type: Receive
 Next-hop reference count: 6
 State: <Active Int>
 Local AS: 69
 Age: 1:34:08 Metric: 1
 Task: MPLS
 Announcement bits (1): 0-KRT
 AS path: I

...

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
299840 (1 entry, 1 announced)
TSI:
KRT in-kernel 299840 /52 -> {indirect(1048575)}
 *RSVP Preference: 7/2
 Next hop type: Flood
 Address: 0x9174a30
 Next-hop reference count: 4
 Next hop type: Router, Next hop index: 798
 Address: 0x9174c28
 Next-hop reference count: 2
 Next hop: 8.0.0.2 via lt-1/2/0.9 weight 0x1
 Label-switched-path R2-to-R4-2p2mp

```



```

Label operation: Pop
Next hop type: Router, Next hop index: 1048574
Address: 0x92544f0
Next-hop reference count: 2
Next hop: 7.0.0.2 via lt-1/2/0.7 weight 0x1
Label-switched-path R2-to-R200-p2mp
Label operation: Pop
Next hop: 6.0.0.2 via lt-1/2/0.5 weight 0x8001
Label operation: Pop
State: <Active Int>
Age: 1:29 Metric: 1
Task: RSVP
Announcement bits (1): 0-KRT
AS path: I...

```

800010 (1 entry, 1 announced)

TSI:

```

KRT in-kernel 800010 /36 -> {vt-3/2/0.32769}
 *VPLS Preference: 7
 Next-hop reference count: 2
 Next hop: via vt-3/2/0.32769, selected
 Label operation: Pop
 State: <Active Int>
 Age: 1:31:53
 Task: Common L2 VC
 Announcement bits (1): 0-KRT
 AS path: I

```

vt-3/2/0.32769 (1 entry, 1 announced)

TSI:

```

KRT in-kernel vt-3/2/0.32769.0 /16 -> {indirect(1048574)}
 *VPLS Preference: 7
 Next-hop reference count: 2
 Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1, selected
 Label-switched-path green-r1-r3
 Label operation: Push 800012, Push 100096(top)
 Protocol next hop: 10.255.70.103
 Push 800012
 Indirect next hop: 87272e4 1048574
 State: <Active Int>
 Age: 1:31:53 Metric2: 2
 Task: Common L2 VC
 Announcement bits (2): 0-KRT 1-Common L2 VC
 AS path: I
 Communities: target:11111:1 Layer2-info: encaps:VPLS,
 control flags:, mtu: 0
 Indirect next hops: 1
 Protocol next hop: 10.255.70.103 Metric: 2
 Push 800012
 Indirect next hop: 87272e4 1048574
 Indirect path forwarding next hops: 1
 Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1
 10.255.70.103/32 Originating RIB: inet.3
 Metric: 2 Node path count: 1
 Forwarding nexthops: 1
 Nexthop: 10.31.1.6 via ge-3/1/0.0

```

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

abcd::10:255:71:52/128 (1 entry, 0 announced)

```
*Direct Preference: 0
 Next hop type: Interface
 Next-hop reference count: 1
 Next hop: via lo0.0, selected
 State: <Active Int>
 Local AS: 69
 Age: 1:34:07
 Task: IF
 AS path: I

fe80::280:42ff:fe10:f179/128 (1 entry, 0 announced)
 *Direct Preference: 0
 Next hop type: Interface
 Next-hop reference count: 1
 Next hop: via lo0.0, selected
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:34:07
 Task: IF
 AS path: I

ff02::2/128 (1 entry, 1 announced)
TSI:
KRT in-kernel ff02::2/128 -> {}
 *PIM Preference: 0
 Next-hop reference count: 18
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:34:08
 Task: PIM Recv6
 Announcement bits (1): 0-KRT
 AS path: I

ff02::d/128 (1 entry, 1 announced)
TSI:
KRT in-kernel ff02::d/128 -> {}
 *PIM Preference: 0
 Next-hop reference count: 18
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:34:08
 Task: PIM Recv6
 Announcement bits (1): 0-KRT
 AS path: I

ff02::16/128 (1 entry, 1 announced)
TSI:
KRT in-kernel ff02::16/128 -> {}
 *MLD Preference: 0
 Next-hop reference count: 18
 State: <Active NoReadvrt Int>
 Local AS: 69
 Age: 1:34:06
 Task: MLD
 Announcement bits (1): 0-KRT
 AS path: I

private.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

fe80::280:42ff:fe10:f179/128 (1 entry, 0 announced)
 *Direct Preference: 0
```

```

Next hop type: Interface
Next-hop reference count: 1
Next hop: via lo0.16385, selected
State: <Active NoReadvrt Int>
Age: 1:34:07
Task: IF
AS path: I

green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)

10.255.70.103:1:3:1/96 (1 entry, 1 announced)
 *BGP Preference: 170/-101
 Route Distinguisher: 10.255.70.103:1
 Next-hop reference count: 7
 Source: 10.255.70.103
 Protocol next hop: 10.255.70.103
 Indirect next hop: 2 no-forward
 State: <Secondary Active Int Ext>
 Local AS: 69 Peer AS: 69
 Age: 1:28:12 Metric2: 1
 Task: BGP_69.10.255.70.103+179
 Announcement bits (1): 0-green-l2vpn
 AS path: I
 Communities: target:11111:1 Layer2-info: encaps:VPLS,
 control flags:, mtu: 0
 Label-base: 800008, range: 8
 Localpref: 100
 Router ID: 10.255.70.103
 Primary Routing Table bgp.l2vpn.0

10.255.71.52:1:1:1/96 (1 entry, 1 announced)
TSI:
Page 0 idx 0 Type 1 val 8699540
 *L2VPN Preference: 170/-1
 Next-hop reference count: 5
 Protocol next hop: 10.255.71.52
 Indirect next hop: 0 -
 State: <Active Int Ext>
 Age: 1:34:03 Metric2: 1
 Task: green-l2vpn
 Announcement bits (1): 1-BGP.0.0.0.0+179
 AS path: I
 Communities: Layer2-info: encaps:VPLS, control flags:Site-Down,
 mtu: 0
 Label-base: 800016, range: 8, status-vector: 0x9F

10.255.71.52:1:5:1/96 (1 entry, 1 announced)
TSI:
Page 0 idx 0 Type 1 val 8699528
 *L2VPN Preference: 170/-101
 Next-hop reference count: 5
 Protocol next hop: 10.255.71.52
 Indirect next hop: 0 -
 State: <Active Int Ext>
 Age: 1:34:03 Metric2: 1
 Task: green-l2vpn
 Announcement bits (1): 1-BGP.0.0.0.0+179
 AS path: I
 Communities: Layer2-info: encaps:VPLS, control flags:, mtu: 0
 Label-base: 800008, range: 8, status-vector: 0x9F

```

```

...

12circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

TSI:

10.245.255.63:CtrlWord:4:3:Local/96 (1 entry, 1 announced)
 *L2CKT Preference: 7
 Next hop: via so-1/1/2.0 weight 1, selected
 Label-switched-path my-lsp
 Label operation: Push 100000[0]
 Protocol next hop: 10.245.255.63 Indirect next hop: 86af000 296
 State: <Active Int>
 Local AS: 99
 Age: 10:21
 Task: 12 circuit
 Announcement bits (1): 0-LDP
 AS path: I
 VC Label 100000, MTU 1500, VLAN ID 512

55.0.0.0/24 (1 entry, 1 announced)
TSI:
KRT queued (pending) add
 55.0.0.0/24 -> {Push 300112}
 *BGP Preference: 170/-101
 Next hop type: Router
 Address: 0x925c208
 Next-hop reference count: 2
 Source: 10.0.0.9
 Next hop: 10.0.0.9 via ge-1/2/0.15, selected
 Label operation: Push 300112
 Label TTL action: prop-ttl
 State: <Active Ext>
 Local AS: 7019 Peer AS: 13979
 Age: 1w0d 23:06:56
 AIGP: 25
 Task: BGP_13979.10.0.0.9+56732
 Announcement bits (1): 0-KRT
 AS path: 13979 7018 I
 Accepted
 Route Label: 300112
 Localpref: 100
 Router ID: 10.9.9.1

```

#### show route extensive (Access Route)

```

user@host> show route 13.160.0.102 extensive
inet.0: 39256 destinations, 39258 routes (39255 active, 0 holddown, 1 hidden)
13.160.0.102/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 13.160.0.102/32 -> {13.160.0.2}
OSPF area : 0.0.0.0, LSA ID : 13.160.0.102, LSA type : Extern
 *Access Preference: 13
 Next-hop reference count: 78472
 Next hop: 13.160.0.2 via fe-0/0/0.0, selected
 State: <Active Int>
 Age: 12
 Task: RPD Unix Domain Server./var/run/rpd_serv.local
 Announcement bits (2): 0-KRT 1-OSPFv2
 AS path: I

```

## show route extensive (BGP PIC Edge)

```

user@host> show route 1.1.1.6 extensive
ed.inet.0: 6 destinations, 9 routes (6 active, 0 holddown, 0 hidden)
 1.1.1.6/32 (3 entries, 2 announced)
 State: <CalcForwarding>
TSI:
KRT in-kerne1 1.1.1.6/32 -> {indirect(1048574), indirect(1048577)}
Page 0 idx 0 Type 1 val 9219e30
 Nexthop: Self
 AS path: [2] 3 I
 Communities: target:2:1
 Path 1.1.1.6 from 1.1.1.4 Vector len 4. Val: 0
..
 #Multipath Preference: 255
 Next hop type: Indirect
 Address: 0x93f4010
 Next-hop reference count: 2
..
 Protocol next hop: 1.1.1.4
 Push 299824
 Indirect next hop: 944c000 1048574 INH Session ID: 0x3
 Indirect next hop: weight 0x1
 Protocol next hop: 1.1.1.5
 Push 299824
 Indirect next hop: 944c1d8 1048577 INH Session ID: 0x4
 Indirect next hop: weight 0x4000
 State: <ForwardingOnly Int Ext>
 Inactive reason: Forwarding use only
 Age: 25 Metric2: 15
 Validation State: unverified
 Task: RT
 Announcement bits (1): 0-KRT
 AS path: 3 I
 Communities: target:2:1

```

## show route extensive (FRR and LFA)

```

user@host> show route 20.31.2.0 extensive
inet.0: 46 destinations, 49 routes (45 active, 0 holddown, 1 hidden)
 20.31.2.0/24 (2 entries, 1 announced)
 State: FlashAll
TSI:
KRT in-kerne1 20.31.2.0/24 -> {Push 299776, Push 299792}
 *RSVP Preference: 7/1
 Next hop type: Router, Next hop index: 1048574
 Address: 0xbbbc010
 Next-hop reference count: 5
 Next hop: 10.31.1.2 via ge-2/1/8.0 weight 0x1, selected
 Label-switched-path europa-d-to-europa-e
 Label operation: Push 299776
 Label TTL action: prop-ttl
 Session Id: 0x201
 Next hop: 10.31.2.2 via ge-2/1/4.0 weight 0x4001
 Label-switched-path europa-d-to-europa-e
 Label operation: Push 299792
 Label TTL action: prop-ttl
 Session Id: 0x202
 State: Active Int
 Local AS: 100
 Age: 5:31 Metric: 2

```

```

Task: RSVP
Announcement bits (1): 0-KRT
AS path: I
OSPF Preference: 10
Next hop type: Router, Next hop index: 615
Address: 0xb9d78c4
Next-hop reference count: 7
Next hop: 10.31.1.2 via ge-2/1/8.0, selected
Session Id: 0x201
State: Int
Inactive reason: Route Preference
Local AS: 100
Age: 5:35 Metric: 3
Area: 0.0.0.0
Task: OSPF
AS path: I

```

### show route extensive (Route Reflector)

```

user@host> show route extensive
1.0.0.0/8 (1 entry, 1 announced)

TSI:
KRT in-kernel 1.0.0.0/8 -> {indirect(40)}
*BGP Preference: 170/-101
Source: 192.168.4.214
Protocol next hop: 207.17.136.192 Indirect next hop: 84ac908 40
State: <Active Int Ext>
Local AS: 10458 Peer AS: 10458
Age: 3:09 Metric: 0 Metric2: 0
Task: BGP_10458.192.168.4.214+1033
Announcement bits (2): 0-KRT 4-Resolve inet.0
AS path: 3944 7777 I <Originator>
Cluster list: 1.1.1.1
Originator ID: 10.255.245.88
Communities: 7777:7777
Localpref: 100
Router ID: 4.4.4.4
Indirect next hops: 1
 Protocol next hop: 207.17.136.192 Metric: 0
 Indirect next hop: 84ac908 40
 Indirect path forwarding next hops: 0
 Next hop type: Discard

```

### show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs)

```

user@host> show route label 299872 detail
mpls.0: 13 destinations, 13 routes (13 active, 0 holddown, 0 hidden)
299872 (1 entry, 1 announced)
*LDP Preference: 9
Next hop type: Flood
Next-hop reference count: 3
Address: 0x9097d90
Next hop: via vt-0/1/0.1
Next-hop index: 661
Label operation: Pop
Address: 0x9172130
Next hop: via so-0/0/3.0
Next-hop index: 654
Label operation: Swap 299872
State: **Active Int>

```

```

Local AS: 1001
Age: 8:20 Metric: 1
Task: LDP
Announcement bits (1): 0-KRT
AS path: I
FECs bound to route: P2MP root-addr 10.255.72.166, grp 232.1.1.1,
src 192.168.142.2

```

### show route label detail (Multipoint LDP with Multicast-Only Fast Reroute)

```
user@host> show route label 301568 detail
```

```

mpls.0: 18 destinations, 18 routes (18 active, 0 holddown, 0 hidden)
301568 (1 entry, 1 announced)
 *LDP Preference: 9
 Next hop type: Flood
 Address: 0x2735208
 Next-hop reference count: 3
 Next hop type: Router, Next hop index: 1397
 Address: 0x2735d2c
 Next-hop reference count: 3
 Next hop: 1.3.8.2 via ge-1/2/22.0
 Label operation: Pop
 Load balance label: None;
 Next hop type: Router, Next hop index: 1395
 Address: 0x2736290
 Next-hop reference count: 3
 Next hop: 1.3.4.2 via ge-1/2/18.0
 Label operation: Pop
 Load balance label: None;
 State: <Active Int AckRequest MulticastRPF>
 Local AS: 10
 Age: 54:05 Metric: 1
 Validation State: unverified
 Task: LDP
 Announcement bits (1): 0-KRT
 AS path: I
 FECs bound to route: P2MP root-addr 1.1.1.1, grp: 232.1.1.1, src:
192.168.219.11
 Primary Upstream : 1.1.1.3:0--1.1.1.2:0
 RPF Nexthops :
 ge-1/2/15.0, 1.2.94.1, Label: 301568, weight: 0x1
 ge-1/2/14.0, 1.2.3.1, Label: 301568, weight: 0x1
 Backup Upstream : 1.1.1.3:0--1.1.1.6:0
 RPF Nexthops :
 ge-1/2/20.0, 1.2.96.1, Label: 301584, weight: 0xffffe
 ge-1/2/19.0, 1.3.6.1, Label: 301584, weight: 0xffffe

```

## show route protocol

---

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                      | <code>show route protocol <i>protocol</i></code><br><code>&lt;brief   detail   extensive   terse&gt;</code><br><code>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Syntax (EX Series Switches)</b> | <code>show route protocol <i>protocol</i></code><br><code>&lt;brief   detail   extensive   terse&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br><b>ospf2</b> and <b>ospf3</b> options introduced in Junos OS Release 9.2.<br><b>ospf2</b> and <b>ospf3</b> options introduced in Junos OS Release 9.2 for EX Series switches.<br><b>flow</b> option introduced in Junos OS Release 10.0.<br><b>flow</b> option introduced in Junos OS Release 10.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>                 | Display the route entries in the routing table that were learned from a particular protocol.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b> .<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system.<br><br><b><i>protocol</i></b> —Protocol from which the route was learned: <ul style="list-style-type: none"><li>• <b>access</b>—Access route for use by DHCP application</li><li>• <b>access-internal</b>—Access-internal route for use by DHCP application</li><li>• <b>aggregate</b>—Locally generated aggregate route</li><li>• <b>arp</b>—Route learned through the Address Resolution Protocol</li><li>• <b>atmvpn</b>—Asynchronous Transfer Mode virtual private network</li><li>• <b>bgp</b>—Border Gateway Protocol</li><li>• <b>ccc</b>—Circuit cross-connect</li><li>• <b>direct</b>—Directly connected route</li><li>• <b>dvmrp</b>—Distance Vector Multicast Routing Protocol</li><li>• <b>esis</b>—End System-to-Intermediate System</li><li>• <b>flow</b>—Locally defined flow-specification route</li><li>• <b>frr</b>—Precomputed protection route or backup route used when a link goes down</li><li>• <b>isis</b>—Intermediate System-to-Intermediate System</li><li>• <b>ldp</b>—Label Distribution Protocol</li><li>• <b>l2circuit</b>—Layer 2 circuit</li><li>• <b>l2vpn</b>—Layer 2 virtual private network</li></ul> |



- **local**—Local address
- **mpls**—Multiprotocol Label Switching
- **msdp**—Multicast Source Discovery Protocol
- **ospf**—Open Shortest Path First versions 2 and 3
- **ospf2**—Open Shortest Path First versions 2 only
- **ospf3**—Open Shortest Path First version 3 only
- **pim**—Protocol Independent Multicast
- **rip**—Routing Information Protocol
- **ripng**—Routing Information Protocol next generation
- **rsvp**—Resource Reservation Protocol
- **rtarget**—Local route target virtual private network
- **static**—Statically defined route
- **tunnel**—Dynamic tunnel
- **vpn**—Virtual private network



**NOTE:** EX Series switches run a subset of these protocols. See the switch CLI for details.

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>List of Sample Output</b>    | <a href="#">show route protocol access on page 274</a><br><a href="#">show route protocol access-internal extensive on page 274</a><br><a href="#">show route protocol arp on page 274</a><br><a href="#">show route protocol bgp on page 275</a><br><a href="#">show route protocol bgp detail on page 275</a><br><a href="#">show route protocol bgp extensive on page 275</a><br><a href="#">show route protocol bgp terse on page 276</a><br><a href="#">show route protocol direct on page 276</a><br><a href="#">show route protocol frr on page 277</a><br><a href="#">show route protocol l2circuit detail on page 277</a><br><a href="#">show route protocol l2vpn extensive on page 278</a><br><a href="#">show route protocol ldp on page 279</a><br><a href="#">show route protocol ldp extensive on page 279</a><br><a href="#">show route protocol ospf (Layer 3 VPN) on page 280</a><br><a href="#">show route protocol ospf detail on page 281</a><br><a href="#">show route protocol rip on page 281</a><br><a href="#">show route protocol rip detail on page 281</a><br><a href="#">show route protocol ripng table inet6 on page 282</a><br><a href="#">show route protocol static detail on page 282</a> |

**Output Fields** For information about output fields, see the output field tables for the *show route* command, the *show route detail* command, the *show route extensive* command, or the *show route terse* command.

## Sample Output

### show route protocol access

```
user@host> show route protocol access
inet.0: 30380 destinations, 30382 routes (30379 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

13.160.0.3/32 *[Access/13] 00:00:09
 > to 13.160.0.2 via fe-0/0/0.0
13.160.0.4/32 *[Access/13] 00:00:09
 > to 13.160.0.2 via fe-0/0/0.0
13.160.0.5/32 *[Access/13] 00:00:09
 > to 13.160.0.2 via fe-0/0/0.0
```

### show route protocol access-internal extensive

```
user@host> show route protocol access-internal 13.160.0.19 extensive
inet.0: 100020 destinations, 100022 routes (100019 active, 0 holddown, 1 hidden)
13.160.0.19/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 13.160.0.19/32 -> {13.160.0.2}
 *Access-internal Preference: 12
 Next-hop reference count: 200000
 Next hop: 13.160.0.2 via fe-0/0/0.0, selected
 State: <Active Int>
 Age: 36
 Task: RPD Unix Domain Server./var/run/rpd_serv.local
 Announcement bits (1): 0-KRT
 AS path: I
```

### show route protocol arp

```
user@host> show route protocol arp
inet.0: 43 destinations, 43 routes (42 active, 0 holddown, 1 hidden)

inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)

cust1.inet.0: 1033 destinations, 2043 routes (1033 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

20.20.1.3/32 [ARP/4294967293] 00:04:35, from 20.20.1.1
 Unusable
20.20.1.4/32 [ARP/4294967293] 00:04:35, from 20.20.1.1
 Unusable
20.20.1.5/32 [ARP/4294967293] 00:04:32, from 20.20.1.1
 Unusable
20.20.1.6/32 [ARP/4294967293] 00:04:34, from 20.20.1.1
 Unusable
20.20.1.7/32 [ARP/4294967293] 00:04:35, from 20.20.1.1
 Unusable
20.20.1.8/32 [ARP/4294967293] 00:04:35, from 20.20.1.1
 Unusable
20.20.1.9/32 [ARP/4294967293] 00:04:35, from 20.20.1.1
 Unusable
20.20.1.10/32 [ARP/4294967293] 00:04:35, from 20.20.1.1
```

```

 Unusable
20.20.1.11/32 [ARP/4294967293] 00:04:33, from 20.20.1.1
 Unusable
20.20.1.12/32 [ARP/4294967293] 00:04:33, from 20.20.1.1
 Unusable
20.20.1.13/32 [ARP/4294967293] 00:04:33, from 20.20.1.1
 Unusable
...

```

### show route protocol bgp

```

user@host> show route protocol bgp 192.168.64.0/21
inet.0: 335832 destinations, 335833 routes (335383 active, 0 holddown, 450 hidden)
+ = Active Route, - = Last Active, * = Both

192.168.64.0/21 *[BGP/170] 6d 10:41:16, localpref 100, from 192.168.69.71
 AS path: 10458 14203 2914 4788 4788 I
 > to 192.168.167.254 via fxp0.0

```

### show route protocol bgp detail

```

user@host> show route protocol bgp 66.117.63.0/24 detail
inet.0: 335805 destinations, 335806 routes (335356 active, 0 holddown, 450 hidden)
66.117.63.0/24 (1 entry, 1 announced)
 *BGP Preference: 170/-101
 Next hop type: Indirect
 Next-hop reference count: 1006436
 Source: 192.168.69.71
 Next hop type: Router, Next hop index: 324
 Next hop: 192.168.167.254 via fxp0.0, selected
 Protocol next hop: 192.168.69.71
 Indirect next hop: 8e166c0 342
 State: <Active Ext>
 Local AS: 69 Peer AS: 10458
 Age: 6d 10:42:42 Metric2: 0
 Task: BGP_10458.192.168.69.71+179
 Announcement bits (3): 0-KRT 2-BGP RT Background 3-Resolve tree

1
 AS path: 10458 14203 2914 4788 4788 I
 Communities: 2914:410 2914:2403 2914:3400
 Accepted
 Localpref: 100
 Router ID: 207.17.136.192

```

### show route protocol bgp extensive

```

user@host> show route protocol bgp 192.168.64.0/21 extensive

inet.0: 335827 destinations, 335828 routes (335378 active, 0 holddown, 450 hidden)
192.168.64.0/21 (1 entry, 1 announced)
TSI:
KRT in-kernel 1.9.0.0/16 -> {indirect(342)}
Page 0 idx 1 Type 1 val db31a80
 Nexthop: Self
 AS path: [69] 10458 14203 2914 4788 4788 I
 Communities: 2914:410 2914:2403 2914:3400
Path 1.9.0.0 from 192.168.69.71 Vector len 4. Val: 1
 *BGP Preference: 170/-101
 Next hop type: Indirect
 Next-hop reference count: 1006502
 Source: 192.168.69.71
 Next hop type: Router, Next hop index: 324

```

```

Next hop: 192.168.167.254 via fxp0.0, selected
Protocol next hop: 192.168.69.71
Indirect next hop: 8e166c0 342
State: <Active Ext>
Local AS: 69 Peer AS: 10458
Age: 6d 10:44:45 Metric2: 0
Task: BGP_10458.192.168.69.71+179
Announcement bits (3): 0-KRT 2-BGP RT Background 3-Resolve tree
1
AS path: 10458 14203 2914 4788 4788 I
Communities: 2914:410 2914:2403 2914:3400
Accepted
Localpref: 100
Router ID: 207.17.136.192
Indirect next hops: 1
 Protocol next hop: 192.168.69.71
 Indirect next hop: 8e166c0 342
 Indirect path forwarding next hops: 1
 Next hop type: Router
 Next hop: 192.168.167.254 via fxp0.0
 192.168.0.0/16 Originating RIB: inet.0
 Node path count: 1
 Forwarding nexthops: 1
 Nexthop: 192.168.167.254 via fxp0.0

```

### show route protocol bgp terse

```
user@host> show route protocol bgp 192.168.64.0/21 terse
```

```
inet.0: 24 destinations, 32 routes (23 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
```

| A Destination   | P Prf | Metric 1 | Metric 2 | Next hop   | AS path    |
|-----------------|-------|----------|----------|------------|------------|
| 192.168.64.0/21 | B 170 | 100      |          | >100.1.3.2 | 10023 21 I |

### show route protocol direct

```
user@host> show route protocol direct
```

```
inet.0: 335843 destinations, 335844 routes (335394 active, 0 holddown, 450 hidden)
+ = Active Route, - = Last Active, * = Both
```

```

8.8.8.0/24 *[Direct/0] 17w0d 10:31:49
 > via fe-1/3/1.0
10.255.165.1/32 *[Direct/0] 25w4d 04:13:18
 > via lo0.0
30.30.30.0/24 *[Direct/0] 17w0d 23:06:26
 > via fe-1/3/2.0
192.168.164.0/22 *[Direct/0] 25w4d 04:13:20
 > via fxp0.0

```

```
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
```

```

47.0005.80ff.f800.0000.0108.0001.0102.5516.5001/152
 *[Direct/0] 25w4d 04:13:21
 > via lo0.0

```

```
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
```

```

abcd::10:255:165:1/128
 *[Direct/0] 25w4d 04:13:21
 > via lo0.0
fe80::2a0:a5ff:fe12:ad7/128
 *[Direct/0] 25w4d 04:13:21
 > via lo0.0

```

### show route protocol frr

```

user@host> show route protocol frr
inet.0: 43 destinations, 43 routes (42 active, 0 holddown, 1 hidden)

inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)

cust1.inet.0: 1033 destinations, 2043 routes (1033 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

20.20.1.3/32 *[FRR/200] 00:05:38, from 20.20.1.1
 > to 20.20.1.3 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.4/32 *[FRR/200] 00:05:38, from 20.20.1.1
 > to 20.20.1.4 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.5/32 *[FRR/200] 00:05:35, from 20.20.1.1
 > to 20.20.1.5 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.6/32 *[FRR/200] 00:05:37, from 20.20.1.1
 > to 20.20.1.6 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.7/32 *[FRR/200] 00:05:38, from 20.20.1.1
 > to 20.20.1.7 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.8/32 *[FRR/200] 00:05:38, from 20.20.1.1
 > to 20.20.1.8 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.9/32 *[FRR/200] 00:05:38, from 20.20.1.1
 > to 20.20.1.9 via ge-4/1/0.0
 to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.10/32 *[FRR/200] 00:05:38, from 20.20.1.1
...

```

### show route protocol l2circuit detail

```

user@host> show route protocol l2circuit detail

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
100000 (1 entry, 1 announced)
 *L2CKT Preference: 7
 Next hop: via ge-2/0/0.0, selected
 Label operation: Pop Offset: 4
 State: <Active Int>
 Local AS: 99
 Age: 9:52
 Task: Common L2 VC
 Announcement bits (1): 0-KRT
 AS path: I

ge-2/0/0.0 (1 entry, 1 announced)
 *L2CKT Preference: 7
 Next hop: via so-1/1/2.0 weight 1, selected
 Label-switched-path my-lsp

```

```

Label operation: Push 100000, Push 100000(top)[0] Offset: -4
Protocol next hop: 10.245.255.63
Push 100000 Offset: -4
 Indirect next hop: 86af0c0 298
State: <Active Int>
Local AS: 99
Age: 9:52
Task: Common L2 VC
Announcement bits (2): 0-KRT 1-Common L2 VC
AS path: I

l2circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

10.245.255.63:CtrlWord:4:3:Local/96 (1 entry, 1 announced)
 *L2CKT Preference: 7
 Next hop: via so-1/1/2.0 weight 1, selected
 Label-switched-path my-lsp
 Label operation: Push 100000[0]
 Protocol next hop: 10.245.255.63 Indirect next hop: 86af000 296
 State: <Active Int>
 Local AS: 99
 Age: 10:21
 Task: l2 circuit
 Announcement bits (1): 0-LDP
 AS path: I
 VC Label 100000, MTU 1500, VLAN ID 512

```

### show route protocol l2vpn extensive

```

user@host> show route protocol l2vpn extensive

inet.0: 14 destinations, 15 routes (13 active, 0 holddown, 1 hidden)

inet.3: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

mpls.0: 7 destinations, 7 routes (7 active, 0 holddown, 0 hidden)
800001 (1 entry, 1 announced)
TSI:
KRT in-kernel 800001 /36 -> {so-0/0/0.0}
 *L2VPN Preference: 7
 Next hop: via so-0/0/0.0 weight 49087 balance 97%, selected
 Label operation: Pop Offset: 4
 State: <Active Int>
 Local AS: 69
 Age: 7:48
 Task: Common L2 VC
 Announcement bits (1): 0-KRT
 AS path: I

so-0/0/0.0 (1 entry, 1 announced)
TSI:
KRT in-kernel so-0/0/0.0 /16 -> {indirect(288)}
 *L2VPN Preference: 7
 Next hop: via so-0/0/1.0, selected
 Label operation: Push 800000 Offset: -4
 Protocol next hop: 10.255.14.220
 Push 800000 Offset: -4
 Indirect next hop: 85142a0 288
 State: <Active Int>

```

```

Local AS: 69
Age: 7:48
Task: Common L2 VC
Announcement bits (2): 0-KRT 1-Common L2 VC
AS path: I
Communities: target:69:1 Layer2-info: encaps:PPP,
control flags:2, mtu: 0

```

### show route protocol ldp

```

user@host> show route protocol ldp
inet.0: 12 destinations, 13 routes (12 active, 0 holddown, 0 hidden)

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

192.168.16.1/32 *[LDP/9] 1d 23:03:35, metric 1
 > via t1-4/0/0.0, Push 100000
192.168.17.1/32 *[LDP/9] 1d 23:03:35, metric 1
 > via t1-4/0/0.0

private1___.inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

mpls.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

100064 *[LDP/9] 1d 23:03:35, metric 1
 > via t1-4/0/0.0, Pop
100064(S=0) *[LDP/9] 1d 23:03:35, metric 1
 > via t1-4/0/0.0, Pop
100080 *[LDP/9] 1d 23:03:35, metric 1
 > via t1-4/0/0.0, Swap 100000

```

### show route protocol ldp extensive

```

user@host> show route protocol ldp extensive
192.168.16.1/32 (1 entry, 1 announced)
 State: <FlashAll>
 *LDP Preference: 9
 Next-hop reference count: 3
 Next hop: via t1-4/0/0.0, selected
 Label operation: Push 100000
 State: <Active Int>
 Local AS: 65500
 Age: 1d 23:03:58 Metric: 1
 Task: LDP
 Announcement bits (2): 0-Resolve tree 1 2-Resolve tree 2
 AS path: I

192.168.17.1/32 (1 entry, 1 announced)
 State: <FlashAll>
 *LDP Preference: 9
 Next-hop reference count: 3
 Next hop: via t1-4/0/0.0, selected
 State: <Active Int>
 Local AS: 65500
 Age: 1d 23:03:58 Metric: 1
 Task: LDP
 Announcement bits (2): 0-Resolve tree 1 2-Resolve tree 2
 AS path: I

```

```
private1__inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
```

```
mpls.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
```

```
100064 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 100064 /36 -> {t1-4/0/0.0}
```

```
*LDP Preference: 9
 Next-hop reference count: 2
 Next hop: via t1-4/0/0.0, selected
 State: <Active Int>
 Local AS: 65500
 Age: 1d 23:03:58 Metric: 1
 Task: LDP
 Announcement bits (1): 0-KRT
 AS path: I
 Prefixes bound to route: 192.168.17.1/32
```

```
100064(S=0) (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 100064 /40 -> {t1-4/0/0.0}
```

```
*LDP Preference: 9
 Next-hop reference count: 2
 Next hop: via t1-4/0/0.0, selected
 Label operation: Pop
 State: <Active Int>
 Local AS: 65500
 Age: 1d 23:03:58 Metric: 1
 Task: LDP
 Announcement bits (1): 0-KRT
 AS path: I
```

```
100080 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 100080 /36 -> {t1-4/0/0.0}
```

```
*LDP Preference: 9
 Next-hop reference count: 2
 Next hop: via t1-4/0/0.0, selected
 Label operation: Swap 100000
 State: <Active Int>
 Local AS: 65500
 Age: 1d 23:03:58 Metric: 1
 Task: LDP
 Announcement bits (1): 0-KRT
 AS path: I
 Prefixes bound to route: 192.168.16.1/32
```

### show route protocol ospf (Layer 3 VPN)

```
user@host> show route protocol ospf
```

```
inet.0: 40 destinations, 40 routes (39 active, 0 holddown, 1 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

```
10.39.1.4/30 *[OSPF/10] 00:05:18, metric 4
 > via t3-3/2/0.0
10.39.1.8/30 [OSPF/10] 00:05:18, metric 2
 > via t3-3/2/0.0
10.255.14.171/32 *[OSPF/10] 00:05:18, metric 4
 > via t3-3/2/0.0
10.255.14.179/32 *[OSPF/10] 00:05:18, metric 2
 > via t3-3/2/0.0
```



```

224.0.0.5/32 *[OSPF/10] 20:25:55, metric 1

VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.39.1.16/30 [OSPF/10] 00:05:43, metric 1
 > via so-0/2/2.0
10.255.14.173/32 *[OSPF/10] 00:05:43, metric 1
 > via so-0/2/2.0
224.0.0.5/32 *[OSPF/10] 20:26:20, metric 1

```

### show route protocol ospf detail

```

user@host> show route protocol ospf detail
VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.39.1.16/30 (2 entries, 0 announced)
 OSPF Preference: 10
 Nexthop: via so-0/2/2.0, selected
 State: <Int>
 Inactive reason: Route Preference
 Age: 6:25 Metric: 1
 Area: 0.0.0.0
 Task: VPN-AB-OSPF
 AS path: I
 Communities: Route-Type:0.0.0.0:1:0

...

```

### show route protocol rip

```

user@host> show route protocol rip
inet.0: 26 destinations, 27 routes (25 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
10.255.14.177/32 *[RIP/100] 20:24:34, metric 2
 > to 10.39.1.22 via t3-0/2/2.0
224.0.0.9/32 *[RIP/100] 00:03:59, metric 1

```

### show route protocol rip detail

```

user@host> show route protocol rip detail
inet.0: 26 destinations, 27 routes (25 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
10.255.14.177/32 (1 entry, 1 announced)
 *RIP Preference: 100
 Nexthop: 10.39.1.22 via t3-0/2/2.0, selected
 State: <Active Int>
 Age: 20:25:02 Metric: 2
 Task: VPN-AB-RIPv2
 Announcement bits (2): 0-KRT 2-BGP.0.0.0.0+179
 AS path: I
 Route learned from 10.39.1.22 expires in 96 seconds

```

**show route protocol ripng table inet6**

```

user@host> show route protocol ripng table inet6
inet6.0: 4215 destinations, 4215 routes (4214 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

1111::1/128 *[RIPng/100] 02:13:33, metric 2
 > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::2/128 *[RIPng/100] 02:13:33, metric 2
 > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::3/128 *[RIPng/100] 02:13:33, metric 2
 > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::4/128 *[RIPng/100] 02:13:33, metric 2
 > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::5/128 *[RIPng/100] 02:13:33, metric 2
 > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::6/128 *[RIPng/100] 02:13:33, metric 2
 > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0

```

**show route protocol static detail**

```

user@host> show route protocol static detail
inet.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
10.5.0.0/16 (1 entry, 1 announced)
 *Static Preference: 5
 Next hop type: Router, Next hop index: 324
 Address: 0x9274010
 Next-hop reference count: 27
 Next hop: 192.168.187.126 via fxp0.0, selected
 Session Id: 0x0
 State: <Active NoReadvrt Int Ext>
 Age: 7w3d 21:24:25
 Validation State: unverified
 Task: RT
 Announcement bits (1): 0-KRT
 AS path: I

10.10.0.0/16 (1 entry, 1 announced)
 *Static Preference: 5
 Next hop type: Router, Next hop index: 324
 Address: 0x9274010
 Next-hop reference count: 27
 Next hop: 192.168.187.126 via fxp0.0, selected
 Session Id: 0x0
 State: <Active NoReadvrt Int Ext>
 Age: 7w3d 21:24:25
 Validation State: unverified
 Task: RT
 Announcement bits (1): 0-KRT
 AS path: I

10.13.10.0/23 (1 entry, 1 announced)
 *Static Preference: 5
 Next hop type: Router, Next hop index: 324
 Address: 0x9274010
 Next-hop reference count: 27
 Next hop: 192.168.187.126 via fxp0.0, selected
 Session Id: 0x0
 State: <Active NoReadvrt Int Ext>
 Age: 7w3d 21:24:25
 Validation State: unverified

```

Task: RT  
Announcement bits (1): 0-KRT  
AS path: I



## PART 4

# Troubleshooting

- [Acquiring Troubleshooting Information on page 287](#)
- [Troubleshooting Configuration Statements on page 297](#)



## CHAPTER 7

# Acquiring Troubleshooting Information

- [Tracing Extended DHCP Operations on page 287](#)
- [Tracing Extended DHCP Operations for Specific Interfaces on page 293](#)
- [Collecting Subscriber Access Logs Before Contacting Juniper Technical Support on page 294](#)

### Tracing Extended DHCP Operations

---

Both the extended DHCP local server and the extended DHCP relay agent support tracing operations. DHCP tracing operations track extended DHCP operations and record them in a log file. The error descriptions captured in the log file provide detailed information to help you solve problems.

You can configure DHCP trace operations at the global level and at the interface level. Global DHCP tracing logs all DHCP-related events, whereas interface-level tracing logs only interface-specific DHCP events. If you configure interface-level trace operations, you can specify tracing for a range of interfaces or an individual interface. However, only a single interface-level log file is supported. That is, you cannot specify different interface-level log files for different interfaces or groups of interfaces.

By default, nothing is traced. When you enable the tracing operation, the default tracing behavior is as follows:

- Important events for both global and per-interface tracing are logged in a file located in the `/var/log` directory. By default, the router uses the filename, `jdhcpd`. You can specify a different filename, but you cannot change the directory in which trace files are located.
- When the trace log file ***filename*** reaches 128 kilobytes (KB), it is compressed and renamed ***filename.0.gz***. Subsequent events are logged in a new file called ***filename***, until it reaches capacity again. At this point, ***filename.0.gz*** is renamed ***filename.1.gz*** and ***filename*** is compressed and renamed ***filename.0.gz***. This process repeats until the number of archived files reaches the maximum file number. Then the oldest trace file—the one with the highest number—is overwritten.

You can optionally specify the number of trace files to be from 2 through 1000. You can also configure the maximum file size to be from 10 KB through 1 gigabyte (GB). (For more information about how log files are created, see the *Junos OS System Log Messages Reference*.)

- By default, only the user who configures the tracing operation can access log files. You can optionally configure read-only access for all users.

To configure global DHCP tracing operations.

- Specify tracing operations for DHCP local server and DHCP relay:

```
[edit system processes dhcp-service]
user@host# edit traceoptions
```

The tracing configuration is applied globally to all DHCP applications in every LS:RI. Configuration of event tracing on a per-LS:RI basis is not supported. DHCP tracing is configurable only in the default LS:RI. However, DHCP applications (local server or relay) do not have to be configured in the default LS:RI. This behavior was different in software releases before Junos OS Release 11.4, where you had to configure a DHCP application in the default LS:RI in order to configure DHCP tracing, even when you wanted to run DHCP and trace its operations only in a nondefault LS:RI.

In the earlier software releases, you configured tracing statements at the **[edit system services dhcp-local-server]** and **[edit forwarding-options dhcp-relay]** hierarchy levels. These statements have been deprecated and hidden in favor of the statements at the **[edit system processes dhcp-service]** hierarchy level.



**NOTE:** The deprecated statements may be removed from a future release; we recommend that you transition to the new statements.

Because you can configure DHCP tracing at three different hierarchy levels (one new and recommended, two old and deprecated), the following rules apply to manage the interaction:

- When you configure a filename or any other options for the trace log file, the configuration at the **[edit system processes dhcp-service]** hierarchy level has the highest precedence, followed by the configuration at the **[edit system services dhcp-local-server]** hierarchy level, and finally with the lowest precedence, the configuration at the **[edit forwarding-options dhcp-relay]** hierarchy level.
- The flag configurations for multiple hierarchy levels are merged and applied to all trace log events.
- The deprecated statements do not support filtering the generation of DHCP trace log events by severity level. If you use these statements, trace logging operates with an implicit severity of **all**, regardless of the severity level configured at the **[edit system processes dhcp-service]** hierarchy level.

For information about configuring per-interface tracing options, see [“Tracing Extended DHCP Operations for Specific Interfaces” on page 292](#).

The extended DHCP traceoptions operations are described in the following sections:

- [Configuring the Extended DHCP Log Filename on page 289](#)
- [Configuring the Number and Size of Extended DHCP Log Files on page 289](#)



- [Configuring Access to the Extended DHCP Log File on page 290](#)
- [Configuring a Regular Expression for Extended DHCP Messages to Be Logged on page 290](#)
- [Configuring the Extended DHCP Tracing Flags on page 291](#)
- [Configuring the Severity Level to Filter Which Extended DHCP Messages Are Logged on page 291](#)
- [Tracing Extended DHCP Operations for Specific Interfaces on page 292](#)

## Configuring the Extended DHCP Log Filename

By default, the name of the file that records trace output is **jdhcpd**. You can specify a different name by including the **file** option. DHCP local server and DHCP relay agent both support the **file** option for the **traceoptions** statement and the **interface-traceoptions** statement.

To change the filename:

- Specify a filename for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set file filename
```

- Specify a filename for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set file filename
```

## Configuring the Number and Size of Extended DHCP Log Files

You can optionally specify the number of compressed, archived trace log files to be from 2 through 1000. You can also configure the maximum file size to be from 10 KB through 1 gigabyte (GB); the default size is 128 kilobytes (KB).

The archived files are differentiated by a suffix in the format **.*number*.gz**. The newest archived file is **.0.gz** and the oldest archived file is **.(*maximum number*)-1.gz**. When the current trace log file reaches the maximum size, it is compressed and renamed, and any existing archived files are renamed. This process repeats until the maximum number of archived files is reached, at which point the oldest file is overwritten.

For example, you can set the maximum file size to 2 MB, and the maximum number of files to 20. When the file that receives the output of the tracing operation, ***filename***, reaches 2 MB, ***filename*** is compressed and renamed ***filename.0.gz***, and a new file called ***filename*** is created. When the new ***filename*** reaches 2 MB, ***filename.0.gz*** is renamed ***filename.1.gz*** and ***filename*** is compressed and renamed ***filename.0.gz***. This process repeats until there are 20 trace files. Then the oldest file, ***filename.19.gz***, is simply overwritten when the next oldest file, ***filename.18.gz*** is compressed and renamed to ***filename.19.gz***.

DHCP local server and DHCP relay agent both support the **files** and **size** options for the **traceoptions** statement and the **interface-traceoptions** statement. To configure the number and size of trace files:

- Specify the name, number, and size of the file used for the trace output for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set file filename files number size maximum-file-size
```

- Specify the name, number, and size of the file used for the trace output for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set file filename files number size maximum-file-size
```

## Configuring Access to the Extended DHCP Log File

By default, only the user who configures the tracing operation can access the log files. You can enable all users to read the log file and you can explicitly set the default behavior of the log file.

DHCP local server and DHCP relay agent both support the **world-readable** option and the **no-world-readable** option for the **traceoptions** statement and the **interface-traceoptions** statement. To specify that all users can read the log file:

- Configure the log file to be world-readable for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set file filename world-readable
```

- Configure the log file to be world-readable for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set file filename world-readable
```

To explicitly set the default behavior, in which the log file can only be read by the user who configured tracing:

- Configure the log file to be no-world-readable for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set file filename no-world-readable
```

- Configure the log file to be no-world-readable for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set file filename no-world-readable
```

## Configuring a Regular Expression for Extended DHCP Messages to Be Logged

By default, the trace operation output includes all messages relevant to the logged events. You can refine the output by including regular expressions to be matched.

DHCP local server and DHCP relay agent both support the **match** option for the **traceoptions** statement and the **interface-traceoptions** statement. To configure regular expressions to be matched:

- Specify the regular expression for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set file filename match regular-expression
```

- Specify the regular expression for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set file filename match regular-expression
```

## Configuring the Extended DHCP Tracing Flags

By default, only important events are logged. You can specify which events and operations are logged by specifying one or more tracing flags.

DHCP local server and DHCP relay agent both support the **flag** option for the **traceoptions** statement and the **interface-traceoptions** statement. A smaller set of flags is supported for interface-level tracing than for global tracing. To configure the flags for the events to be logged:

- Specify the flags for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set flag flag
```

- Specify the flags for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set flag flag
```

## Configuring the Severity Level to Filter Which Extended DHCP Messages Are Logged

The messages associated with a logged event are categorized according to severity level. You can use the severity level to determine which messages are logged for the event type. A low severity level is less restrictive—filters out fewer messages—than a higher level. When you configure a severity level, all messages at that level and all higher (more restrictive) levels are logged.

The following list presents severity levels in order from lowest (least restrictive) to highest (most restrictive). This order also represents the significance of the messages; for example, **error** messages are of greater concern than **info** messages.

- **verbose**
- **info**
- **notice**
- **warning**
- **error**

The severity level that you configure depends on the issue that you are trying to resolve. In some cases you might be interested in seeing all messages relevant to the logged event, so you specify **all**. You can also specify **verbose** with the same result, because **verbose** is the lowest (least restrictive) severity level; it has nothing to do with the terseness or verbosity of the messages. Either choice generates a large amount of output. You can specify a more restrictive severity level, such as **notice** or **info** to filter the messages. By default, the trace operation output includes only messages with a severity level of **error**.

DHCP local server and DHCP relay agent both support the **level** option for the **traceoptions** statement and the **interface-traceoptions** statement. To configure the flags for the events to be logged:

- Specify the severity level for global tracing operations.

```
[edit system processes dhcp-service traceoptions]
user@host# set level severity
```

- Specify the severity level for per-interface tracing operations.

```
[edit system processes dhcp-service interface-traceoptions]
user@host# set level severity
```

## Tracing Extended DHCP Operations for Specific Interfaces

In addition to the global DHCP tracing operations, subscriber management enables you to trace extended DHCP operations for a specific interface or for a range of interfaces.

Configuring per-interface tracing is a two-step procedure. In the first step, you specify the tracing options that you want to use, such as file information and flags. In the second step, you enable the tracing operation on the specific interfaces.

To configure per-interface tracing operations:

1. Specify the tracing options you want to use.



**NOTE:** Per-interface tracing uses the same default tracing behavior as the global extended DHCP tracing operation. The default behavior is described in [“Tracing Extended DHCP Operations” on page 287](#).

- a. Specify that you want to configure per-interface tracing options.

- For DHCP local server, DHCPv6 local server, DHCP relay agent, and DHCPv6 relay agent:

```
[edit system processes dhcp-service]
user@host# edit interface-traceoptions
```

- b. (Optional) Specify the tracing file options.

- Configure the name for the file used for the trace output.

See [“Configuring the Extended DHCP Log Filename” on page 289](#).

- Configure the number and size of the log files.

See [“Configuring the Number and Size of Extended DHCP Log Files” on page 289](#).

- Configure access to the log file.

See [“Configuring Access to the Extended DHCP Log File” on page 290](#).

- Configure a regular expression to filter logging events.

See [“Configuring a Regular Expression for Extended DHCP Messages to Be Logged” on page 290](#).

- c. (Optional) Specify tracing flag options.  
See [“Configuring the Extended DHCP Tracing Flags” on page 291](#).
- d. (Optional) Configure a severity level for messages to specify which event messages are logged.  
See [“Configuring the Severity Level to Filter Which Extended DHCP Messages Are Logged” on page 291](#).

2. Enable tracing on an interface or interface range.

The following examples show a DHCP local server configuration. You can also use the **trace** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level and at the **[edit system services dhcp-local-server dhcpv6]** hierarchy level.

- Enable tracing on a specific interface.

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

- Enable tracing on a range of interfaces.

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

## Tracing Extended DHCP Operations for Specific Interfaces

In addition to the global DHCP tracing operations, subscriber management enables you to trace extended DHCP operations for a specific interface or for a range of interfaces.

Configuring per-interface tracing is a two-step procedure. In the first step, you specify the tracing options that you want to use, such as file information and flags. In the second step, you enable the tracing operation on the specific interfaces.

To configure per-interface tracing operations:

1. Specify the tracing options you want to use.



**NOTE:** Per-interface tracing uses the same default tracing behavior as the global extended DHCP tracing operation. The default behavior is described in [“Tracing Extended DHCP Operations” on page 287](#).

- a. Specify that you want to configure per-interface tracing options.
  - For DHCP local server, DHCPv6 local server, DHCP relay agent, and DHCPv6 relay agent:
 

```
[edit system processes dhcp-service]
user@host# edit interface-traceoptions
```
- b. (Optional) Specify the tracing file options.

- Configure the name for the file used for the trace output.

See [“Configuring the Extended DHCP Log Filename” on page 289](#).

- Configure the number and size of the log files.

See [“Configuring the Number and Size of Extended DHCP Log Files” on page 289](#).

- Configure access to the log file.

See [“Configuring Access to the Extended DHCP Log File” on page 290](#).

- Configure a regular expression to filter logging events.

See [“Configuring a Regular Expression for Extended DHCP Messages to Be Logged” on page 290](#).

- c. (Optional) Specify tracing flag options.

See [“Configuring the Extended DHCP Tracing Flags” on page 291](#).

- d. (Optional) Configure a severity level for messages to specify which event messages are logged.

See [“Configuring the Severity Level to Filter Which Extended DHCP Messages Are Logged” on page 291](#).

2. Enable tracing on an interface or interface range.

The following examples show a DHCP local server configuration. You can also use the **trace** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level and at the **[edit system services dhcp-local-server dhcpv6]** hierarchy level.

- Enable tracing on a specific interface.

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

- Enable tracing on a range of interfaces.

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

#### Related Documentation

- [Tracing Extended DHCP Operations on page 287](#)

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## Collecting Subscriber Access Logs Before Contacting Juniper Technical Support

**Problem** When you experience a subscriber access problem in your network, we recommend that you collect certain logs before you contact Juniper Technical Support. This topic shows you the most useful logs for a variety of network implementations. In addition to the relevant log information, you must also collect standard troubleshooting information and send it to Juniper Technical Support in your request for assistance.

**Solution** To collect standard troubleshooting information:

- Redirect the command output to a file.

```
user@host> request support information | save rsi-1
```

To configure logging to assist Juniper Technical Support:

1. Review the following blocks of statements to determine which apply to your configuration.

```
[edit]
set system syslog archive size 100m files 25
set system auto-configuration traceoptions file filename
set system auto-configuration traceoptions file filename size 100m files 25
set protocols ppp-service traceoptions file filename size 100m files 25
set protocols ppp-service traceoptions level all
set protocols ppp-service traceoptions flag all
set protocols ppp traceoptions file filename size 100m files 25
set protocols ppp traceoptions level all
set protocols ppp traceoptions flag all
set protocols ppp monitor-session all
set interfaces pp0 traceoptions flag all
set demux traceoptions file filename size 100m files 25
set demux traceoptions level all
set demux traceoptions flag all
set system processes dhcp-service traceoptions file filename
set system processes dhcp-service traceoptions file size 100m
set system processes dhcp-service traceoptions file files 25
set system processes dhcp-service traceoptions flag all
set class-of-service traceoptions file filename
set class-of-service traceoptions file size 100m
set class-of-service traceoptions flag all
set class-of-service traceoptions file files 25
set routing-options traceoptions file filename
set routing-options traceoptions file size 100m
set routing-options traceoptions flag all
set routing-options traceoptions file files 25
set interfaces traceoptions file filename
set interfaces traceoptions file size 100m
set interfaces traceoptions flag all
set interfaces traceoptions file files 25
set system processes general-authentication-service traceoptions file filename
set system processes general-authentication-service traceoptions file size 100m
set system processes general-authentication-service traceoptions flag all
set system processes general-authentication-service traceoptions file files 25
```

2. Copy the relevant statements into a text file and modify the log filenames as you want.
3. Copy the statements from the text file and paste them into the CLI on your router to configure logging.
4. Commit the logging configuration to begin collecting information.



**NOTE:** The maximum file size for DHCP local server and DHCP relay log files is 1 GB. The maximum number of log files for DHCP local server and DHCP relay is 1000.



**BEST PRACTICE:** Enable these logs only to collect information when troubleshooting specific problems. Enabling these logs during normal operations can result in reduced system performance.

**Related  
Documentation**

- *Compressing Troubleshooting Logs from /var/logs to Send to Juniper Technical Support*



## CHAPTER 8

# Troubleshooting Configuration Statements

- [interface-traceoptions \(DHCP\) on page 298](#)
- [trace \(DHCP Relay Agent\) on page 300](#)
- [traceoptions \(DHCP\) on page 301](#)

## interface-traceoptions (DHCP)

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|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre>interface-traceoptions {<br/>    file <i>filename</i> &lt;files <i>number</i>&gt; &lt;match <i>regular-expression</i> &gt; &lt;size <i>maximum-file-size</i>&gt;<br/>    &lt;world-readable   no-world-readable&gt;;<br/>    flag <i>flag</i>;<br/>    level (all   error   info   notice   verbose   warning);<br/>    no-remote-trace;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>     | [edit system processes dhcp-service]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b> | Statement introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>         | <p>Configure extended DHCP tracing operations that can be enabled on a specific interface or group of interfaces.</p> <p>Replaces deprecated <b>interface-traceoptions</b> statements at the [edit forwarding-options dhcp-relay] and [edit system services dhcp-local-server] hierarchy levels.</p> <p>To enable the tracing operation on the specific interfaces, you use the <b>interface <i>interface-name</i> trace</b> statement.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>             | <p><b>file <i>filename</i></b>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory <b>/var/log</b>.</p> <p><b>files <i>number</i></b>—(Optional) Maximum number of trace files to create before overwriting the oldest one. If you specify a maximum number of files, you also must specify a maximum file size with the <b>size</b> option.</p> <p><b>Range:</b> 2 through 1000</p> <p><b>Default:</b> 3 files</p> <p><b>flag <i>flag</i></b>—Tracing operation to perform. To specify more than one tracing operation, include multiple <b>flag</b> statements</p> <ul style="list-style-type: none"><li>• <b>all</b>—Trace all events</li><li>• <b>packet</b>—Trace packet and option decoding operations</li><li>• <b>state</b>—Trace changes in state</li></ul> <p><b>level</b>—Level of tracing to perform; also known as severity level. The option you configure enables tracing of events at that level and all higher (more restrictive) levels. You can specify any of the following levels:</p> <ul style="list-style-type: none"><li>• <b>all</b>—Match messages of all levels.</li><li>• <b>error</b>—Match error messages.</li><li>• <b>info</b>—Match informational messages.</li><li>• <b>notice</b>—Match notice messages about conditions requiring special handling.</li></ul> |

- **verbose**—Match verbose messages. This is the lowest (least restrictive) severity level; when you configure **verbose**, messages at all higher levels are traced. Therefore, the result is the same as when you configure **all**.
- **warning**—Match warning messages.

**Default:** error

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

**no-remote-trace**—Disable remote tracing.

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

**size *maximum-file-size***—(Optional) Maximum size of each trace file. By default, the number entered is treated as bytes. Alternatively, you can include a suffix to the number to indicate kilobytes (KB), megabytes (MB), or gigabytes (GB). If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option.

**Syntax:** *sizek* to specify KB, *sizem* to specify MB, or *sizeg* to specify GB

**Range:** 10240 through 1073741824

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

|                                 |                                                           |
|---------------------------------|-----------------------------------------------------------|
| <b>Required Privilege Level</b> | trace—To view this statement in the configuration.        |
|                                 | trace-control—To add this statement to the configuration. |

|                              |                                                                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related Documentation</b> | <ul style="list-style-type: none"> <li>• <a href="#">Tracing Extended DHCP Operations for Specific Interfaces on page 292</a></li> </ul> |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|

## trace (DHCP Relay Agent)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | trace;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <p>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/>[edit forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/>[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> <b>interface</b> <i>interface-name</i>],<br/>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-name</i>],<br/>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 10.4.</p> <p>Support at the [edit ... <b>dhcpv6</b>] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p>Enable trace operations for a group of interfaces or for a specific interface within a group. Use the statement at the [edit ... <b>dhcpv6</b>] hierarchy levels to configure DHCPv6 support.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Tracing Extended DHCP Operations on page 287</a></li><li>• <a href="#">Tracing Extended DHCP Operations for Specific Interfaces on page 292</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## traceoptions (DHCP)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> traceoptions {     file <i>filename</i> &lt;files <i>number</i>&gt; &lt;match <i>regular-expression</i> &gt; &lt;size <i>maximum-file-size</i>&gt;         &lt;world-readable   no-world-readable&gt;;     flag <i>flag</i>;     level (all   error   info   notice   verbose   warning);     no-remote-trace; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>     | [edit system processes dhcp-service]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b> | <p>Statement introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>         | <p>Define global tracing operations for extended DHCP local server and extended DHCP relay agent processes.</p> <p>Replaces deprecated <b>traceoptions</b> statements at the <b>[edit forwarding-options dhcp-relay]</b> and <b>[edit system services dhcp-local-server]</b> hierarchy levels.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>             | <p><b>file <i>filename</i></b>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory <b>/var/log</b>.</p> <p><b>files <i>number</i></b>—(Optional) Maximum number of trace files to create before overwriting the oldest one. If you specify a maximum number of files, you also must specify a maximum file size with the <b>size</b> option.</p> <p><b>Range:</b> 2 through 1000</p> <p><b>Default:</b> 3 files</p> <p><b>flag <i>flag</i></b>—Tracing operation to perform. To specify more than one tracing operation, include multiple <b>flag</b> statements</p> <ul style="list-style-type: none"> <li>• <b>all</b>—Trace all events.</li> <li>• <b>auth</b>—Trace authentication events.</li> <li>• <b>database</b>—Trace database events.</li> <li>• <b>fwd</b>—Trace firewall process events.</li> <li>• <b>general</b>—Trace miscellaneous events.</li> <li>• <b>ha</b>—Trace high availability-related events.</li> <li>• <b>interface</b>—Trace interface operations.</li> <li>• <b>io</b>—Trace I/O operations.</li> <li>• <b>packet</b>—Trace packet and option decoding operations.</li> <li>• <b>performance</b>—Trace performance measurement operations.</li> <li>• <b>profile</b>—Trace profile operations.</li> <li>• <b>rpd</b>—Trace routing protocol process events.</li> </ul> |

- **rtsock**—Trace routing socket operations.
- **session-db**—Trace session database events.
- **state**—Trace changes in state.
- **statistics**—Trace baseline statistics.
- **ui**—Trace user interface operations.

**level**—Level of tracing to perform; also known as severity level. The option you configure enables tracing of events at that level and all higher (more restrictive) levels. You can specify any of the following levels:

- **all**—Match messages of all levels.
- **error**—Match error messages.
- **info**—Match informational messages.
- **notice**—Match notice messages about conditions requiring special handling.
- **verbose**—Match verbose messages. This is the lowest (least restrictive) severity level; when you configure **verbose**, messages at all higher levels are traced. Therefore, the result is the same as when you configure **all**.
- **warning**—Match warning messages.

**Default:** error

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

**no-remote-trace**—Disable remote tracing.

**no-world-readable**—(Optional) Disable unrestricted file access, allowing only the user **root** and users who have the Junos OS **maintenance** permission to access the trace files.

**size *maximum-file-size***—(Optional) Maximum size of each trace file. By default, the number entered is treated as bytes. Alternatively, you can include a suffix to the number to indicate kilobytes (KB), megabytes (MB), or gigabytes (GB). If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option.

**Syntax:** **sizek** to specify KB, **sizem** to specify MB, or **sizeg** to specify GB

**Range:** 10240 through 1073741824

**Default:** 128 KB

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

|                                 |                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | trace—To view this statement in the configuration.<br>trace-control—To add this statement to the configuration. |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------|

|                              |                                                                |
|------------------------------|----------------------------------------------------------------|
| <b>Related Documentation</b> | • <a href="#">Tracing Extended DHCP Operations on page 287</a> |
|------------------------------|----------------------------------------------------------------|

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