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# Junos<sup>®</sup> OS for EX Series Ethernet Switches

## System Services on EX9200 Switches

Release

12.3



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Release 12.3

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## Supported Platforms

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

- EX Series

## Using the Examples in This Manual

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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 xvii defines notice icons used in this guide.

Table 1: Notice Icons

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

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

Table 2: Text and Syntax Conventions

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

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

Convention	Description	Examples
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies book names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS System Basics Configuration Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<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@# <b>set system domain-name</b> <i>domain-name</i>
<b>Text like this</b>	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Enclose optional keywords or variables.	<b>stub &lt;default-metric metric&gt;;</b>
(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.	<b>broadcast   multicast</b>  <i>(string1   string2   string3)</i>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	<b>community name members [ community-ids ]</b>
Indentation and braces ( { } )	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
<b>J-Web GUI Conventions</b>		
<b>Bold text like this</b>	Represents J-Web graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> <li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li> <li>To cancel the configuration, click <b>Cancel</b>.</li> </ul>
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

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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](mailto: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

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

- 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 Local Server on page 3](#)
- [DHCP Relay Agent on page 27](#)



## CHAPTER 1

# DHCP Local Server

- [Extended DHCP Local Server Overview on page 4](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [DHCP Local Server Handling of Client Information Request Messages on page 9](#)
- [DHCP Duplicate Client Differentiation Using Client Subinterface Overview on page 10](#)
- [Group-Specific DHCP Local Server Options on page 11](#)
- [Understanding Dynamic Reconfiguration of Extended DHCP Local Server Clients on page 12](#)
- [DHCP Snooping Support on page 15](#)
- [DHCP Auto Logout Overview on page 16](#)
- [Address-Assignment Pools Overview on page 18](#)
- [Use of DHCP Option 50 and DHCPv6 IA\\_NA Option to Request a Specific IP Address on page 19](#)
- [Multiple Address Assignment for DHCPv6 Clients on page 20](#)
- [Centrally Configured Opaque DHCP Options on page 21](#)
- [Graceful Routing Engine Switchover on page 25](#)
- [Port Number Requirements for DHCP Firewall Filters on page 26](#)

## Extended DHCP Local Server Overview

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You can enable the router or switch to function as an extended DHCP local server and configure the extended DHCP local server options on the router (or switch). The extended DHCP local server provides an IP address and other configuration information in response to a client request. 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 or DHCP client 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 enhances traditional DHCP server operation by utilizing centralized address-assignment pools. The address-assignment pools are managed independently of the DHCP local server and can be shared by different client applications.

You can also configure the extended DHCP local server to support IPv6 clients. Both DHCP local server and DHCPv6 local server support the specific address request feature, which enables you to assign a particular address to a client. See [“DHCPv6 Local Server Overview” on page 8](#) for information about the DHCPv6 local server feature.



**NOTE:** You cannot configure the extended DHCP local server and extended DHCP relay on the same interface.

To configure the extended DHCP local server on the router (or switch), you include the **dhcp-local-server** statement at the **[edit system services]** hierarchy level. See the **[edit system services dhcp-local-server]** Hierarchy Level for the complete DHCP local server syntax.

This overview covers:

- [Interaction Among the DHCP Client, Extended DHCP Local Server, and Address-Assignment Pools on page 4](#)
- [Providing DHCP Client Configuration Information on page 5](#)
- [Minimal Configuration for Clients on page 6](#)
- [DHCP Local Server and Address-Assignment Pools on page 6](#)
- [DHCP Liveness Detection on page 7](#)

## Interaction Among the DHCP Client, Extended DHCP Local Server, and Address-Assignment Pools

The pattern of interaction between the DHCP local server, the DHCP client, and address-assignment pools is the same regardless of whether the software installation is on a router or a switch. Technically, the codes operates in the same manner, regardless of the hardware platform. 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 local server is configured on the router.

- On switches—In a typical network configuration, the DHCP client is on an access device, such as a personal computer, and the DHCP local server is configured on the switch.

The following steps provide a high-level description of the interaction among the DHCP local server, DHCP client, and address-assignment pools:

1. The DHCP client sends a discover packet to one or more DHCP local servers in the network to obtain configuration parameters and an IP address for the subscriber (or DHCP client).
2. Each DHCP local server that receives the discover packet then searches its address-assignment pool for the client address and configuration options. Each local server creates an entry in its internal client table to keep track of the client state, then sends a DHCP offer packet to the client.
3. On receipt of the offer packet, the DHCP client selects the DHCP local server from which to obtain configuration information and sends a request packet indicating the DHCP local server selected to grant the address and configuration information.
4. The selected DHCP local server sends an acknowledgement packet to the client that contains the client address lease and configuration parameters. The server also installs the host route and ARP entry, and then monitors the lease state.

## Providing DHCP Client Configuration Information

When the extended DHCP application receives a response from an external authentication server, the response might include information in addition to the IP address and subnet mask. The extended DHCP application uses the information from the authentication grant for the response the DHCP application sends to the DHCP client. The DHCP application can either send the information in its original form or the application might merge the information with local configuration specifications. For example, if the authentication grant includes an address pool name and a local configuration specifies DHCP attributes for that pool, the extended DHCP application merges the authentication results and the attributes in the reply that the server sends to the client.

A local configuration is optional — a client can be fully configured by the external authentication service. However, if the external authentication service does not provide client configuration, you must configure the local address-assignment pool to provide the configuration for the client. When a local configuration specifies options, the extended DHCP application adds the local configuration options to the offer PDU the server sends to the client. If the two sets of options overlap, the options in the authentication response from the external service take precedence.

When you use RADIUS to provide the authentication, the additional information might be in the form of RADIUS attributes and Juniper Networks VSAs. [Table 3 on page 6](#) lists the information that RADIUS might include in the authentication grant. See RADIUS Attributes and Juniper Networks VSAs Supported by the AAA Service Framework for a complete list of RADIUS attributes and Juniper Networks VSAs that the extended DHCP applications supports for subscriber access management or DHCP management.

Table 3: Information in Authentication Grant

Attribute Number	Attribute Name	Description
RADIUS attribute 8	Framed-IP-Address	Client IP address
RADIUS attribute 9	Framed-IP-Netmask	Subnet mask for client IP address (DHCP option 1)
Juniper Networks VSA 26-4	Primary-DNS	Primary domain server (DHCP option 6)
Juniper Networks VSA 26-5	Secondary-DNS	Secondary domain server (DHCP option 6)
Juniper Networks VSA 26-6	Primary-WINS	Primary WINS server (DHCP option 44)
Juniper Networks VSA 26-7	Secondary-WINS	Secondary WINS server (DHCP option 44)
RADIUS attribute 27	Session-Timeout	Lease time
RADIUS attribute 88	Framed-Pool	Address assignment pool name
Juniper Networks VSA 26-109	DHCP-Guided-Relay-Server	DHCP relay server

### Minimal Configuration for Clients

The extended DHCP local server provides a minimal configuration to the DHCP client if the client does not have DHCP option 55 configured. The server provides the subnet mask of the address-assignment pool that is selected for the client. In addition to the subnet mask, the server provides the following values to the client if the information is configured in the selected address-assignment pool:

- **router**—A router (or switch) located on the client's subnet. This statement is the equivalent of DHCP option 3.
- **domain name**—The name of the domain in which the client searches for a DHCP server host. This is the default domain name that is appended to hostnames that are not fully qualified. This is equivalent to DHCP option 15.
- **domain name server**—A Domain Name System (DNS) name server that is available to the client to resolve hostname-to-client mappings. This is equivalent to DHCP option 6.

### DHCP Local Server and Address-Assignment Pools

In the traditional DHCP server operation, the client address pool and client configuration information reside on the DHCP server. With the extended DHCP local server, the client address and configuration information reside in centralized address-assignment pools,

which are managed independently of the DHCP local server and which can be shared by different client applications.

The extended DHCP local server also supports advanced pool matching and the use of named address ranges. You can also configure the local server to use DHCP option 82 information in the client PDU to determine which named address range to use for a particular client. The client configuration information, which is configured in the address-assignment pool, includes user-defined options, such as boot server, grace period, and lease time.

Configuring the DHCP environment that includes the extended DHCP local server requires two independent configuration operations, which you can complete in any order. In one operation, you configure the extended DHCP local server on the router and specify how the DHCP local server determines which address-assignment pool to use. In the other operation, you configure the address-assignment pools used by the DHCP local server. The address-assignment pools contain the IP addresses, named address ranges, and configuration information for DHCP clients. See [Configuring Address-Assignment Pools](#) for details about creating and using address-assignment pools.



**NOTE:** The extended DHCP local server and the address-assignment pools used by the server must be configured in the same logical system and routing instance.

## DHCP Liveness Detection

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 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. You can configure



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

### Related Documentation

- [Configuring Address-Assignment Pools](#)
- [Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 83](#)
- [Dynamic Profile Attachment to DHCP Subscriber Interfaces Overview](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)
- [Use of DHCP Option 50 and DHCPv6 IA\\_NA Option to Request a Specific IP Address on page 19](#)
- [Graceful Routing Engine Switchover on page 25](#)
- [Subscriber Management Unified ISSU Support](#)

- [Tracing Extended DHCP Operations on page 395](#)
- [Verifying and Managing DHCP Local Server Configuration on page 297](#)
- [Example: Minimum Extended DHCP Local Server Configuration on page 43](#)
- [Example: Extended DHCP Local Server Configuration with Optional Pool Matching on page 43](#)
- [Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine](#)

## DHCPv6 Local Server Overview

The DHCPv6 local server enhances the extended DHCP local server by providing support for IPv6. When a DHCPv6 client logs in, the DHCPv6 local server uses the AAA service framework to interact with the RADIUS server. The RADIUS server, which is configured independently of DHCP, authenticates the client and supplies the IPv6 prefix and client configuration parameters.

You can configure DHCPv6 local server to communicate the following attributes to the AAA service framework and RADIUS at login time:

- Client username
- Client password



**NOTE:** The client username, which uniquely identifies a subscriber or a DHCP client, must be present in the configuration in order for DHCPv6 local server to use RADIUS authentication.

Based on the attributes that the DHCPv6 local server provides, RADIUS returns the information listed in [Table 4 on page 8](#) to configure the client:

**Table 4: RADIUS Attributes and VSAs for DHCPv6 Local Server**

Attribute Number	Attribute Name	Description
27	Session-Timeout	Lease time, in seconds. If not supplied, the lease does not expire
123	Delegated-IPv6-Prefix	Prefix that is delegated to the client
26-143	Max-Clients-Per-Interface	Maximum number of clients allowed per interface

The DHCPv6 local server 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.

The DHCPv6 local server provides many of the same features as the extended DHCP local server, including:

- Configuration for a specific interface or for a group of interfaces
- Site-specific usernames and passwords
- Numbered Ethernet interfaces
- Statically configured CoS and filters
- AAA directed login
- Use of the IA\_NA option to assign a specific address to a client

To configure the extended DHCPv6 local server on the router (or switch), you include the **dhcpv6** statement at the **[edit system services dhcp-local-server]** hierarchy level. See the [edit system services dhcp-local-server] Hierarchy Level for the complete DHCP local server syntax, including the DHCPv6 syntax.

You can also include the **dhcpv6** statement at the following hierarchy levels:

- **[edit logical-systems *logical-system-name* system services dhcp-local-server]**
- **[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server]**
- **[edit routing-instances *routing-instance-name* system services dhcp-local-server]**

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)
- [Grouping Interfaces with Common DHCP Configurations on page 60](#)
- [Group-Specific DHCP Local Server Options on page 11](#)
- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Configuring Passwords for Usernames on page 80](#)
- [Creating Unique Usernames for DHCP Clients on page 81](#)
- [Use of DHCP Option 50 and DHCPv6 IA\\_NA Option to Request a Specific IP Address on page 19](#)
- [Verifying and Managing DHCPv6 Local Server Configuration on page 297](#)
- [Example: Extended DHCPv6 Local Server Configuration](#)

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## DHCP Local Server Handling of Client Information Request Messages

DHCP clients that already have externally provided addresses may solicit further configuration information from a DHCP server by sending a DHCP information request that indicates what information is desired. By default, DHCP local server and DHCPv6 local server ignore any DHCP information requests that they receive. You can override this default behavior to enable processing of these messages. Include the **process-inform**

statement at the **[edit system services dhcp-local-server overrides]** or **[edit system services dhcp-local-server dhcpv6 overrides]** hierarchy level.

By default, DHCP relay and DHCP relay proxy automatically forward DHCP information request messages without modification if the messages are received on an interface configured for a DHCP server group. DHCP relay and relay proxy drop information request messages received on any other interfaces. You cannot disable this default DHCP relay and relay proxy behavior.

The information requested by these clients has typically been configured with the **dhcp-attributes** statement for an address pool defined by the **address-assignment pool pool-name** statement at the **[edit access]** hierarchy level.

When you enable processing of DHCP information requests, you can optionally specify the name of the pool from which the local server retrieves the requested configuration information for the client. If you do not specify a local pool, then the local server requests that AAA selects and returns only the name of the relevant pool.

DHCP local server responds to the client with a DHCP acknowledgment message that includes the requested information—if it is available. DHCPv6 local server responds in the same manner but uses a DHCP reply message. No subscriber management or DHCP-management is applied as a result of the DHCP information request message.



**NOTE:** PPP interfaces are not supported on EX Series switches.

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When DHCPv6 is configured over PPP interfaces, the PPP RADIUS authentication data can be used to select the pool from which the response information is taken. Additionally other RADIUS attributes can also be inserted into the DHCPv6 reply message. If an overlap exists between RADIUS attributes and local pool attributes, the RADIUS values are used instead of the local configuration data. If no RADIUS information is received from the underlying PPP interface, then the behavior is the same as described previously for non-PPP interfaces.

**Related  
Documentation**

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Enabling Processing of Client Information Requests on page 67](#)

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## DHCP Duplicate Client Differentiation Using Client Subinterface Overview

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In some network environments, client IDs and MAC addresses might not be unique, resulting in duplicate clients. For example, two network adapters might be manufactured with the same hardware address, resulting in a duplicate MAC address among the DHCP clients attached to the router (or switch). A duplicate DHCP client occurs when a client attempts to get a lease, and that client has the same client ID or the same MAC address as an existing DHCP client.

When DHCP server receives a request from a new client that has a duplicate ID or MAC address, DHCP server terminates the address lease for the existing client and returns the

address to its original address pool. DHCP server then assigns a new address and lease to the new client.

By default, both DHCP local server and DHCP relay 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. In this situation, the default configuration prevents duplicate clients.

You can provide greater differentiation between duplicate clients by configuring DHCP to consider the client subinterface when duplicate clients occur. In this optional configuration, DHCP uniquely identifies:

- The subnet on which the client resides
- The subinterface on which the client resides
- The client within the subnet

**Related  
Documentation**

- [Configuring DHCP Duplicate Client Support on page 60](#)
- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 59](#)

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## Group-Specific DHCP Local Server Options

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You can include the following statements at the **[edit system services dhcp-local-server group group-name]** hierarchy level to set group-specific DHCP local server configuration options, and at the **[edit system services dhcp-local-server]** hierarchy level to set global DHCP local server configuration options. Statements configured at the **[edit system services dhcp-local-server group group-name]** hierarchy level apply only to the named group of interfaces, and override any global DHCP local server settings configured with the same statements at the **[edit system services dhcp-local-server]** hierarchy level.

DHCPv6 local server supports the same set of statements with the exception of the **dynamic-profile** statement.

- **authentication**—Configure the parameters the router 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.
- **overrides**—Override the default configuration settings for the extended DHCP local server. For information, see “[Overriding Default DHCP Local Server Configuration Settings](#)” on page 63.

**Related  
Documentation**

- [Grouping Interfaces with Common DHCP Configurations on page 60](#)

## Understanding Dynamic Reconfiguration of Extended DHCP Local Server Clients

Dynamic reconfiguration of clients enables the extended DHCP local server to initiate a client update without waiting for the client to initiate a request.

### Default Client/Server Interaction

Typically the DHCP client initiates all of the basic DHCP client/server interactions. The DHCP server sends information to a client only in response to a request from that client. This behavior does not enable a client to be quickly updated with its network address and configuration in the event of server changes:



**NOTE:** Technically, the DHCP client/server interactions are the same on routers and switches. However, the primary usage of this technology on the routers is for subscriber management. The switches are not used for subscriber management. Therefore, this topic provides two sample scenarios. The actions are the same, but the implementation details are different.

- On routers—Suppose a service provider restructures its addressing scheme or changes the server IP addresses that it provided to clients. Without dynamic reconfiguration, the service provider typically clears the DHCP server binding table, but cannot inform the DHCP clients that their bindings have been cleared. Consequently, the DHCP client operates as though its IP address is still valid, but it is now unable to communicate over the access network, resulting in an outage. The DHCP local server needs to wait for the client to send a message to renew its lease or rebind to the server. In response, the server sends a NAK message to the client to force it to begin the DHCP connection process again. Alternatively, the provider can wait for customers to make a service call about the network failures and then instruct them to power cycle their customer premises equipment to reinitiate the connection. Neither of these actions is timely or convenient for customers.
- On switches—Suppose you restructure the addressing scheme or change the server IP addresses that the DHCP server provides to clients. Without dynamic reconfiguration, the network typically clears the DHCP server binding table, but cannot inform the DHCP clients that their bindings have been cleared. Consequently, the DHCP client operates as though its IP address is still valid, but it is now unable to communicate over the access network, resulting in an outage. The DHCP local server needs to wait for the client to send a message to renew its lease or rebind to the server. In response, the server sends a NAK message to the client to force it to begin the DHCP connection process again. Alternatively, you can wait for users to notify you of the network failures and then instruct them to power cycle their equipment to reinitiate the connection. Neither of these actions is timely or convenient for users.

### Dynamic Client/Server Interaction for DHCPv4

Dynamic reconfiguration for DHCPv4 is available through a partial implementation of RFC 3203, *DHCP Reconfigure Extension* for DHCPv4. It enables the DHCPv4 local server to send a message to the client to force reconfiguration.

The server sends a `forcerenew` message to a DHCPv4 client, initiating a message exchange. In response, DHCPv4 clients that support the `forcerenew` message then send a lease renewal message to the server. The server rejects the lease renewal request and sends a NAK to the client, causing the client to reinitiate the DHCP connection. A successful reconnection results in the reconfiguration of the DHCP client. Only the exchange of `forcerenew`, `renew`, and NAK messages is supported from RFC 3202. DHCP relay and DHCP relay proxy do not participate in the client reconfiguration or react to `forcerenew` messages other than to forward them to the client.

When the local server state machine starts the reconfiguration process on a bound client, the client transitions to the reconfiguring state and the local server sends a `forcerenew` message to the client. Because the client was in the bound state before entering the reconfiguring state, all subscriber services or DHCP-managed services, such as forwarding and statistics, continue to work. Client statistics are not maintained in the interval between a successful reconfiguration and the subsequent client binding. When the server responds to the client renewal request with a NAK, the client entry is removed from the binding table and final statistics are reported. New statistics are collected when the client sends a discover message to establish a new session.

## Dynamic Client/Server Interaction for DHCPv6

Dynamic reconfiguration for DHCPv6 is available through a partial implementation of RFC 3315, *Dynamic Host Configuration Protocol for IPv6 (DHCPv6)*. It enables the DHCPv6 local server to send a message to the client to force reconfiguration.

DHCPv6 servers send `reconfigure` messages to DHCPv6 clients, initiating a message exchange. In response, DHCPv6 clients that support the `reconfigure` message transition to the renewing state and send a `renew` message to the server. The server returns a reply message with a lifetime of zero (0). The client transitions to the init state and sends a `solicit` message. The server sends an `advertise` message to indicate that it is available for service. The client sends a request for configuration parameters, which the server then includes in its reply. DHCP relay and DHCP relay proxy do not participate in the client reconfiguration or react to `reconfigure` messages other than to forward them to the client.

When a DHCPv6 server is triggered to initiate reconfiguration on a bound DHCPv6 client, the client transitions to the `reconfigure` state. All subscriber services, such as forwarding and statistics, continue to work. The server then sends the `reconfigure` message to the client. If the DHCPv6 client is already in the `reconfigure` state, the DHCPv6 server ignores the reconfiguration trigger. For clients in any state other than bound or `reconfigure`, the server clears the binding state of the client, as if the `clear dhcpv6 server binding` command had been issued.

## Dynamic Configuration Options

You can enable dynamic reconfiguration for all DHCP clients or only the DHCP clients serviced by a specified group of interfaces, and you can modify the behavior accordingly.

- To enable dynamic reconfiguration with default reconfiguration values for all DHCP clients, include the `reconfigure` statement at the `[edit system services dhcp-local-server]` hierarchy level for DHCPv4 clients, and at the `[edit system services dhcp-local-server dhcpv6]` hierarchy level for DHCPv6 clients.

- Alternatively, to enable dynamic reconfiguration for only the DHCP clients serviced by a specified group of interfaces, include the **reconfigure** statement at the **[edit system services dhcp-local-server group *group-name*]** hierarchy level for DHCPv4 clients, and at the **[edit system services dhcp-local-server dhcpv6 group *group-name*]** hierarchy level for DHCPv6 clients.

You can optionally modify the behavior of the reconfiguration process by including the appropriate statements at the **[edit system services dhcp-local-server reconfigure]** hierarchy level for all DHCPv4 clients, and at the **[edit system services dhcp-local-server dhcpv6 reconfigure]** hierarchy level for all DHCPv6 clients. To override this global configuration for only the DHCP clients serviced by a specified group of interfaces, you can include the statements with different values at the **[edit system services dhcp-local-server group *group-name* reconfigure]** hierarchy level for DHCPv4 clients, and at the **[edit system services dhcp-local-server dhcpv6 group *group-name* reconfigure]** hierarchy level for DHCPv6 clients.

Include the **attempts** statement to specify how many times the local server sends the **forcerenew** or **reconfigure** message to initiate client reconfiguration. Include the **timeout** statement to set the interval between the first and second attempts. The interval between each subsequent attempt doubles the previous value. For example, if the first value is 2, the first retry is attempted 2 seconds after the first attempt fails. The second retry is attempted 4 seconds after the first retry fails. The third retry is attempted 8 seconds after the second retry fails, and so on.

By default, the DHCP client's original configuration is restored if all of the reconfiguration attempts fail. Include the **clear-on-abort** statement to delete the client instead.

You can configure an authentication token by including the **token** statement. The DHCP local server then includes this token inside the authentication option when it sends **forcerenew** or **reconfigure** messages. If the service provider has previously configured the DHCP client with this token, then the client can compare that token against the newly received token, and reject the message if the tokens do not match. This functionality corresponds to RFC 3118, *Authentication for DHCP Messages*, section 4.

In the event of a RADIUS-initiated disconnect (RID), the client is deleted by default. You can configure the client to be reconfigured instead of deleted by including the **radius-disconnect** statement. The client is deleted if all attempts to reconfigure the client fail.

For the DHCPv6 server only, you can include the **strict** statement. By default, the server accepts solicit messages from clients that do not support server-initiated reconfiguration. Including this statement causes the server to discard solicit messages from nonsupporting clients; consequently the server does not bind these clients.

You can force the local server to initiate the reconfiguration process for clients by issuing the **request dhcp server reconfigure** command for DHCPv4 clients, and the **request dhcpv6 server reconfigure** command for DHCPv6 clients. Command options determine whether reconfiguration is then attempted for all clients or specified clients.

Events that take place while a reconfiguration is in process take precedence over the reconfiguration. [Table 5 on page 15](#) lists the actions taken in response to several different events.

**Table 5: Action Taken for Events That Occur During a Reconfiguration**

Event	Action
Server receives a discover (DHCPv4) or solicit (DHCPv6) message from the client.	Server drops packet and deletes client.
Server receives a request, renew, rebind, or init-reboot message from the client.	DHCPv4—Server sends NAK message and deletes client.  DHCPv6—Server drops packet and deletes client. Server replies to renew message with lease time of zero (0).
Server receives a release or decline message from the client.	Server deletes client.
The client lease times out.	Server deletes client.
The <b>clear dhcp server binding</b> command is issued.	Server deletes client.
The <b>request dhcp server reconfigure</b> (DHCPv4) or <b>request dhcpv6 server reconfigure</b> (DHCPv6) command is issued.	Command is ignored.
GRES or DHCP restart occurs.	Reconfiguration process is halted.

**Related Documentation**

- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)

## DHCP Snooping Support

DHCP snooping provides DHCP security on the router or switch by filtering incoming messages. When DHCP snooping is enabled, the router (or switch) 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 (and in Junos OS Release 12.3R2 on EX Series switches), the router (or switch) discards snooped packets by default. To enable normal processing of snooped packets in Junos OS Release 10.1 and later (and in Junos OS Release 12.3R2 on EX Series switches), 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 (or switch) 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 (or switch) 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 99](#)
- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server on page 79](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 54](#)

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## 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 17](#)
- [How DHCP Identifies and Releases Clients on page 17](#)
- [Option 60 and Option 82 Requirements on page 18](#)

## 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 (on the routers), 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. 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. The secondary identification method is based on the DHCP option 60 and option 82 information in DHCP discover messages.

Both the primary and secondary identification methods use subnet information to differentiate between clients. The primary identification method differentiates between two clients with the same MAC address (or same Client Identifier) if the clients are on different subnets. Similarly, the secondary identification method 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 97](#).

### Related Documentation

- [Automatically Logging Out DHCP Clients on page 66](#)
- [DHCP Relay Agent Option 82 Value for Auto Logout on page 97](#)
- [Clearing DHCP Bindings for Subscriber Access](#)

## Address-Assignment Pools Overview

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The address-assignment pool feature supports subscriber management and DHCP management functionality by enabling you to create IPv4 and IPv6 address pools that different client applications can share. For example, multiple client applications, such as DHCP, can use an address-assignment pool to provide addresses for their particular clients. Client applications can acquire addresses for either authenticated or unauthenticated clients.

Address-assignment pools support both dynamic and static address assignment. In dynamic address assignment, a client is automatically assigned an address from the address-assignment pool. In static address assignment, which is supported for IPv4 pools only, you reserve an address that is then always used by a particular client. Addresses that are reserved for static assignment are removed from the dynamic address pool and cannot be assigned to other clients.

You can configure named address ranges within an address-assignment pool. A named range is a subset of the overall address range. A client application can use named ranges

to manage address assignment based on client-specific criteria. For example, for IPv4 address-assignment pools, you might create a named range that is based on a specific DHCP option 82 value. Then, when a DHCP client request matches the specified option 82 value, an address from the specified range is assigned to the client.

You can link address-assignment pools together to provide backup pools for address assignment. When the primary pool is fully allocated, the router or switch automatically switches to the linked, or secondary, pool and begins allocating addresses from that pool.

You can also explicitly identify that an address-assignment pool is used for ND/RA.

#### Related Documentation

- [Configuring Address-Assignment Pools](#)
- [DNS Address Assignment Precedence](#)
- [Address-Assignment Pools Licensing Requirements](#)
- [Example: Configuring an Address-Assignment Pool](#)
- [Configuring an Extended DHCP Server with DHCPv6 on EX Series Switches \(CLI Procedure\)](#)

## Use of DHCP Option 50 and DHCPv6 IA\_NA Option to Request a Specific IP Address

Subscriber management or DHCP management enables you to specify that DHCP local server assign a particular address to a client. For example, if a client is disconnected, you might use this capability to assign the same address that the client was using prior to being disconnected. If the requested address is available, DHCP assigns it to the client. If the address is unavailable, the DHCP local server offers another address, based on the address allocation process.

Both DHCP local server and DHCPv6 local server support the specific address request feature. DHCP local server uses DHCP option 50 in DHCP DISCOVER messages to request a particular address, while DHCPv6 local server uses the IA\_NA option (Identity Association for Non-Temporary Addresses) in DHCPv6 SOLICIT messages.



**NOTE:** Subscriber management (DHCP management) supports only one address for each of the DHCPv6 IA\_NA or IA\_PD address types. If the DHCPv6 client requests more than one address for a given type, the DHCPv6 local server uses only the first address and ignores the other addresses.

## Multiple Address Assignment for DHCPv6 Clients

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Subscriber management (on the routers) or DHCP management (on the switches) enables you to assign multiple addresses to a single DHCPv6 client. Multiple address support is enabled by default, and is activated when the DHCPv6 local server receives a DHCPv6 Solicit message from a subscriber (or DHCP client) that contains multiple addresses.

For example, if you are implementing this feature on the routers, you might use the multiple address assignment feature in a networking environment in which a customer premises equipment (CPE) device requires a host address and a delegated prefix. In such an environment, you can configure subscriber management to assign both a DHCPv6 IA\_NA (Identity Association for Non-Temporary Addresses) and an IA\_PD (Identity Association for Prefix Delegation) address to the client (the CPE device).

- [Multiple Address Assignment Using Local Address Pools or RADIUS on page 20](#)
- [Junos OS Predefined Variable for Multiple DHCPv6 Address Assignment on page 20](#)

### Multiple Address Assignment Using Local Address Pools or RADIUS

You can use either local address pools or RADIUS when assigning multiple addresses to a DHCP client. When at least one address is successfully allocated, the router or switch creates a subscriber (or DHCP client) entry and binds the entry to the assigned address. If both addresses are successfully allocated, the router (or switch) creates a single subscriber (or DHCP client) entry and binds both addresses to that entry.

You can also configure a delegated address pool, which explicitly specifies the address pool that subscriber management (or DHCP management) uses to assign IPv6 prefixes for subscribers (or DHCP clients).

### Junos OS Predefined Variable for Multiple DHCPv6 Address Assignment



NOTE: EX Series switches do not support demux.

(On the routers only) Subscriber management provides a predefined variable that you can use to dynamically configure DHCPv6 multiple address assignment. You apply the Junos OS predefined variable, `$junos-subscriber-ipv6-multi-address`, as a demux source address in a dynamic profile. When the dynamic profile is attached to a subscriber, the variable is expanded to include both the host and prefix addresses. You use this variable instead of the `$junos-subscriber-ipv6-address` variable, which supports a single IPv6 address.

You include the `$junos-subscriber-ipv6-multi-address` variable at the `[edit dynamic-profile profile-name interfaces interface-name unit logical-unit-number family inet6 demux-source]` hierarchy level.

#### Related Documentation

- [Specifying the Delegated Address Pool for IPv6 Prefix Assignment on page 68](#)
- [Junos OS Predefined Variables](#)

## Centrally Configured Opaque DHCP Options

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Subscriber management (on the routers) or DHCP management (on the switches) enables you to centrally configure DHCP options on a RADIUS server and then distribute the options on a per-subscriber or per DHCP-client basis. This method results in RADIUS-sourced DHCP options—the DHCP options originate at the RADIUS server and are sent to the subscriber (or DHCP client). This differs from the traditional client-sourced method (also called DHCP-sourced) of configuring DHCP options, in which the options originate at the client and are sent to the RADIUS server. The subscriber management (DHCP management) RADIUS-sourced DHCP options are also considered to be *opaque*, because DHCP local server performs minimal processing and error checking for the DHCP options string before passing the options to the subscriber (DHCP client).

Subscriber management (or DHCP management) uses Juniper Networks VSA 26-55 (DHCP-Options) to distribute the RADIUS-sourced DHCP options. The RADIUS server includes VSA 26-55 in the Access-Accept message that the server returns during subscriber authentication or DHCP client authentication. The RADIUS server sends the Access-Accept message to the RADIUS client, and then on to DHCP local server for return to the DHCP subscriber. The RADIUS server can include multiple instances of VSA 26-55 in a single Access-Accept message. The RADIUS client concatenates the multiple instances and uses the result as a single instance.

There is no CLI configuration required to enable subscriber management (DHCP management) to use the centrally configured DHCP options—the procedure is triggered by the presence of VSA 26-55 in the RADIUS Access-Accept message.

When building the offer packet for the DHCP client, DHCP local server uses the following sequence:

1. Processes any RADIUS-configured parameters that are passed as separate RADIUS attributes; for example, RADIUS attribute 27 (Session Timeout).
2. Processes any client-sourced parameters; for example, RADIUS attributes 53 (DHCP Message Type) and 54 (Server Identifier).
3. Appends (without performing any processing) the opaque DHCP options string contained in the VSA 26-55 received from the RADIUS server.

In addition to supporting central configuration of DHCP options directly on the RADIUS server (RADIUS-sourced options), subscriber management (DHCP management) also supports the traditional client-sourced options configuration, in which the router's (switch's) DHCP component sends the options to the RADIUS server. The client-sourced DHCP options method is supported for both DHCP local server and DHCP relay agent; however, the RADIUS-sourced central configuration method is supported on DHCP local server only. Both the RADIUS-sourced and client-sourced methods support DHCPv4 and DHCPv6 subscribers (clients).



**NOTE:** You can use the RADIUS-sourced and client-sourced methods simultaneously on DHCP local server. However, you must ensure that the central configuration method does not include options that override client-sourced DHCP options, because this can create unpredictable results.

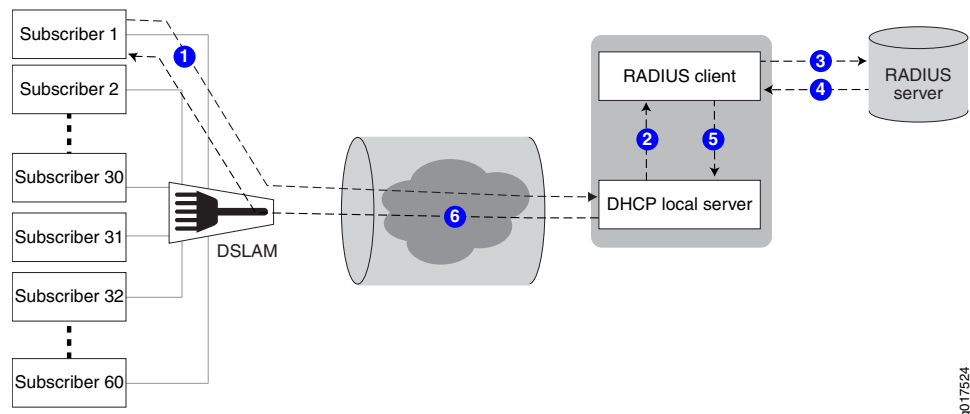
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- [Data Flow for RADIUS-Sourced DHCP Options on page 23](#)
- [Multiple VSA 26-55 Instances Configuration on page 24](#)
- [DHCP Options That Cannot Be Centrally Configured on page 24](#)

## Data Flow for RADIUS-Sourced DHCP Options

Figure 1 on page 23 shows the procedure subscriber management (DHCP management) uses when configuring DHCP options for subscribers (DHCP clients).

**Figure 1: DHCP Options Data Flow**



The following general sequence describes the data flow when subscriber management (DHCP management) uses RADIUS-sourced DHCP options and VSA 26-55 to configure a DHCP subscriber (client):

1. The subscriber (DHCP client) sends a DHCP discover message (or DHCPv6 solicit message) to the DHCP local server. The message includes client-sourced DHCP options.
2. The DHCP local server initiates authentication with the Junos OS RADIUS client.
3. The RADIUS client sends an Access-Request message on behalf of the subscriber (DHCP client) to the external RADIUS server. The message includes the subscriber's (DHCP client's) client-sourced DHCP options.
4. The external RADIUS server responds by sending an Access-Accept message to the RADIUS client. The Access-Accept message includes the RADIUS-sourced opaque DHCP options in VSA 26-55.
5. The RADIUS client sends the DHCP options string to DHCP local server. If there are multiple VSA 26-55 instances, the RADIUS client first assembles them into a single options string.
6. DHCP local server processes all options into the DHCP offer (or DHCPv6 reply) message, except for the RADIUS-sourced VSA 26-55 DHCP options. After processing all other options, DHCP local server then appends the unmodified VSA 26-55 DHCP options to the message and sends the message to the subscriber (DHCP client).

7. The subscriber (DHCP client) is configured with the DHCP options.
8. The following operations occur after the subscriber (DHCP client) receives the DHCP options:
  - Accounting—The RADIUS client sends Acct-Start and Interim-Accounting requests to the RADIUS server, including the RADIUS-sourced DHCP options in VSA 26-55. By default, the DHCP options are included in accounting requests.
  - Renewal—When the subscriber (DHCP client) renews, the cached DHCP options value is returned in the DHCP renew (or DHCPv6 ACK) message. The originally assigned DHCP options cannot be modified during a renew cycle.
  - Logout—When the subscriber (DHCP client) logs out, the RADIUS client sends an Acct-Stop message to the RADIUS server, including the RADIUS-sourced VSA 26-55.

## Multiple VSA 26-55 Instances Configuration

VSA 26-55 supports a maximum size of 247 bytes. If your RADIUS-sourced DHCP options field is greater than 247 bytes, you must break the field up and manually configure multiple instances of VSA 26-55 for the RADIUS server to return. When using multiple instances for an options field, you must place the instances in the packet in the order in which the fragments are to be reassembled by the RADIUS client. The fragments can be of any size of 247 bytes or less.



**BEST PRACTICE:** For ease of configuration and management of your DHCP options, you might want to have one DHCP option per VSA 26-55 instance, regardless of the size of the option field.

When the RADIUS client returns a reassembled opaque options field in an accounting request to the RADIUS server, the client uses 247-byte fragments. If you had originally created instances of fewer than 247 bytes, the returned fragments might not be the same as you originally configured on the RADIUS server.



**NOTE:** If you are configuring Steel-Belted Radius (SBR) to support multiple VSA 26-55 instances, ensure that you specify VSA 26-55 with the RO flags in the Subscriber Management RADIUS dictionary file. The R value indicates a multivalued reply attribute and the O value indicates an ordered attribute.

## DHCP Options That Cannot Be Centrally Configured

Table 6 on page 25 shows the DHCP options that you must not centrally configure on the RADIUS server.

Table 6: Unsupported Opaque DHCP Options

DHCP Option	Option Name	Comments
Option 0	Pad Option	Not supported.
Option 51	IP Address Lease Time	Value is provided by RADIUS attribute 27 (Session-Timeout).
Option 52	Option Overload	Not supported.
Option 53	DHCP Message Type	Value is provided by DHCP local server.
Option 54	Server Identifier	Value is provided by DHCP local server.
Option 55	Parameter Request List	Value is provided by DHCP local server.
Option 255	End	Value is provided by DHCP local server.
–	DHCP magic cookie	Not supported.

**Related Documentation**

- Monitoring DHCP Options Configured on RADIUS Servers

## 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 the Junos OS High Availability Configuration Guide.

**Related  
Documentation**

- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- Subscriber Management Unified ISSU Support

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## Port Number Requirements for DHCP Firewall Filters

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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 complete information about configuring firewall filters in general, see Junos OS Firewall Filters and Traffic Policers Configuration Guide.

**Related  
Documentation**

- Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- Dynamic Firewall Filters Overview

## CHAPTER 2

# DHCP Relay Agent

- [Extended DHCP Relay Agent Overview on page 28](#)
- [DHCP Relay Proxy Overview on page 31](#)
- [DHCPv6 Relay Agent Overview on page 33](#)
- [DHCP Duplicate Client Differentiation Using Client Subinterface Overview on page 34](#)
- [Group-Specific DHCP Relay Options on page 34](#)
- [DHCP Snooping Support on page 35](#)
- [DHCP Auto Logout Overview on page 36](#)
- [Graceful Routing Engine Switchover on page 38](#)
- [Port Number Requirements for DHCP Firewall Filters on page 39](#)

## Extended DHCP Relay Agent Overview

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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 Switches 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 more information about how to use the DHCP relay agent in a video/IPTV application, see the Junos OS Feature Guides.

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 the Routing Policy Configuration Guide.

You can also configure the extended DHCP relay agent to support IPv6 clients. See [“DHCPv6 Relay Agent Overview” on page 33](#) 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 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 29](#)
- [DHCP Liveness Detection on page 30](#)

## 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 33](#)
- [Access and Access-Internal Routes for Subscriber Management](#)
- [Dynamic Profile Attachment to DHCP Subscriber Interfaces Overview](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)
- [DHCP Relay Proxy Overview on page 31](#)
- [Graceful Routing Engine Switchover on page 25](#)
- [Subscriber Management Unified ISSU Support](#)
- [Verifying and Managing DHCP Relay Configuration on page 299](#)
- [Tracing Extended DHCP Operations on page 395](#)
- [Example: Minimum DHCP Relay Agent Configuration on page 49](#)
- [Example: DHCP Relay Agent Configuration with Multiple Clients and Servers](#)
- [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 50](#)
- [Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing](#)
- [Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine](#)

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## DHCP Relay Proxy Overview

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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 28](#)
- [Enabling DHCP Relay Proxy Mode on page 112](#)
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116](#)

## 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 Switches 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 **dhcpv6** statement at the **[edit forwarding-options dhcp-relay]** hierarchy level.

You can also include the **dhcpv6** 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 58](#)
- [Grouping Interfaces with Common DHCP Configurations on page 60](#)
- [Group-Specific DHCP Relay Options on page 34](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)
- [Configuring Passwords for Usernames on page 80](#)
- [Creating Unique Usernames for DHCP Clients on page 81](#)
- [Verifying and Managing DHCPv6 Local Server Configuration on page 297](#)
- [Example: Extended DHCPv6 Local Server Configuration](#)

## DHCP Duplicate Client Differentiation Using Client Subinterface Overview

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In some network environments, client IDs and MAC addresses might not be unique, resulting in duplicate clients. For example, two network adapters might be manufactured with the same hardware address, resulting in a duplicate MAC address among the DHCP clients attached to the router (or switch). A duplicate DHCP client occurs when a client attempts to get a lease, and that client has the same client ID or the same MAC address as an existing DHCP client.

When DHCP server receives a request from a new client that has a duplicate ID or MAC address, DHCP server terminates the address lease for the existing client and returns the address to its original address pool. DHCP server then assigns a new address and lease to the new client.

By default, both DHCP local server and DHCP relay 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. In this situation, the default configuration prevents duplicate clients.

You can provide greater differentiation between duplicate clients by configuring DHCP to consider the client subinterface when duplicate clients occur. In this optional configuration, DHCP uniquely identifies:

- The subnet on which the client resides
- The subinterface on which the client resides
- The client within the subnet

### Related Documentation

- [Configuring DHCP Duplicate Client Support on page 60](#)
- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 59](#)

## Group-Specific DHCP Relay Options

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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 112](#).
- **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 115](#).
- **overrides**—Override the default configuration settings for the extended DHCP relay agent. For information, see [“Overriding the Default DHCP Relay Configuration Settings” on page 90](#).
- **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-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](#).
- **relay-option-82**—(DHCPv4 only) Enable or disable the insertion of option 82 information in packets destined for a DHCP server. For information, see [“Enabling and Disabling Insertion of Option 82 Information” on page 108](#).
- **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](#).

**Related  
Documentation**

- [Grouping Interfaces with Common DHCP Configurations on page 60](#)

## DHCP Snooping Support

DHCP snooping provides DHCP security on the router or switch by filtering incoming messages. When DHCP snooping is enabled, the router (or switch) 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 (and in Junos OS Release 12.3R2 on EX Series switches), the router (or switch) discards snooped packets by default. To enable normal processing of snooped packets in Junos OS Release 10.1 and later (and in Junos OS Release 12.3R2 on EX Series switches), 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 (or switch) 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 (or switch) 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 99](#)
- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server on page 79](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 54](#)

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## 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 37](#)
- [How DHCP Identifies and Releases Clients on page 37](#)
- [Option 60 and Option 82 Requirements on page 38](#)

## 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 (on the routers), 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. 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. The secondary identification method is based on the DHCP option 60 and option 82 information in DHCP discover messages.

Both the primary and secondary identification methods use subnet information to differentiate between clients. The primary identification method differentiates between two clients with the same MAC address (or same Client Identifier) if the clients are on different subnets. Similarly, the secondary identification method 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.

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## 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 97](#).

### Related Documentation

- [Automatically Logging Out DHCP Clients on page 66](#)
- [DHCP Relay Agent Option 82 Value for Auto Logout on page 97](#)
- [Clearing DHCP Bindings for Subscriber Access](#)

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## 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 the Junos OS High Availability Configuration Guide.

- Related Documentation**
- [Extended DHCP Local Server Overview on page 4](#)
  - [Extended DHCP Relay Agent Overview on page 28](#)
  - Subscriber Management Unified ISSU Support

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## Port Number Requirements for DHCP Firewall Filters

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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 complete information about configuring firewall filters in general, see Junos OS Firewall Filters and Traffic Policers Configuration Guide.

- Related Documentation**
- Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine
  - [Extended DHCP Local Server Overview on page 4](#)

- [Extended DHCP Relay Agent Overview on page 28](#)
- [Dynamic Firewall Filters Overview](#)

## PART 2

# Configuration

- [DHCP Local Server Examples on page 43](#)
- [DHCP Relay Agent Examples on page 49](#)
- [Configuration Tasks for DHCP Local Server on page 57](#)
- [Configuration Tasks for DHCP Relay Agent on page 85](#)
- [DHCP Local Server Configuration Statements on page 119](#)
- [DHCP Relay Agent Configuration Statements on page 205](#)



## CHAPTER 3

# DHCP Local Server Examples

- [Example: Minimum Extended DHCP Local Server Configuration on page 43](#)
- [Example: Extended DHCP Local Server Configuration with Optional Pool Matching on page 43](#)
- [Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44](#)

### Example: Minimum Extended DHCP Local Server Configuration

---

This example shows the minimum configuration you need to use for the extended DHCP local server on the router or switch:

```
[edit system services]
dhcp-local-server {
  group group_one {
    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 the server group named **group\_one**, and specifies that the DHCP local server is enabled on interface **fe-0/0/2.0** within the group. The DHCP local server uses the default pool match configuration of **ip-address-first**.

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)

### Example: Extended DHCP Local Server Configuration with Optional Pool Matching

---

This example shows an extended DHCP local server configuration that includes optional IPv4 address-assignment pool matching and interface groups. For pool matching, this configuration specifies that the DHCP local server first check the response from an external authentication authority (for example, RADIUS) and use the Framed-IPv6-Pool attribute to determine the address-assignment pool to use for the client address. If no external authority match is found, the DHCP local server then uses ip-address-first

matching together with the option 82 information to match the named address range for client IPv4 address assignment. The option 82 matching must also be included in the address-assignment pool configuration.

```
[edit system services]
dhcp-local-server {
  group group_one {
    interface fe-0/0/2.0;
    interface fe-0/0/2.1;
  }
  group group_two {
    interface fe-0/0/3.0;
    interface fe-0/0/3.1;
  }
  pool-match-order {
    external-authority
    ip-address-first;
    option-82;
  }
}
```



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

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)
- [Address-Assignment Pools Overview on page 18](#)

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## Example: Configuring Group Liveness Detection for DHCP Local Server Clients

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This example shows how to configure group liveness detection for DHCP local server subscribers or DHCP clients using Bidirectional Forwarding Detection (BFD) as the liveness detection method.

- [Requirements on page 44](#)
- [Overview on page 45](#)
- [Configuration on page 45](#)

### Requirements

- Juniper Networks MX Series routers
- Juniper Networks EX Series switches
- Junos OS Release 12.1R1 or later
- Junos OS Release 12.3R2 or later for EX Series switches
- Configure DHCP local server. See [“Extended DHCP Local Server Overview” on page 4](#).

## Overview

In this example, you configure group liveness detection for DHCP local server subscribers (clients) by completing the following operations:

1. Enable liveness detection for DHCP local server subscriber (or DHCP client) groups.
2. Specify BFD as the liveness detection method for all dynamically created DHCP local server subscribers (clients).
3. Configure BFD-specific statements to define how the protocol behaves.
4. Configure the action the router (switch) 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 system services dhcp-local-server dhcpv6]` or `[edit system services dhcp-local-server dhcpv6 group group-name]` hierarchy level.

## Configuration

### Step-by-Step Procedure

To configure group liveness detection for DHCP local server:

1. Specify that you want to configure liveness detection.  

```
[edit system services dhcp-local-server ]
user@host# edit liveness-detection
```
2. Specify that you want to configure liveness detection for a specific DHCP local server group.  

```
[edit system services dhcp-local-server liveness-detection]
user@host# edit group local_group_1
```
3. Specify that you want to configure the liveness detection method.  

```
[edit system services dhcp-local-server group local_group_1 liveness-detection]
user@host# edit method
```
4. Specify BFD as the liveness detection method that you want DHCP to use.  

```
[edit system services dhcp-local-server group local_group_1 liveness-detection
method]
user@host# edit bfd
```
5. Configure the detection time threshold (in milliseconds) at which a trap is produced.  

```
[edit system services dhcp-local-server group local_group_1 liveness-detection
method bfd]
user@host# set detection-time threshold 30000
```
6. Configure the time (in milliseconds) for which BFD holds a session up notification.  

```
[edit system services dhcp-local-server group local_group_1 liveness-detection
method bfd]
```

```
user@host# set holddown-interval 50
```

7. Configure the BFD minimum transmit and receive interval (in milliseconds).



**NOTE:** You do not need to configure the BFD minimum transmit and receive interval if you configure the minimum-interval for the BFD transmit-interval statement and the minimum-receive-interval.

```
[edit system services dhcp-local-servergroup local_group_1 liveness-detection method bfd]
user@host# set minimum-interval 45000
```

8. Configure the minimum receive interval (in milliseconds).



**NOTE:** You do not need to configure the BFD minimum receive interval if you configure the BFD minimum transmit and receive interval.

```
[edit system services dhcp-local-server group local_group_1 liveness-detection method bfd]
user@host# set minimum-receive-interval 60000
```

9. Configure a multiplier value for the detection time.

```
[edit system services dhcp-local-server group local_group_1 liveness-detection method bfd]
user@host# set multiplier 100
```

10. Disable the ability for BFD interval timers to change or adapt to network situations.

```
[edit system services dhcp-local-server group local_group_1 liveness-detection method bfd]
user@host# set no-adaptation
```

11. Configure the BFD session mode.

```
[edit system services dhcp-local-server group local_group_1 liveness-detection method bfd]
user@host# set session-mode automatic
```

12. Configure the threshold and minimum interval for the BFD transmit interval.



**NOTE:** You do not need to configure the transmit interval values if you have already configured the minimum transmit and receive interval for BFD.

```
[edit system services dhcp-local-server group local_group_1 liveness-detection method bfd]
user@host# set transmit-interval threshold 60000 minimum-interval 45000
```

13. Configure the BFD protocol version you want to detect.

```
[edit system services dhcp-local-server group local_group_1 liveness-detection
method bfd]
user@host# set version automatic
```

14. Configure the action the router (switch) 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 system services dhcp-local-server group local_group_1 liveness-detection]
user@host# edit failure-action action
```

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

```
[edit]
regress@montag# show system
services {
  dhcp-local-server {
    group local_group_1 {
      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 30000;
            }
            session-mode automatic;
            holddown-interval 50;
          }
        }
      }
    }
  }
}
```

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

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)
- [DHCP Liveness Detection Overview on page 115](#)
- [Configuring Detection of DHCP Local Server Client Connectivity on page 76](#)



## CHAPTER 4

# DHCP Relay Agent Examples

- [Example: Minimum DHCP Relay Agent Configuration on page 49](#)
- [Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 50](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 54](#)

### 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 28](#)

## 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 50](#)
- [Overview on page 50](#)
- [Configuration on page 51](#)
- [Verification on page 52](#)

### 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 28](#).

- (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 60](#).

### 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 51](#)
- [Results on page 52](#)

### 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 52](#)

---

### 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 28](#)
  - DHCP Options and Selective Traffic Processing Overview
  - Using DHCP Option Information to Selectively Process DHCP Client Traffic
  - Displaying a Count of DHCP Packets That Are Dropped or Forwarded During Selective Processing That Is Based on DHCP Option Strings
  - Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing

## 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 54](#)
- [Overview on page 54](#)
- [Configuration on page 54](#)

### Requirements

- Configure DHCP relay agent. See “[Extended DHCP Relay Agent Overview](#)” on page 28.

### 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 15](#)
  - [Configuring DHCP Snooping for DHCP Relay Agent on page 99](#)



## CHAPTER 5

# Configuration Tasks for DHCP Local Server

- [Using External AAA Authentication Services with DHCP on page 58](#)
- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 59](#)
- [Configuring DHCP Duplicate Client Support on page 60](#)
- [Grouping Interfaces with Common DHCP Configurations on page 60](#)
- [Guidelines for Configuring Interface Ranges on page 61](#)
- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Specifying the Maximum Number of DHCP Clients Per Interface on page 64](#)
- [Disabling ARP Table Population on page 65](#)
- [Automatically Logging Out DHCP Clients on page 66](#)
- [Enabling Processing of Client Information Requests on page 67](#)
- [Specifying the Delegated Address Pool for IPv6 Prefix Assignment on page 68](#)
- [Enabling DHCPv6 Rapid Commit Support on page 69](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
- [Configuring Dynamic Reconfiguration Attempts for DHCP Clients on page 71](#)
- [Configuring Deletion of the Client When Dynamic Reconfiguration Fails on page 72](#)
- [Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect on page 73](#)
- [Configuring a Token for DHCP Local Server Authentication on page 73](#)
- [Preventing Binding of Clients That Do Not Support Reconfigure Messages on page 74](#)
- [Requesting DHCP Local Server to Initiate Reconfiguration of Client Bindings on page 75](#)
- [Configuring Detection of DHCP Local Server Client Connectivity on page 76](#)
- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77](#)
- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server on page 79](#)
- [Configuring Passwords for Usernames on page 80](#)

- [Creating Unique Usernames for DHCP Clients on page 81](#)
- [Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 83](#)

## 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” on page 80](#).

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

See [“Creating Unique Usernames for DHCP Clients” on page 81](#).

**Related  
Documentation**

- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [DHCPv6 Relay Agent Overview on page 33](#)

---

## Guidelines for Configuring Support for DHCP Duplicate Clients

This topic describes the guidelines for configuring DHCP to include the client subinterface in order to distinguish between duplicate clients (clients with the same MAC address or client ID) in a subscriber access or in a DHCP-managed environment.

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

- The optional DHCP duplicate client support feature is used for DHCPv4 clients. For DHCPv6, client identification is independent of MAC address.
- For DHCP relay agent configuration:
  - DHCP relay must be configured to insert option 82, regardless of whether or not the incoming packet has option 82.
  - Option 82 must include the Agent Circuit ID suboption (suboption 1).
  - Option 82 must be the interface name, not the interface description.
  - DHCP server must echo option 82 in the server’s reply. This is required because of the following:
    - The giaddr inserted by DHCP relay is the same for duplicate clients on different subinterfaces. The DHCP local server uses option 82 when allocating the IP address.
    - DHCP relay uses the echoed option 82 to learn the client subinterface and to construct the client key.
- For the Layer 3 wholesale model:
  - The wholesaler and retailer logical system/routing instances must have the same **duplicate-clients-on-interface** statement configuration.
  - For DHCP relay, the wholesaler and the retailer routing contexts must both be configured with the Agent Circuit ID suboption (suboption 1) in option 82.

- Related Documentation**
- [DHCP Duplicate Client Differentiation Using Client Subinterface Overview on page 10](#)
  - [Configuring DHCP Duplicate Client Support on page 60](#)

---

## Configuring DHCP Duplicate Client Support

You can optionally configure DHCP local server and DHCP relay to include a client subinterface when distinguishing between two clients that have the same MAC address or client ID. The configuration is a global setting for each logical system/routing instance.

To configure DHCP local server to include the client subinterface:

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

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

2. Configure the optional duplicate client support.

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

To configure DHCP relay agent to include the client subinterface:

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

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

2. Configure the optional duplicate client support.

```
[edit system services dhcp-relay]
user@host# set duplicate-clients-on-interface
```

- Related Documentation**
- [DHCP Duplicate Client Differentiation Using Client Subinterface Overview on page 10](#)
  - [Guidelines for Configuring Support for DHCP Duplicate Clients on page 59](#)

---

## 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 on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [DHCPv6 Relay Agent Overview on page 33](#)
- [Group-Specific DHCP Local Server Options on page 11](#)
- [Group-Specific DHCP Relay Options on page 34](#)
- [Guidelines for Configuring Interface Ranges on page 61](#)

## 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 60](#)

## Overriding Default DHCP Local Server Configuration Settings

Subscriber management enables you to override certain default DHCP and DHCPv6 local server configuration settings. You can override 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 local server configuration options, include the **overrides** statement and its subordinate statements at the **[edit system services dhcp-local-server]** or **[edit system services dhcp-local-server dhcpv6]** hierarchy level.
- To override DHCP local server configuration options for a named group of interfaces, include the statements at the **[edit system services dhcp-local-server group group-name]** or **[edit system services dhcp-local-server dhcpv6 group]** hierarchy level.
- To override DHCP local server configuration options for a specific interface within a named group of interfaces, include the statements at the **[edit system services dhcp-local-server group group-name interface]** or **[edit system services dhcp-local-server dhcpv6 group group-name interface]** hierarchy level.

To override default DHCP local server configuration settings:

1. Specify that you want to configure override options.

Global override:

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

Group level override:

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

Per-interface override:

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

2. (Optional) Override the maximum number of DHCP clients allowed per interface.

See [“Specifying the Maximum Number of DHCP Clients Per Interface” on page 64](#).

3. (Optional) Override ARP table population in distrusted environments.

See [“Disabling ARP Table Population” on page 65](#).

4. (Optional) Configure DHCP client auto logout.

See [“Automatically Logging Out DHCP Clients” on page 66](#).

5. (Optional) Enable processing of information requests from clients.

See [“Enabling Processing of Client Information Requests” on page 67](#).

6. (Optional, DHCPv6 only) Specify a delegated pool name to use for DHCPv6 multiple address assignment.

See [“Specifying the Delegated Address Pool for IPv6 Prefix Assignment” on page 68](#).

7. (Optional, DHCPv6 only) Enable DHCPv6 rapid commit support.  
See [“Enabling DHCPv6 Rapid Commit Support” on page 69](#).
8. (Optional) Delete DHCP override settings.  
See [“Deleting DHCP Local Server and DHCP Relay Override Settings” on page 70](#).

**Related  
Documentation**

- [Group-Specific DHCP Local Server Options on page 11](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)

---

## 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
```

#### Related Documentation

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)

## Disabling ARP Table Population

By default, DHCP populates the ARP table with the MAC address of a client when the client binding is established. However, you may choose to use the DHCP **no-arp** statement to hide the subscriber MAC address or the DHCP client MAC address, as it appears in ARP table entries.

When running in a trusted environment (that is, when not using the **no-arp** statement), DHCP populates the ARP table with unique MAC addresses contained within the DHCP PDU for each DHCP client:

**Table 7: ARP Table in Trusted Environment**

IP Address	MAC Address
Client 1 IP Address	MAC A
Client 2 IP Address	MAC B
Client 3 IP Address	MAC C

In distrusted environments, you can specify the **no-arp** statement to hide the MAC addresses of clients. When you specify the **no-arp** statement, DHCP does not automatically populate the ARP table with MAC address information from the DHCP PDU for each client. Instead, the system performs an ARP to obtain the MAC address of each client and obtains the MAC address of the immediately attached device (for example, a DSLAM). DHCP populates the ARP table with the same interface MAC address (for example, MAC X from a DSLAM interface) for each client:

**Table 8: ARP Table in Distrusted Environment**

IP Address	MAC Address
Client 1 IP Address	MAC X
Client 2 IP Address	MAC X

Table 8: ARP Table in Distrusted Environment (*continued*)

IP Address	MAC Address
Client 3 IP Address	MAC X

To disable ARP table population:

- 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:
 

```
[edit forwarding-options dhcp-relay]
user@host# edit overrides
```
- Disable ARP table population with client-specific information. (DHCP local server and DHCP relay agent both support the **no-arp** statement.)
  - For DHCP local server:
 

```
[edit system services dhcp-local-server overrides]
user@host# set no-arp
```
  - For DHCP relay:
 

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

#### Related Documentation

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)

## 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 that has the same DHCP option 60 and DHCP option 82 information as the 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. (DHCP local server and DHCP relay agent both support the **client-discover-match** statement.)

- For DHCP local server:

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

- For DHCP relay:

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



**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 16](#)
- [DHCP Relay Agent Option 82 Value for Auto Logout on page 97](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)

## Enabling Processing of Client Information Requests

By default, DHCP local server and DHCPv6 local server do not respond to information request messages from the client. You can enable DHCP local server and DHCPv6 local server to process these messages and respond to them with an acknowledgment (ack or reply message, respectively) and the requested information.

DHCP relay agent automatically forwards the information request messages without modification to the configured server group by means of the interfaces configured for the respective server group. The messages are dropped if they are received on an unconfigured interface. DHCP relay proxy also supports forwarding these messages. You cannot disable forwarding of the information request messages.

Configure one or more local address pools if you want to use a local pool rather than one provided by AAA. See [Configuring an Address-Assignment Pool Name and Addresses](#). For processing information request messages, the address configuration is not necessary. For DHCP local server, you must specify the IPv4 family; for DHCPv6 local server, you must specify the IPv6 family.

See [Configuring DHCP Client-Specific Attributes](#) for details about how to configure the information sought by clients that send information request messages.

To enable processing of DHCP client information request messages:

1. Specify that you want to configure override options.

- For DHCP local server:

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

- For DHCPv6 local server:

```
[edit system services dhcp-local-server dhcpv6 overrides]
user@host# set process-inform
```

2. (Optional) Specify a pool name from which DHCP information is returned to the client.

- For DHCP local server:

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

- For DHCPv6 local server:

```
[edit system services dhcp-local-server dhcpv6 overrides process-inform]
user@host# set pool pool-name
```

#### Related Documentation

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)

---

## Specifying the Delegated Address Pool for IPv6 Prefix Assignment

You can explicitly specify a delegated address pool:

- On routers—Subscriber management uses the pool to assign IPv6 prefixes for subscribers. You can specify the delegated address pool globally, for a specific group of interfaces, or for a particular interface.
- On switches—DHCP management uses the pool to assign IPv6 prefixes for DHCP clients. You can specify the delegated address pool globally, for a specific group of interfaces, or for a particular interface.



**NOTE:** You can also use by Juniper Networks VSA 26-161 to specify the delegated address pool. The VSA-specified value always takes precedence over the delegated-address statement.

To configure the delegated address pool for DHCPv6 local server:

1. Specify that you want to configure override options.

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

2. Configure the delegated address pool.

```
[edit system services dhcp-local-server dhcpv6 overrides]
user@host# set delegated-pool paris-cable-12
```

#### Related Documentation

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)

## Enabling DHCPv6 Rapid Commit Support

You can configure the extended DHCPv6 local server to support the DHCPv6 Rapid Commit option (DHCPv6 option 14). When rapid commit is enabled on the extended DHCPv6 local server, the server recognizes the Rapid Commit option in Solicit messages sent from the DHCPv6 client. (DHCPv6 clients are configured separately to include the DHCPv6 Rapid Commit option in the Solicit messages.) The server and client then use a two-message exchange (Solicit and Reply) to configure clients, rather than the default four-message exchange (Solicit, Advertise, Request, and Reply). The two-message exchange provides faster client configuration, and is beneficial in environments in which networks are under a heavy load.

You can configure the DHCPv6 local server to support the Rapid Commit option globally, for a specific group, or for a specific interface. By default, Rapid Commit support is disabled on the DHCPv6 local server.

To configure the DHCPv6 local server to support the DHCPv6 Rapid Commit option:

1. Specify that you want to configure override options.

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

2. Enable rapid commit support.

```
[edit system services dhcp-local-server dhcpv6 overrides]
user@host# set rapid-commit
```

- Related Documentation**
- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
  - [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
  - [Extended DHCP Local Server Overview on page 4](#)

---

## Deleting DHCP Local Server and DHCP Relay Override Settings

You can delete override settings for DHCP local server and DHCP relay globally, for a named group, or for a specific interface within a named group. You can delete a specific override setting or all overrides.

- To delete a specific DHCP override setting at a particular hierarchy level, include the **overrides** statement with the appropriate subordinate statements. For example, to delete the DHCP local server override **no-arp** setting for a group named **marin20**:

```
[edit system services dhcp-local-server]
user@host# delete group marin20 overrides no-arp
```

- To delete all DHCP override settings at a hierarchy level, include the **overrides** statement without any subordinate statements. For example, to delete all DHCP relay overrides for interface **fxp0.0**, which is in group **marin20**:

```
[edit forwarding-options dhcp-relay]
user@host# delete group marin20 interface fxp0.0 overrides
```

- Related Documentation**
- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
  - [Extended DHCP Local Server Overview on page 4](#)
  - [Extended DHCP Relay Agent Overview on page 28](#)

---

## Configuring Extended DHCP Local Server Dynamic Client Reconfiguration

The DHCP local server can initiate reconfiguration of its clients to avoid extended outages because of server configuration changes. In addition to requesting that the DHCP local server initiate reconfiguration, you can specify the reconfiguration behavior.

To configure dynamic reconfiguration of DHCP clients:

1. Enable dynamic reconfiguration with default values for all clients.

For DHCPv4:

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

For DHCPv6:

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

2. (Optional) Override the global configuration for a particular group of clients.

For DHCPv4:

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

For DHCPv6:

```
[edit system services dhcp-local-server dhcpv6 group group-name]
user@host# set reconfigure
```

3. (Optional) Configure how the server attempts reconfiguration.  
See [“Configuring Dynamic Reconfiguration Attempts for DHCP Clients” on page 71](#).
4. (Optional) Configure the response to a failed reconfiguration.  
See [“Configuring Deletion of the Client When Dynamic Reconfiguration Fails” on page 72](#).
5. (Optional) Configure the behavior in response to a RADIUS-initiated disconnect.  
See [“Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect” on page 73](#).
6. (Optional) Configure a token for rudimentary server authentication.  
See [“Configuring a Token for DHCP Local Server Authentication” on page 73](#).
7. (Optional) Initiate reconfiguration of some or all client bindings.  
See [“Requesting DHCP Local Server to Initiate Reconfiguration of Client Bindings” on page 75](#).
8. (Optional) Prevent DHCPv6 clients from binding if they do not support reconfigure messages.  
See [“Preventing Binding of Clients That Do Not Support Reconfigure Messages” on page 74](#).

## Configuring Dynamic Reconfiguration Attempts for DHCP Clients

You can configure how many attempts the local server makes to initiate reconfiguration of the DHCP client by sending `forcerenew` messages. You can also specify how long the server waits between attempts. By default, eight attempts are made and the initial interval is two seconds.

Each successive attempt doubles the interval between attempts. For example, if the first value is 2, the first retry is attempted 2 seconds after the first attempt fails. The second retry is attempted 4 seconds after the first retry fails. The third retry is attempted 8 seconds after the second retry fails, and so on. A group configuration takes precedence over a DHCP local server configuration.

(Optional) To configure DHCP local server reconfiguration behavior for all DHCP clients:

1. Specify the number of reconfiguration attempts.

For DHCPv4:

```
[edit system services dhcp-local-server reconfigure]
user@host# set attempts 5
```

For DHCPv6:

```
[edit system services dhcp-local-server dhcpv6 reconfigure]
user@host# set attempts 5
```

2. Specify the interval between reconfiguration attempts.

For DHCPv4:

```
[edit system services dhcp-local-server reconfigure]
user@host# set timeout 8
```

For DHCPv6:

```
[edit system services dhcp-local-server dhcpv6 reconfigure]
user@host# set timeout 8
```

To override the global configuration for a particular group of clients, include the statements at the `[edit system services dhcp-local-server group group-name reconfigure]` hierarchy level or the `[edit system services dhcpv6 dhcp-local-server group group-name reconfigure]` hierarchy level.

**Related  
Documentation**

- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
- [attempts on page 134](#)
- [timeout on page 197](#)

---

## Configuring Deletion of the Client When Dynamic Reconfiguration Fails

---

You can configure the local server to delete the client when the maximum number of reconfiguration attempts has been made without success. By default, the client's original configuration is restored.

(Optional) To configure the DHCP local server to delete the client when reconfiguration is not successful, for all clients:

- Specify the client deletion.

For DHCPv4:

```
[edit system services dhcp-local-server reconfigure]
user@host# set clear-on-abort
```

For DHCPv6:

```
[edit system services dhcp-local-server dhcpv6 reconfigure]
user@host# set clear-on-abort
```

To override the global configuration for a particular group of clients, include the statement at the `[edit system services dhcp-local-server group group-name reconfigure]` hierarchy

level or the `[edit system services dhcpv6 dhcp-local-server group group-name reconfigure]` hierarchy level.

- Related Documentation**
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
  - [clear-on-abort on page 138](#)

## Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect

You can configure the local server to reconfigure the client when the client receives a RADIUS-initiated disconnect. By default, the client is deleted when a RADIUS-initiated disconnect is received.

(Optional) To configure the DHCP local server to reconfigure the client instead of deleting the client when a RADIUS-initiated disconnect is received, for all clients:

- Specify the RADIUS-initiated disconnect trigger.

For DHCPv4:

```
[edit system services dhcp-local-server reconfigure trigger]
user@host# set radius-disconnect
```

For DHCPv6:

```
[edit system services dhcp-local-server dhcpv6 reconfigure trigger]
user@host# set radius-disconnect
```

To override the global configuration for a particular group of clients, include the statement at the `[edit system services dhcp-local-server group group-name reconfigure trigger]` hierarchy level or the `[edit system services dhcpv6 dhcp-local-server group group-name reconfigure trigger]` hierarchy level.

- Related Documentation**
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
  - [radius-disconnect on page 186](#)
  - [trigger on page 200](#)

## Configuring a Token for DHCP Local Server Authentication

You can configure the local server to include a constant, unencoded token in the DHCP forcerenew message as part of the authentication option it sends to clients. The client compares the received token with a token already configured on the client. If the tokens do not match, the DHCP client discards the forcerenew message. Use of the token provides rudimentary protection against inadvertently instantiated DHCP servers.

(Optional) To configure the DHCP local server to include a token in the forcerenew message sent to the client, for all clients:

- Specify the token.

For DHCPv4:

```
[edit system services dhcp-local-server reconfigure]
user@host# set token 8ysIU9E32k8r
```

For DHCPv6:

```
[edit system services dhcp-local-server dhcpv6 reconfigure]
user@host# set token 8ysIU9E32k8r
```

To override the global configuration for a particular group of clients, include the statement at the `[edit system services dhcp-local-server group group-name reconfigure]` hierarchy level or the `[edit system services dhcpv6 dhcp-local-server group group-name reconfigure]` hierarchy level.

- Related Documentation**
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
  - [token on page 198](#)

---

## Preventing Binding of Clients That Do Not Support Reconfigure Messages

---

The DHCPv6 client and server negotiate the use of reconfigure messages. When the client can accept reconfigure messages from the server, then the client includes the Reconfigure Accept option in both solicit and request messages sent to the server.

By default, the DHCPv6 server accepts solicit messages from clients regardless of whether they support reconfiguration. You can specify that the server require clients to accept reconfigure messages. In this case, the DHCPv6 server includes the Reconfigure Accept option in both advertise and reply messages when reconfiguration is configured for the client interface. Solicit messages from nonsupporting clients are discarded and the clients are not allowed to bind.

(Optional) To configure the DHCPv6 local server to require that all clients accept reconfiguration:

- Specify strict reconfiguration.

```
[edit system services dhcp-local-server dhcpv6 reconfigure]
user@host# set strict
```

To override the global configuration for a particular group of clients, include the statement at the `[edit system services dhcp-local-server dhcpv6 group group-name reconfigure]` hierarchy level.

The `show dhcpv6 server statistics` command displays a count of solicit messages that the server has discarded.

- Related Documentation**
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
  - [strict on page 194](#)

## Requesting DHCP Local Server to Initiate Reconfiguration of Client Bindings

You can request that the DHCP local server initiate reconfiguration of all of clients or only specified clients.

To request reconfiguration of all clients:

- Specify the **all** option.

For DHCPv4:

```
user@host> request dhcp server reconfigure all
```

For DHCPv6:

```
user@host> request dhcpv6 server reconfigure all
```

You can use any of the following methods to request reconfiguration of specific clients:

- Specify the IP address of the DHCP client.

For DHCPv4:

```
user@host> request dhcp server reconfigure 192.168.27.3
```

For DHCPv6:

```
user@host> request dhcpv6 server reconfigure 2001:bd8:1111:2222::
```

- Specify the client ID of a DHCPv6 client.

```
user@host> request dhcpv6 server reconfigure
LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
```

- Specify the session ID of a DHCPv6 client.

```
user@host> request dhcpv6 server reconfigure 5
```

- Specify the MAC address of a DHCPv4 client.

```
user@host> request dhcp server reconfigure 12:23:34:45:56:67
```

- Specify an interface; reconfiguration is attempted for all clients on this interface.

```
user@host> request dhcp server reconfigure interface fe-0/0/0.100
```

- Specify a logical system; reconfiguration is attempted for all clients or the specified clients in this logical system.

```
user@host> request dhcp server reconfigure all logical-system ls-bldg5
```

- Specify a routing instance; reconfiguration is attempted for all clients or the specified clients in this routing instance.

```
user@host> request dhcp server reconfigure all routing-instance ri-boston
```

### Related Documentation

- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
- [request dhcp server reconfigure on page 310](#)

## Configuring Detection of DHCP Local Server Client Connectivity

Liveness detection for DHCP subscriber IP sessions 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 relay.

To configure liveness detection for DHCP local server:

1. Specify that you want to configure liveness detection.

- For DHCP global configuration:

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

- For DHCP group configuration:

```
[edit system services dhcp-local-server 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 system services dhcp-local-server dhcpv6]` or `[edit system services dhcp-local-server dhcpv6 group group-name]` hierarchy level.

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

- For DHCP global configuration:

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

- For DHCP group configuration:

```
[edit system services dhcp-local-server group group-name liveness-detection]
user@host# edit method
```

3. 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 system services dhcp-local-server liveness-detection method]
user@host# edit bfd
```

- For DHCP group configuration:

```
[edit system services dhcp-local-server group group-name liveness-detection method]
user@host# edit bfd
```

4. Configure the liveness detection method as desired.

See [“Example: Configuring Group Liveness Detection for DHCP Local Server Clients” on page 44](#) for an example of how to configure DHCPv4 groups for DHCP local server liveness detection.

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

- For DHCP global configuration:

```
[edit system services dhcp-local-server liveness-detection]
user@host# edit failure-action action
```

- For DHCP group configuration:

```
[edit system services dhcp-local-server group group-name liveness-detection]
user@host# edit failure-action action
```

#### Related Documentation

- [DHCP Liveness Detection Overview on page 115](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116](#)
- [Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44](#)
- [Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients](#)

## 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 78](#)
- [Attaching a Dynamic Profile to a Group of DHCP Subscriber Interfaces or a Group of DHCP Client Interfaces on page 78](#)

## 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 60.

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
- Example: Configuring Dynamic Subscriber Interfaces on IP Demux Interfaces

## Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server

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

Table 9 on page 79 indicates the action the router (or switch) takes for DHCP local server snooped packets.



**NOTE:** Configured interfaces are those interfaces that have been configured with the **group** statement in the [edit system services dhcp-local-server] hierarchy. Non-configured interfaces are those that are in the logical system/routing instance but have not been configured by the **group** statement.

Table 9: Actions for DHCP Local Server Snooped Packets

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

To configure DHCP snooped packet forwarding for DHCP local server:

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

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

2. Enable DHCP snooped packet forwarding for DHCP local server.

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

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

```
[edit system services dhcp-local-server forward-snooped-clients]
user@host# set (all-interfaces | configured-interfaces | non-configured-interfaces)
```

For example, to configure DHCP local server to forward DHCP snooped packets on only configured interfaces:

```
[edit]
system {
  services {
    dhcp-local-server {
      forward-snooped-clients configured-interfaces;
    }
  }
}
```

**Related Documentation**

- [DHCP Snooping Support on page 15](#)

---

## Configuring Passwords for Usernames

You can configure an optional password that the extended DHCP application presents to the external AAA authentication service to authenticate the specified username.

To configure a password that authenticates the username:

1. Specify that you want to configure authentication options.

- For DHCP local server:

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

- For DHCPv6 local server:

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

- For DHCP relay agent:

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

2. Configure the password. (DHCP local server, DHCPv6 local server, and DHCP relay agent all support the **password** statement.)

```
[edit system services dhcp-local-server authentication]
```

```
user@host# set password myPassworD1234
```

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)
- For information about supported characters in passwords, see “Configuring Special Requirements for Plain-Text Passwords” in the Junos OS System Basics Configuration Guide

## Creating Unique Usernames for DHCP Clients

You can configure the extended DHCP application to include additional information in the username that is passed to the external AAA authentication service when the DHCP client logs in. This additional information enables you to construct usernames that uniquely identify subscribers (DHCP clients).



**NOTE:** If you do not include a username in the authentication configuration, the router (or switch) does not perform authentication; however, the IP address is provided by the local pool if it is configured.

When you use the DHCPv6 local server, you must configure authentication and the client username; otherwise client login fails.

The following list describes the optional information that you can include as part of the username:

- **circuit-type**—The circuit type used by the DHCP client, for example **enet**.
- **client-id**—The client identifier option (option 1). (DHCPv6 local server DHCPv6 relay agent only)
- **delimiter**—The delimiter character that separates components that make up the concatenated username. The default delimiter is a period (.). The semicolon (;) is not supported as a delimiter character.
- **domain-name**—The client domain name as a string. The router adds the @ delimiter to the username.
- **interface-name**—The interface name, including the interface device and associated VLAN IDs.
- **logical-system-name**—The name of the logical system, if the receiving interface is in a logical system.
- **mac-address**—The client MAC address, in a string of the format **xxxx.xxxx.xxxx**. (Not supported for DHCPv6 local server)

- **option-60**—The portion of the option 60 payload that follows the length field. (Not supported for DHCPv6 local server)
- **option-82 <circuit-id> <remote-id>**—The specified contents of the option 82 payload. (Not supported for DHCPv6 local server)
  - **circuit-id**—The payload of the Agent Circuit ID suboption.
  - **remote-id**—The payload of the Agent Remote ID suboption.
  - Both **circuit-id** and **remote-id**—The payloads of both suboptions, in the format: **circuit-id[delimiter]remote-id**.
  - Neither **circuit-id** or **remote-id**—The raw payload of the option 82 from the PDU is concatenated to the username.



**NOTE:** For DHCP relay agent, the option 82 value used in creating the username is based on the option 82 value that is encoded in the outgoing (relayed) PDU.

- **relay-agent-interface-id**—The Interface-ID option (option 18). (DHCPv6 local server only)
- **relay-agent-remote-id**—The DHCPv6 Relay Agent Remote-ID option (option 37). (DHCPv6 local server only)
- **relay-agent-subscriber-id**—(On routers only) The DHCPv6 Relay Agent Subscriber-ID option (option 38). (DHCPv6 local server only)
- **routing-instance-name**—The name of the routing instance, if the receiving interface is in a routing instance.
- **user-prefix**—A string indicating the user prefix.

The router (switch) creates the unique username by including the specified additional information in the following order, with the fields separated by a delimiter.

For DHCP local server and DHCP relay agent:

```
user-prefix[delimiter]mac-address[delimiter]logical-system-name[delimiter]
routing-instance-name[delimiter]circuit-type[delimiter]interface-name[delimiter]option-82[delimiter]
option-60@domain-name
```

For DHCPv6 local server:

```
user-prefix[delimiter]logical-system-name[delimiter]routing-instance-name[delimiter]
circuit-type[delimiter]interface-name[delimiter]relay-agent-remote-id[delimiter]
relay-agent-subscriber-id[delimiter]relay-agent-interface-id[delimiter]client-id@domain-name
```

To configure a unique username:

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

```
[edit system services dhcp-local-server]
```

```
user@host# edit authentication
```

- For DHCPv6 local server:

```
[edit system services dhcp-local-server dhcpv6]
```

```
user@host# edit authentication
```

- For DHCP relay agent:

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

```
user@host# edit authentication
```

2. Specify that you want to include optional information in the username. (DHCP local server, DHCPv6 local server, and DHCP relay agent all support the **username-include** statement.)

```
[edit system services dhcp-local-server authentication]
```

```
user@host# set username-include
```

3. (Optional) Specify the optional information you want to include in the username.

```
[edit system services dhcp-local-server authentication username-include]
```

```
user@host# set username-include circuit-type
```

```
user@host# set username-include domain-name isp55.com
```

```
user@host# set username-include mac-address
```

```
user@host# set username-include user-prefix wallybrown
```

The previous **username-include** configuration produces this unique username:

```
wallybrown.0090.1a01.1234.enet@isp55.com
```

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)

## Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use

You can specify the match order in which the extended DHCP local server uses the client data to determine the address-assignment pool that provides the IP address and configuration for a DHCP client. You use the **pool-match-order** statement to specify the match order. If you do not specify the **pool-match-order**, the router (or switch) uses the default **ip-address-first** matching to select the address pool. After DHCP local server determines the address assignment pool to use, the server performs the matching based on the criteria you specified in the pool configuration.

In the default **ip-address-first** matching, the server selects the address-assignment pool to use by matching the IP address in the client DHCP request with the network address of the address-assignment pool. If the client request contains the gateway IP address (giaddr), the local server matches the giaddr to the address-assignment pool's address. If there is no giaddr in the request, then the DHCP local server matches the IP address of the receiving interface to the address of the address-assignment pool.

In **external-authority** matching, the DHCP local server receives the address assignment from an external authority, such as RADIUS or Diameter. If RADIUS is the external authority, the DHCP local server uses the Framed-IPv6-Pool attribute (RADIUS attribute 100) to select the pool. If Diameter is the external authority, the server uses the Diameter counterpart of the Framed-IPv6-Pool attribute to determine the pool.

For IPv4 address-assignment pools, you can optionally configure the extended DHCP local server to match the DHCP relay agent information option (option 82) in the client DHCP packets to a named range in the address-assignment pool used for the client. Named ranges are subsets within the overall address-assignment pool address range, which you can configure when you create the address-assignment pool.



**NOTE:** To use the DHCP local server option 82 matching feature with an IPv4 address-assignment pool, you must ensure that the **option-82** statement is included in the **dhcp-attributes** statement for the address-assignment pool.

To configure the matching order the extended DHCP local server uses to determine the address-assignment pool used for a client:

1. Access the **pool-match-order** configuration.

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

2. Specify the pool matching methods in the order in which the router (switch) performs the methods. You can specify the methods in any order. All methods are optional—the router (switch) uses the **ip-address-first** method by default.

- Configure the router (switch) to use an external addressing authority.

```
[edit system services dhcp-local-server pool-match-order]
user@host# set external-authority
```

- Configure the router (switch) to use the ip-address-first method.

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

- (IPv4 address-assignment pools only) Specify the option 82 matching method.

```
[edit system services dhcp-local-server pool-match-order]
user@host# set option-82
```

#### Related Documentation

- [Address-Assignment Pools Overview on page 18](#)
- [Configuring Address-Assignment Pools](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Example: Extended DHCP Local Server Configuration with Optional Pool Matching on page 43](#)

## CHAPTER 6

# Configuration Tasks for DHCP Relay Agent

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- [Configuring DHCP Duplicate Client Support on page 87](#)
- [Grouping Interfaces with Common DHCP Configurations on page 88](#)
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- [Configuring DHCP Snooping for DHCP Relay Agent on page 99](#)
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- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 104](#)
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- [Configuring Server Groups on page 111](#)
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- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 113](#)
- [Inserting DHCPv6 Interface-ID Option \(Option 18\) In DHCPv6 Packets on page 114](#)
- [DHCP Liveness Detection Overview on page 115](#)

- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116](#)
- [Disabling DHCP Relay on page 118](#)

## 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” on page 80.

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

See “Creating Unique Usernames for DHCP Clients” on page 81.

#### Related Documentation

- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [DHCPv6 Relay Agent Overview on page 33](#)

## Configuring DHCP Duplicate Client Support

You can optionally configure DHCP local server and DHCP relay to include a client subinterface when distinguishing between two clients that have the same MAC address or client ID. The configuration is a global setting for each logical system/routing instance.

To configure DHCP local server to include the client subinterface:

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

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

2. Configure the optional duplicate client support.

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

To configure DHCP relay agent to include the client subinterface:

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

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

2. Configure the optional duplicate client support.

```
[edit system services dhcp-relay]
user@host# set duplicate-clients-on-interface
```

#### Related Documentation

- [DHCP Duplicate Client Differentiation Using Client Subinterface Overview on page 10](#)
- [Guidelines for Configuring Support for DHCP Duplicate Clients on page 59](#)

## 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 on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [DHCPv6 Relay Agent Overview on page 33](#)
- [Group-Specific DHCP Local Server Options on page 11](#)
- [Group-Specific DHCP Relay Options on page 34](#)
- [Guidelines for Configuring Interface Ranges on page 61](#)

## 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 60](#)

---

## 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 112.](#)
3. (DHCPv4 only) Overwrite the giaddr in DHCP packets that the DHCP relay agent forwards.

See [“Overwriting giaddr Information” on page 92.](#)

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 92.](#)

5. (DHCPv4 only) Override the DHCP relay agent information option (option 82) in DHCP packets.

See [“Overriding Option 82 Information” on page 92.](#)

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 93.](#)

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 94.](#)

8. (DHCPv4 only) Override the ARP table population in distrusted environments.

See [“Disabling ARP Table Population” on page 65.](#)

9. (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 64.](#)

10. (DHCPv4 only) Configure client auto logout.

See [“DHCP Auto Logout Overview” on page 16.](#)

11. (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 99.](#)

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 106.](#)

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

See [“Disabling DHCP Relay” on page 118.](#)

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

See [“Disabling Automatic Binding of Stray DHCP Requests” on page 107.](#)

#### Related Documentation

- [Group-Specific DHCP Relay Options on page 34](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)

## 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 28](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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 28](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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
```

2. 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 28](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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:

1. Specify that you want to configure override options.

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

2. 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 28](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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:

1. Specify that you want to configure override options.

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

2. 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 28](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## Disabling ARP Table Population

By default, DHCP populates the ARP table with the MAC address of a client when the client binding is established. However, you may choose to use the DHCP **no-arp** statement to hide the subscriber MAC address or the DHCP client MAC address, as it appears in ARP table entries.

When running in a trusted environment (that is, when not using the **no-arp** statement), DHCP populates the ARP table with unique MAC addresses contained within the DHCP PDU for each DHCP client:

**Table 10: ARP Table in Trusted Environment**

IP Address	MAC Address
Client 1 IP Address	MAC A
Client 2 IP Address	MAC B
Client 3 IP Address	MAC C

In distrusted environments, you can specify the **no-arp** statement to hide the MAC addresses of clients. When you specify the **no-arp** statement, DHCP does not automatically populate the ARP table with MAC address information from the DHCP PDU for each client. Instead, the system performs an ARP to obtain the MAC address of each client and obtains the MAC address of the immediately attached device (for example,

a DSLAM). DHCP populates the ARP table with the same interface MAC address (for example, MAC X from a DSLAM interface) for each client:

**Table 11: ARP Table in Distrusted Environment**

IP Address	MAC Address
Client 1 IP Address	MAC X
Client 2 IP Address	MAC X
Client 3 IP Address	MAC X

To disable ARP table population:

- 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:
 

```
[edit forwarding-options dhcp-relay]
user@host# edit overrides
```
- Disable ARP table population with client-specific information. (DHCP local server and DHCP relay agent both support the **no-arp** statement.)
  - For DHCP local server:
 

```
[edit system services dhcp-local-server overrides]
user@host# set no-arp
```
  - For DHCP relay:
 

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

#### Related Documentation

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [DHCPv6 Local Server Overview on page 8](#)
- [Extended DHCP Relay Agent Overview on page 28](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)

## 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
```

#### Related Documentation

- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)

---

## 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 that has the same DHCP option 60 and DHCP

option 82 information as the 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. (DHCP local server and DHCP relay agent both support the **client-discover-match** statement.)

- For DHCP local server:

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

- For DHCP relay:

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



**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 16](#)
- [DHCP Relay Agent Option 82 Value for Auto Logout on page 97](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)
- [Extended DHCP Local Server Overview on page 4](#)
- [Extended DHCP Relay Agent Overview on page 28](#)

## DHCP Relay Agent Option 82 Value for Auto Logout

Table 12 on page 98 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 12: 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
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 16](#)
- [Automatically Logging Out DHCP Clients on page 66](#)

## 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 99](#).
2. (DHCPv4 only) Configure snooped packets forwarding support.  
See [“Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent” on page 104](#).

### Related Documentation

- [DHCP Snooping Support on page 15](#)
- [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 99](#)
- [Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 104](#)
- [Example: Configuring DHCP Snooping Support for DHCP Relay Agent on page 54](#)

## 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 104](#), 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 (or switch) 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 and in Junos OS 12.3R2 and later for EX Series switches, 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 104](#)
- [DHCP Snooping Support on page 15](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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 99, you enable or disable the DHCP relay snooping feature.

[Table 13 on page 105](#) shows the action the router or switch takes on snooped packets when DHCP snooping is enabled by the `allow-snooped-clients` statement. [Table 14 on page 105](#) 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 15 on page 105](#) 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 13: 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
<b>forward-snooped-clients</b> not configured	snooped packets result in subscriber (DHCP client) creation	dropped
<b>all-interfaces</b>	forwarded	forwarded
<b>configured-interfaces</b>	forwarded	dropped
<b>non-configured-interfaces</b>	snooped packets result in subscriber (DHCP client) creation	forwarded

Table 14: 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
<b>forward-snooped-clients</b> not configured	dropped	dropped
<b>all-interfaces</b>	dropped	forwarded
<b>configured-interfaces</b>	dropped	dropped
<b>non-configured-interfaces</b>	dropped	forwarded

Table 15: Actions for Snooped BOOTREPLY Packets

forward-snooped-clients Configuration	Action
<b>forward-snooped-clients</b> not configured	snooped <b>BOOTREPLY</b> packets dropped if client is not found
<b>forward-snooped-clients</b> all configurations	snooped <b>BOOTREPLY</b> 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 15](#)
- [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 99](#)

---

## 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 28](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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 28](#)
- [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

---

## Enabling and Disabling Insertion of Option 82 Information

You can enable or disable support for the DHCP relay agent information option (option 82) in packets destined for a DHCP server. You can configure option 82 support globally or for a named group of interfaces.

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

To configure support for the DHCP relay agent information option 82, you use the **relay-option-82** statement.

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

- [Configuring Agent Circuit ID Information on page 109](#)
- [Configuring an Option 82 Prefix on page 109](#)
- [Using a Textual Description in Option 82 on page 111](#)

## Configuring Agent Circuit ID Information

You use the **relay-option-82** statement to enable insertion of option 82 information in DHCP packets. You must also specify at least the **circuit-id** statement to include the Agent Circuit ID suboption (suboption 1) of the DHCP relay agent information option.

If you specify the **circuit-id** statement, the format of the Agent Circuit 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. Specify insertion of the Agent Circuit ID suboption.

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

## Configuring an Option 82 Prefix

You can include an optional prefix to the base option 82 information in DHCP packets destined for a DHCP server.

The prefix is separated from the option 82 Agent Circuit ID 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 Agent Circuit ID 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 Agent Circuit ID format. For Fast Ethernet or Gigabit Ethernet interfaces that do not use VLANs or S-VLANs, neither the **vlan-id** value nor the **svlan-id** value appears.

To configure an optional 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. Specify insertion of the Agent Circuit ID information.

```
[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
```

## Using a Textual Description in Option 82

By default, when DHCP option 82 is inserted into client packets, the Agent Circuit ID suboption includes the interface identifier. You can optionally configure that the Agent Circuit ID suboption 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 suboption for static interfaces. The textual description is configured 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.

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. Specify insertion of the Agent Circuit ID information.

```
[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
```

## 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 28](#)

---

## 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 28](#)
  - [Grouping Interfaces with Common DHCP Configurations on page 60](#)

---

## 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 31](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

## 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 113](#)
- [Attaching a Dynamic Profile to a Group of DHCP Subscriber Interfaces or a Group of DHCP Client Interfaces on page 114](#)

### 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 60.

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](#)
- [Example: Configuring Dynamic Subscriber Interfaces on IP Demux Interfaces](#)

---

## 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 optionally include a prefix, which can include any combination of hostname, logical system name, and routing instance name. You can also specify that the packets include the textual interface description instead of the interface identifier.



**NOTE:** If you configure the optional Steps 2 or 3, and the specified information does not exist (for example, there is no interface description), DHCPv6 relay ignores the optional configuration and inserts the 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 the 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)
```

#### Related Documentation

- [Extended DHCP Relay Agent Overview on page 28](#)

## 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 on page 76](#)
- [Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116](#)

---

## 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 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 28](#)
- [DHCP Liveness Detection Overview on page 115](#)
- [Configuring Detection of DHCP Local Server Client Connectivity on page 76](#)
- [Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44](#)
- [Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients](#)

---

## 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 28](#)
- [Deleting DHCP Local Server and DHCP Relay Override Settings on page 70](#)

## CHAPTER 7

# DHCP Local Server Configuration Statements

- [\[edit system\] Hierarchy Level on page 119](#)

### [\[edit system\] Hierarchy Level](#)

---

```
system {
  accounting {
    destination {
      radius {
        server {
          server-address {
            accounting-port port-number;
            max-outstanding-requests
            port port-number;
            retry number;
            secret password;
            source-address address;
            timeout seconds;
          }
        }
      }
    }
    tacplus {
      server {
        server-address {
          port port-number;
          secret password;
          single-connection;
          source-address address;
          timeout seconds;
        }
      }
    }
  }
  events [ change-log interactive-commands login ];
}
allow-6pe-traceroute;
allow-v4mapped-packets;
archival {
  configuration {
    archive-sites {
```

```

        ftp://<username>:<password>@<host>:<port>/<url-path>;
        scp://<username>:<password>@<host>:<port>/<url-path>;
    }
    transfer-interval interval;
    transfer-on-commit;
}
}
arp {
    aging-timer minutes;
    gratuitous-arp-delay;
    gratuitous-arp-on-ifup;
    interfaces {
        logical-interface-name {
            aging-timer minutes;
        }
    }
    passive-learning;
    purging;
}
authentication-order [ authentication-methods ];
auto-configuration {
    traceoptions {
        file <filename> <files number> <match regular-expression> <size size>
            <world-readable | no-world-readable>;
        flag <all | auth | configuration | ;interfaces | io | rtsock | ui>
        level level;
        no-remote-trace;
    }
}
backup-router address <destination [ destination-addresses ]>;
commit {
    fast-synchronize;
    synchronize;
    server {
        commit-interval number;
        days-to-keep-error-logs number;
        maximum-aggregate-pool number;
        maximum-entries number;
        traceoptions {
            file <filename> <files number> <match regular-expression> <size size>
                <world-readable | no-world-readable>;
            flag <all | auth | configuration | ;interfaces | io | rtsock | ui>
            level level;
            no-remote-trace;
        }
    }
}
}
(compress-configuration-files | no-compress-configuration-files);
ddos-protection {
    global {
        disable-fpc;
        disable-logging;
        disable-routing-engine;
        flow-detection;
        flow-report-rate;
        violation-report-rate;
    }
}

```

```

}
protocols protocol-group (aggregate | packet-type) {
    bandwidth packets-per-second;
    burst size;
    disable-fpc;
    disable-logging;
    disable-routing-engine;
    fpc {
        bandwidth-scale percentage;
        burst-scale percentage;
        disable-fpc;
    }
    priority level;
    recover-time seconds;
    flow-detection {
        flow-detect-time detect-period;
        no-flow-logging;
        timeout-active-flows enable-period;
        flow-level-bandwidth;
        flow-level-control (all | keep-all | police);
        flow-detection-mode (always-on | automatic | disabled);
        physical-interface;
        flow-recover-time recover-period;
        flow-timeout-time timeout-period;
        subscriber;
    }
}
}
traceoptions{
    file filename <files number> <match regular-expression > <size maximum-file-size>
        <world-readable | no-world-readable>;
    flag flag;
    level (all | error | info | notice | verbose | warning);
    no-remote-trace;
}
}
default-address-selection;
diag-port-authentication (encrypted-password "password" | plain-text-password);
dynamic-profile-options {
    versioning;
}
domain-name domain-name;
domain-search [ domain-list ];
do-not-disable-ip6op-ondad;
extensions {
    providers {
        provider-id {
            license-type license deployment-scope [ deployments ];
        }
    }
}
resource-limits {
    package package-name {
        resources {
            cpu {
                priority number;
                time seconds;
            }
        }
    }
}

```

```

    file {
        core-size bytes;
        open number;
        size bytes;
    }
    memory {
        data-size bytes;
        locked-in bytes;
        resident-set-size bytes;
        socket-buffers bytes;
        stack-size bytes;
    }
}
}
process process-ui-name {
    resources {
        cpu {
            priority number;
            time seconds;
        }
        file {
            core-size bytes;
            open number;
            size bytes;
        }
        memory {
            data-size bytes;
            locked-in bytes;
            resident-set-size bytes;
            socket-buffers bytes;
            stack-size bytes;
        }
    }
}
}
}
fips {
    level level;
}
host-name hostname;
inet6-backup-router ipv6-address <destination address>;
internet-options {
    (gre-path-mtu-discovery | no-gre-path-mtu-discovery);
    icmpv4-rate-limit bucket-size number packet-rate rate;
    icmpv6-rate-limit bucket-size number packet-rate rate;
    (ipip-path-mtu-discovery | no-ipip-path-mtu-discovery);
    (ipv6-path-mtu-discovery | noipv6-path-mtu-discovery);
    ipv6-path-mtu-discovery-timeout;
    no-tcp-rfc1323-paws;
    no-tcp-rfc1323;
    (path-mtu-discovery | no-path-mtu-discovery);
    source-port upper-limit port-number;
    (source-quench | no-source-quench);
    tcp-drop-synfin-set;
}
kernel-replication;

```

```

license {
    autoupdate {
        url URL;
        password password;
    }
    renew before-expiration number;
    interval number
    traceoptions {
        file <filename> <files number> <size maximum-file-size> <world-readable |
            no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}
location {
    altitude feet;
    building name;
    country-code code;
    floor number;
    hcoord horizontal-coordinate;
    lata service-area;
    latitude degrees;
    longitude degrees;
    npa-nxx number;
    postal-code postal-code;
    rack number;
    vcoord vertical-coordinate;
}
login {
    announcement "text";
    class class-name {
        access-end "hh<:mm<:ss>>";
        access-start "hh<:mm<:ss>>";
        allow-commands "regular-expression";
        ( allow-configuration | allow-configuration-regexps ) "regular expression 1" "regular
            expression 2";
        allowed-days [ sunday monday tuesday wednesday thursday friday saturday ];
        configuration-breadcrumbs;
        deny-commands "regular-expression";
        ( deny-configuration | deny-configuration-regexps ) "regular expression 1" "regular
            expression 2";
        idle-timeout minutes;
        logical-system logical-system-name;
        login-alarms;
        login-script filename;
        login-tip;
        permissions [ permissions ];
        security-role [ security-role ];
    }
    deny-sources ( address address | apply-groups | apply-groups-except );
    message "text";
    password {
        change-type ( character-sets | set-transitions );
        format ( des | md5 | sha1 );
        maximum-length length;
        minimum-changes number;
    }
}

```

```
    minimum-length length;  
    minimum-lower-cases number;  
    minimum-numeric number;  
    minimum-punctuations number;  
    minimum-upper-cases number;  
}  
retry-options {  
    backoff-factor number;  
    backoff-threshold number;  
    maximum-time number;  
    minimum-time number;  
    tries-before-disconnect number;  
}  
user username {  
    authentication {  
        (encrypted-password "password" | plain-text-password);  
        load-key-file filename;  
        ssh-dsa "public-key" <from hostname>;  
        ssh-ecdsa "public-key" <from hostname>;  
        ssh-rsa "public-key" <from hostname>;  
    }  
    class class-name;  
    full-name "complete-name";  
    uid uid-value;  
}  
}  
max-configurations-on-flash number;  
mirror-flash-on-disk;  
name-server {  
    address;  
}  
nd-maxmcast-solicit  
nd-retransmit-timer  
no-multicast-echo;  
no-neighbor-learn;;  
no-ping-record-route;  
no-ping-time-stamp;  
no-redirects;  
no-redirects-ipv6;  
ntp {  
    authentication-key key-number type md5 value password;  
    boot-server address;  
    broadcast <address> <key-number> <ttl value> <version value>;  
    broadcast-client;  
    multicast-client <address>;  
    peer address <key-number> <prefer> <version value>;  
    server address <key-number> <prefer> <version value>;  
    source-address source-address;  
    trusted-key [ key-numbers ];  
}  
pic-console-authentication {  
    (encrypted-password "encrypted-password" | plain-text-password);  
}  
ports {  
    auxiliary {  
        disable;
```

```

    insecure;
    type (ansi | small-xterm | vt100 | xterm);
    port-type (mini-usb | rj45);
  }
}
console {
  disable;
  insecure;
  log-out-on-disconnect;
  type (ansi | small-xterm | vt100 | xterm);
}
}
processes {
  process-name (enable | disable) failover (alternate-media | other-routing-engine);
  command path;
  timeout seconds;
}
proxy {
  password password;
  port port-number;
  server (hostname | ip-address);
  username username;
}
radius-options {
  attributes {
    nas-ip-address address;
  }
  password-protocol mschap-v2;
}
radius-server {
  server-address {
    accounting-port port-number;
    max-outstanding-requests number;
    port port-number;
    retry number;
    secret password;
    source-address source-address;
    timeout seconds;
  }
}
root-authentication {
  (encrypted-password "password" | plain-text-password);
  load-key-file filename;
  ssh-dsa "public-key" <from hostname>;
  ssh-ecdsa "public-key" <from hostname>;
  ssh-rsa "public-key" <from hostname>;
}
(saved-core-context | no-saved-core-context);
saved-core-files number;
scripts {
  load-scripts-from-flash;
  commit {
    allow-transients;
    direct-access;
    file filename.xml {
      checksum (md5 | sha-256 | sha1) hash;
    }
  }
}

```

```

        optional;
        refresh;
        refresh-from url;
        source url;
    }
    max-datasize
    refresh;
    refresh-from url;
    traceoptions {
        file <filename> <files number> <size maximum-file-size> <world-readable |
            no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}
op {
    file filename.xml {
        arguments {
            argument-name {
                description descriptive-text;
            }
        }
        checksum (md5 | sha-256 | sha1) hash;
        command filename-alias;
        description descriptive-text;
        refresh;
        refresh-from url;
        source url;
    }
    max-datasize
    no-allow-url
    refresh;
    refresh-from url;
    traceoptions {
        file <filename> <files number> <size maximum-file-size> <world-readable |
            no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}
}
static-host-mapping {
    hostname {
        alias [ aliases ];
        inet [ addresses ];
        inet6 [ addresses ];
        sysid system-identifier;
    }
}
syslog {
    allow-duplicates;
    archive <binary-data | no-binary-data> <files number> <size size> <world-readable |
        no-world-readable>;
    console {

```

```

any | authorization | change-log | conflict-log | daemon | dfc | external | firewall | ftp
| interactive-commands | kernel | ntp | pfe | security | user) (alert | any | critical |
emergency | error | info | none | notice | warning);
}
file filename {
    facility severity;
    allow-duplicates;
    any (alert | any | critical | emergency | error | info | none | notice | warning);
    archive <archive-sites {ftp-url <password password>}> <files number> <size size>
        <start-time "YYYY-MM-DD.hh:mm"> <transfer-interval minutes> <world-readable |
no-world-readable>;
    authorization (alert | any | critical | emergency | error | info | none | notice | warning);
    change-log (alert | any | critical | emergency | error | info | none | notice | warning);
    conflict-log (alert | any | critical | emergency | error | info | none | notice | warning);
    daemon (alert | any | critical | emergency | error | info | none | notice | warning);
    dfc (alert | any | critical | emergency | error | info | none | notice | warning);
    explicit-priority;
    external (alert | any | critical | emergency | error | info | none | notice | warning);
    firewall (alert | any | critical | emergency | error | info | none | notice | warning);
    ftp (alert | any | critical | emergency | error | info | none | notice | warning);
    interactive-commands (alert | any | critical | emergency | error | info | none | notice
| warning);
    kernel (alert | any | critical | emergency | error | info | none | notice | warning);
    match "regular-expression";
    ntp (alert | any | critical | emergency | error | info | none | notice | warning);
    pfe (alert | any | critical | emergency | error | info | none | notice | warning);
    security (alert | any | critical | emergency | error | info | none | notice | warning);
    structured-data {
        brief
    }
}
host (hostname | other-routing-engine | scc-master) {
    facility severity;
    authorization (alert | any | critical | emergency | error | info | none | notice | warning);
    change-log (alert | any | critical | emergency | error | info | none | notice | warning);
    conflict-log (alert | any | critical | emergency | error | info | none | notice | warning);
    daemon (alert | any | critical | emergency | error | info | none | notice | warning);
    dfc (alert | any | critical | emergency | error | info | none | notice | warning);
    explicit-priority;
    external (alert | any | critical | emergency | error | info | none | notice | warning);
    facility-override facility;
    firewall (alert | any | critical | emergency | error | info | none | notice | warning);
    ftp (alert | any | critical | emergency | error | info | none | notice | warning);
    interactive-commands (alert | any | critical | emergency | error | info | none | notice
| warning);
    kernel (alert | any | critical | emergency | error | info | none | notice | warning);
    log-prefix string;
    match "regular-expression";
    ntp (alert | any | critical | emergency | error | info | none | notice | warning);
    pfe (alert | any | critical | emergency | error | info | none | notice | warning);
    security (alert | any | critical | emergency | error | info | none | notice | warning);
    source-address source-address;
    structured-data {
        brief
    }
    user (username | *) {
    }
}
log-rotate-frequency minutes;

```

```

server;
source-address address;
time-format (year | millisecond | year millisecond);
user (username | *) {
    facility severity;
    match "regular-expression";
}
}
tacplus-options {
    (exclude-cmd-attribute | no-cmd-attribute-value);
    service-name service-name;
}
tacplus-server {
    server-address {
        port port-number;
        secret password;
        single-connection;
        source-address source-address;
        timeout seconds;
    }
}
time-zone (GMT | GMT+hour-offset | GMT-hour-offset | zone-name);
tracing destination-override syslog host address;
use-imported-time-zones;
}
}
system {
    services {
        database-replication {
            traceoptions {
                file <filename> <files number> <match regular-expression>
                <size maximum-file-size> <world-readable | no-world-readable>;
                flag flag;
                no-remote-trace;
            }
        }
        dhcp-local-server {
            authentication {
                password password;
                username-include {
                    circuit-type;
                    delimiter delimiter-character;
                    domain-name domain-name;
                    logical-system-name;
                    mac-address;
                    option-60;
                    option-82 <circuit-id> <remote-id>;
                    routing-instance-name;
                    user-prefix user-prefix;
                }
            }
            duplicate-clients-on-interface;
            dynamic-profile (profile-name | junos-default-profile) <aggregate-clients <merge |
            replace> | use-primary primary-profile-name>;
            forward-snooped-clients (all-interfaces | configured-interfaces |
            non-configured-interfaces);

```

```

group group-name {
  dynamic-profile (profile-name | junos-default-profile) <aggregate-clients <merge |
    replace> | use-primary primary-profile-name>;
  interface interface-name {
    exclude;
    overrides {
      ...same statements as at the [edit system services dhcp-local-server overrides]
        hierarchy level ...
    }
    trace;
    upto upto-interface-name;
  }
}
overrides {
  client-discover-match <option60-and-option82>;
  interface-client-limit number;
  no-arp;
  process-inform {
    pool pool-name;
  }
}
pool-match-order {
  external-authority;
  ip-address-first;
  option-82;
}
reconfigure {
  attempts attempt-count;
  clear-on-abort;
  strict;
  timeout timeout-value;
  token token-value;
  trigger {
    radius-disconnect;
  }
}
traceoptions {
  file <filename> <files number> <match regular-expression>
    <size maximum-file-size> <world-readable | no-world-readable>;
  flag flag;
  no-remote-trace;
}
}
dhcpv4-profiles profile-name {
  bind-interface interface-name;
  dead-server-retry-interval interval-in-seconds;
  dead-server-successive-retry-attempt number-of-attempts;
  dhcp-server-selection-algorithm (highest-priority-server | round-robin);
  lease-time time-in-seconds;
  pool-name pool-name;
  retransmission-attempt number-of-attempts;
  retransmission-interval interval-in-seconds;
  servers ip-address {
    priority value;
  }
}
}

```

```
dhcpv6-profiles profile-name {
    bind-interface interface-name;
    lease-time time-in-seconds;
    pool-name pool-name;
    retransmission-attempt number-of-attempts;
    retransmission-interval interval-in-seconds;
}
traceoptions {
    file <filename> <files number> <match regular-expression>
    <size maximum-file-size> <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
}
}
finger {
    connection-limit limit;
    rate-limit limit;
}
flow-tap-dtcp {
    ssh {
        connection-limit limit;
        rate-limit limit;
    }
}
ftp {
    connection-limit limit;
    rate-limit limit;
}
local-policy-decision-function {
    statistics {
        aacl-statistics-profile profile-name {
            aacl-fields {
                address;
                all-fields;
                application;
                application-group;
                input-bytes;
                input-interface;
                input-packets;
                ipv6-address
                ipv6-prefix-length
                mask;
                output-bytes;
                output-packets;
                subscriber-name;
                timestamp;
                vrf-name;
            }
            file filename;
            record-type (delta | interim);
        }
    }
    file filename {
        archive-sites {
            url;
        }
    }
    files number;
```

```

        size bytes;
        transfer-interval minutes;
    }
    record-type (data | interim);
}
traceoptions {
    file <filename> <files number> <match regular-expression>
        <size maximum-file-size> <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
}
}
netconf {
    ssh {
        connection-limit limit;
        port port;
        rate-limit limit;
    }
    traceoptions {
        file <filename> <files number> <match regular-expression> <size size>
            <world-readable | no-world-readable>;
        flag flag;
        no-remote-trace;
        on-demand;
    }
}
outbound-ssh {
    client client-id {
        address {
            port port-number;
            retry number;
            timeout seconds;
        }
        device-id device-id;
        keep-alive {
            retry number;
            timeout seconds;
        }
        reconnect-strategy (in-order | sticky);
        secret secret;
        services netconf;
    }
    traceoptions {
        file <filename> <files number> <match regular-expression>
            <size maximum-file-size> <world-readable | no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}
resource-monitor {
    resource-category jtree {
        resource-type free-dwords {
            low-watermark number;
            high-watermark number;
        }
        resource-type free-pages {

```

```

        low-watermark number;
        high-watermark number;
    }
}
no-throttle;
no-logging;
high-threshold number;
traceoptions {
    file filename <files number> <match regular-expression> <size maximum-file-size>
        <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
}
}
service-deployment {
    local-certificate certificate-name;
    servers {
        server-address {
            port port-number;
            security-options {
                (ssl3 | tls);
            }
            user username;
        }
    }
    source-address source-address;
    traceoptions {
        flag flag;
    }
}
ssh {
    ciphers [ cipher-1 cipher-2 cipher-3 ...]
    client-alive-count-max seconds;
    client-alive-interval seconds;
    connection-limit limit;
    hostkey-algorithm limit;
    key-exchange limit;
    macs limit;
    max-sessions-per-connection number;
    no-tcp-forwarding;
    protocol-version [v1 v2];
    rate-limit limit;
    root-login (allow | deny | deny-password);
}
subscriber-management {
    enforce-strict-scale-limit-license;
    gres-route-flush-delay;
    maintain-subscriber {
        interface-delete;
    }
    traceoptions {
        file filename <files number> <match regular-expression> <size maximum-file-size>
            <world-readable | no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}

```

```
}
  traceoptions {
    file filename <files number> <match regular-expression > <size maximum-file-size>
      <world-readable | no-world-readable>;
    flag flag;
    no-remote-trace;
  }
telnet {
  connection-limit limit;
  rate-limit limit;
}
tftp-server {
  connection-limit limit;
  rate-limit limit;
}
xnm-clear-text {
  connection-limit limit;
  rate-limit limit;
}
xnm-ssl {
  connection-limit limit;
  local-certificate certificate-name;
  rate-limit limit;
}
}
```

**Related  
Documentation**

- Notational Conventions Used in Junos OS Configuration Hierarchies

## attempts (DHCP Local Server)

<b>Syntax</b>	<code>attempts <i>attempt-count</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.</p>
<b>Description</b>	Configure how many attempts are made to reconfigure all DHCP clients or only the DHCP clients serviced by the specified group of interfaces before reconfiguration is considered to have failed. A group configuration takes precedence over a DHCP local server configuration.
<b>Options</b>	<p><i>attempt-count</i>—Maximum number of attempts.</p> <p><b>Range:</b> 1 through 10</p> <p><b>Default:</b> 8</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="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> <li>• <a href="#">Configuring Dynamic Reconfiguration Attempts for DHCP Clients on page 71</a></li> </ul>

## authentication (DHCP Local Server)

<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 system services <a href="#">dhcp-local-server</a>], [edit system services dhcp-local-server <a href="#">dhcpv6</a>], [edit system services dhcp-local-server dhcpv6 <a href="#">group group-name</a>], [edit system services dhcp-local-server <a href="#">group group-name</a>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...], [edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a> ...], [edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...]</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>
<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 or DHCP local server configuration.</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>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</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>],  [edit system services dhcp-local-server dhcpv6 liveness-detection <a href="#">method</a>],  [edit forwarding-options dhcp-relay liveness-detection <a href="#">method</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection <a href="#">method</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection <a href="#">method</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection <a href="#">method</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection <a href="#">method</a>],  [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.  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.  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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## circuit-type (DHCP Local Server)

<b>Syntax</b>	circuit-type;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>group group-name authentication username-include</b>]</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 circuit type is concatenated with the username during the subscriber authentication or client authentication process.
<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="#">Using External AAA Authentication Services with DHCP on page 58</a></li> </ul>

## clear-on-abort (DHCP Local Server)

<b>Syntax</b>	clear-on-abort;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.</p>
<b>Description</b>	Delete all DHCP clients or only the DHCP clients serviced by the specified group of interfaces when reconfiguration fails; that is, when the maximum number of retry attempts have been made without success. A group configuration takes precedence over a DHCP local server configuration.
<b>Default</b>	Restores the original client configuration when reconfiguration fails.
<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="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> <li>• <a href="#">Configuring Deletion of the Client When Dynamic Reconfiguration Fails on page 72</a></li> </ul>

## client-discover-match (DHCP Local Server)

<b>Syntax</b>	client-discover-match <option60-and-option82>;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server 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 9.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	<p>Configure DHCP local server to use option 60 and option 82 information to uniquely identify DHCP subscribers or clients when primary subscriber or client identification fails. The statement always uses the <b>option60-and-option82</b> option. Specifying the option has no effect.</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="#">Extended DHCP Local Server Overview on page 4</a></li> <li>• <a href="#">Overriding Default DHCP Local Server Configuration Settings on page 63</a></li> </ul>

## client-id (DHCP Local Server)

<b>Syntax</b>	client-id;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	Specify that the DHCPv6 Client-ID option (option 1) in the client PDU name is concatenated with the username during the subscriber authentication or client authentication process.
<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="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## delegated-pool (DHCP Local Server)

<b>Syntax</b>	<code>delegated-pool <i>pool-name</i>;</code>
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group group-name</a> interface <i>interface-name overrides</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">dhcpv6 ...</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services system services dhcp-local-server <a href="#">dhcpv6 ...</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services system services dhcp-local-server <a href="#">dhcpv6 ...</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>
<b>Description</b>	Specify the address pool that assigns the IA_PD address. A pool specified by RADIUS VSA 26-161 takes precedence over the pool specified by this <b>delegated-pool</b> statement.
<b>Options</b>	<i>pool-name</i> —Name of the address-assignment pool.
<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="#">Specifying the Delegated Address Pool for IPv6 Prefix Assignment on page 68</a></li> <li>• <a href="#">Overriding Default DHCP Local Server Configuration Settings on page 63</a></li> </ul>

## delimiter (DHCP Local Server)

<b>Syntax</b>	<code>delimiter <i>delimiter-character</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server dhcpv6 group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server dhcpv6 group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server dhcpv6 group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server dhcpv6 authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server dhcpv6 group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server group group-name authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server dhcpv6 authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server dhcpv6 group group-name authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server group group-name authentication username-include</b>]</p>
<b>Release Information</b>	Statement introduced in Junos OS Release 9.1.
<b>Description</b>	<p>Specify the character used as the delimiter between the concatenated components of the username.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<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.

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

**Related Documentation**

- [Using External AAA Authentication Services with DHCP on page 58](#)

## detection-time

**Syntax**

```
detection-time {
    threshold milliseconds;
}
```

**Hierarchy Level**

[edit system services dhcp-local-server liveness-detection method [bfd](#)],  
[edit system services dhcp-local-server dhcpv6 liveness-detection method [bfd](#)],  
[edit forwarding-options dhcp-relay liveness-detection method [bfd](#)], [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method [bfd](#)],  
[edit system services dhcp-local-server group *group-name* liveness-detection method [bfd](#)],  
[edit system services dhcp-local-server dhcpv6 group *group-name* liveness-detection method [bfd](#)],  
[edit forwarding-options dhcp-relay group *group-name* liveness-detection method [bfd](#)],  
[edit forwarding-options dhcp-relay dhcpv6 group *group-name* liveness-detection method [bfd](#)]

**Release Information**

Statement introduced in Junos OS Release 12.1.  
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description**

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.

The remaining statement is explained separately.

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

**Related Documentation**

- [Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44](#)
- [Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients](#)

## dhcp-local-server

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

```

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

```

```

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


```

```

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

```

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

<b>Release Information</b>	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
<b>Description</b>	<p>Configure Dynamic Host Configuration Protocol (DHCP) local server options on the router or switch and enable the router or switch to function as an extended DHCP local server. The DHCP local server receives DHCP request and reply packets from DHCP clients and then responds with an IP address and other optional configuration information to the client.</p> <p>The extended DHCP local server is incompatible with the DHCP server on J Series routers and so is not supported on J Series routers. Also, the DHCP local server and the DHCP/BOOTP relay server, which are configured under the <b>[edit forwarding-options helpers]</b> hierarchy level, cannot both be enabled on the router or switch at the same time. The extended DHCP local server is fully compatible with the extended DHCP relay feature.</p> <p>The <b>dhcpv6</b> stanza configures the router or switch to support Dynamic Host Configuration Protocol for IPv6 (DHCPv6). The DHCPv6 local server is fully compatible with the extended DHCP local server and the extended DHCP relay feature.</p> <div><p><b>NOTE:</b> When you configure the <b>dhcp-local-server</b> statement at the routing instance hierarchy level, you must use a routing instance type of <b>virtual-router</b>.</p></div> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Local Server Overview on page 4</a></li><li>• <a href="#">DHCPv6 Local Server Overview on page 8</a></li><li>• <a href="#">Configuring a DHCP Server on Switches (CLI Procedure)</a></li></ul>

## dhcpv6 (DHCP Local Server)

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

```

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

```

```

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

```

<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a>],</p> <p>[edit system services <a href="#">dhcp-local-server</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
<b>Description</b>	<p>Configure DHCPv6 local server options on the router or switch and enable the router or switch to function as a server for the DHCP protocol for IP version 6 (IPv6). The DHCPv6 local server sends and receives packets using the IPv6 protocol and informs IPv6 of the routing requirements of router clients. The local server works together with the AAA service framework to control subscriber access (or DHCP client access) and accounting.</p> <p>The DHCPv6 local server is fully compatible with the extended DHCP local server and DHCP relay agent.</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>• <a href="#">DHCPv6 Local Server Overview on page 8</a></li> </ul>

## domain-name (DHCP Local Server)

<b>Syntax</b>	<code>domain-name <i>domain-name-string</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server authentication <b>username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit system services dhcp],</p> <p>[edit system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>group group-name authentication username-include</b>]</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 domain name that is concatenated with the username during the subscriber authentication or DHCP client authentication process.
<b>Options</b>	<b><i>domain-name-string</i></b> —Domain name formatted string.
<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**
- [Using External AAA Authentication Services with DHCP on page 58](#)

## **duplicate-clients-on-interface (DHCP Local Server)**

<b>Syntax</b>	<code>duplicate-clients-on-interface;</code>
<b>Hierarchy Level</b>	[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ], [edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a> ], [edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ], [edit system services <a href="#">dhcp-local-server</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 10.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure DHCP local server to include the client subinterface when distinguishing between duplicate DHCP clients (clients with the same MAC address or client ID) in the same subnet. By default, DHCP distinguishes clients by subnet. This feature is supported on DHCPv4 only.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring DHCP Duplicate Client Support on page 60</a></li> </ul>

## dynamic-profile (DHCP Local Server)

---

<b>Syntax</b>	<pre>dynamic-profile <i>profile-name</i> {     aggregate-clients (merge   replace);     use-primary <i>primary-profile-name</i>; }</pre>
<b>Hierarchy Level</b>	<pre>[edit system services <a href="#">dhcp-local-server</a>], [edit system services dhcp-local-server <a href="#">dhcpv6</a>], [edit system services dhcp-local-server dhcpv6 <a href="#">group</a> <i>group-name</i>], [edit system services dhcp-local-server dhcpv6 <a href="#">group</a> <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>], [edit system services dhcp-local-server <a href="#">group</a> <i>group-name</i>], [edit system services dhcp-local-server <a href="#">group</a> <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system   services <a href="#">dhcp-local-server</a> ...], [edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...]</pre>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.2.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Options <b>aggregate-clients</b> and <b>use-primary</b> introduced in Junos OS Release 9.3.</p> <p>Support at the <b>[edit ... interface]</b> hierarchy levels introduced in Junos OS Release 11.2.</p>
<b>Description</b>	Specify the dynamic profile that is attached to all interfaces, a named group of interfaces, or a specific interface.
<b>Options</b>	<p><b><i>profile-name</i></b>—Name of the dynamic profile.</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>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77</a></li><li>• <a href="#">Configuring a Default Subscriber Service</a></li></ul>

## external-authority

<b>Syntax</b>	external-authority;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">pool-match-order</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">pool-match-order</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">pool-match-order</a>],</p> <p>[edit system services dhcp-local-server <a href="#">pool-match-order</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	<p>Specify that an external authority (for example, RADIUS or Diameter) provides the address assignment.</p> <p>When RADIUS is the external authority, the router uses the Framed-IPv6-Pool attribute (RADIUS attribute 100) to select the pool. When Diameter is the external authority, the router uses the Diameter counterpart of RADIUS Framed-IPv6-Pool attribute.</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="#">Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 83</a></li> <li>• <a href="#">Extended DHCP Local Server Overview on page 4</a></li> <li>• <a href="#">Address-Assignment Pools Overview on page 18</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> ], [edit system services dhcp-local-server dhcpv6 <a href="#">liveness-detection</a> ], [edit forwarding-options dhcp-relay <a href="#">liveness-detection</a> ], [edit forwarding-options dhcp-relay dhcpv6 <a href="#">liveness-detection</a> ], [edit system services dhcp-local-server group <i>group-name</i> <a href="#">liveness-detection</a> ], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">liveness-detection</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">liveness-detection</a> ], [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. 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>	<b>clear-binding</b> —The client session is cleared when a liveness detection failure occurs.  <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.  <b>log-only</b> —A message is logged to indicate the event; no action is taken and DHCP is left to manage the failure.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. 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 115</a></li><li>• <a href="#">Configuring Detection of DHCP Local Server Client Connectivity on page 76</a></li><li>• <a href="#">Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116</a></li><li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## forward-snooped-clients (DHCP Local Server)

<b>Syntax</b>	forward-snooped-clients (all-interfaces   configured-interfaces   non-configured-interfaces);
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a>],</p> <p>[edit system services <a href="#">dhcp-local-server</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>	Configure how the DHCP local server handles DHCP snooped packets on specific interfaces.
<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>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="#">DHCP Snooping Support on page 15</a></li> <li>• <a href="#">Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server on page 79</a></li> </ul>

## group (DHCP Local Server)

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

```

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

```

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

- Related Documentation**
- [Extended DHCP Local Server Overview on page 4](#)
  - [Grouping Interfaces with Common DHCP Configurations on page 60](#)
  - [Using External AAA Authentication Services with DHCP on page 58](#)
  - [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77](#)
  - [Configuring a DHCP Server on Switches \(CLI Procedure\)](#)


---

## holddown-interval

---

<b>Syntax</b>	<code>holddown-interval <i>milliseconds</i>;</code>
<b>Hierarchy Level</b>	<code>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 12.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure the time (in milliseconds) for which Bidirectional Forwarding Detection (BFD) holds a session up notification.
<b>Options</b>	<b><i>milliseconds</i></b> —Interval specifying how long a BFD session must remain up before a state change notification is sent. <b>Range:</b> 0 through 255,000 <b>Default:</b> 0
<b>Required Privilege Level</b>	<code>routing</code> —To view this statement in the configuration. <code>routing-control</code> —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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## interface (DHCP Local Server)

<b>Syntax</b>	<pre> interface <i>interface-name</i> {   exclude;   overrides {     client-discover-match &lt;option60-and-option82&gt;;     interface-client-limit <i>number</i>;     no-arp;     rapid-commit;   }   service-profile <i>dynamic-profile-name</i>;   trace;   upto <i>upto-interface-name</i>; } </pre>
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server <b>group</b> <i>group-name</i>],</p> <p>[edit system services dhcp-local-server <b>dhcpv6 group</b> <i>group-name</i>]</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server</b> ...],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server</b> ...],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server</b> ...]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.0.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Options <b>upto</b> and <b>exclude</b> introduced in Junos OS Release 9.1.</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 local server 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 relay agent.</p>
	<div>  <p><b>NOTE:</b> DHCP values are supported in Integrated Routing and Bridging (IRB) configurations. When you configure an IRB interface in a network that is using DHCP, the DHCP information (for example, authentication, address assignment, and so on) is propagated in the associated bridge domain. This enables the DHCP server to configure client IP addresses residing within the bridge domain. IRB currently only supports static DHCP configurations. For additional information about how to configure IRB, see the JUNOS® MX Series 3D Universal Edge Routers Solutions, Release 12.3.</p> </div>
<b>Options</b>	<p><b>exclude</b>—Exclude an interface or a range of interfaces from the group. This option and the <b>overrides</b> option are mutually exclusive.</p> <p><b>interface-name</b>—Name of the interface. You can repeat this option multiple times.</p>

***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.

<b>Required Privilege Level</b>	system—To view this statement in the configuration.
	system-control—To add this statement to the configuration.
<b>Related Documentation</b>	• <a href="#">Extended DHCP Local Server Overview on page 4</a>
	• <a href="#">Grouping Interfaces with Common DHCP Configurations on page 60</a>
	• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a>

## interface-client-limit (DHCP Local Server)

<b>Syntax</b>	<code>interface-client-limit <i>number</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group</a> interface <i>interface-name</i> <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">overrides</a>],</p> <p>[edit system services dhcp-local-server 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.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	Set the maximum number of DHCP subscribers or DHCP 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.
<b>Default</b>	No limit
<b>Options</b>	<i>number</i> —Maximum number of clients allowed.

**Range:** 1 through 500,000

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

**Related Documentation**

- [Specifying the Maximum Number of DHCP Clients Per Interface on page 64](#)
- [Overriding Default DHCP Local Server Configuration Settings on page 63](#)

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## **interface-delete (Subscriber Management or DHCP Client Management)**

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**Syntax** interface-delete;

**Hierarchy Level** [edit system services subscriber-management maintain-subscriber]

**Release Information** Statement introduced in Junos OS Release 11.1.  
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description** 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.

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.

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

**Related Documentation**

- [Configuring the Router to Maintain DHCP Subscribers During Interface Delete Events](#)

## interface-name (DHCP Local Server)

<b>Syntax</b>	interface-name;
<b>Hierarchy Level</b>	<p>[edit system services <b>dhcp-local-server authentication username-include</b>],  [edit system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],  [edit system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],  [edit system services dhcp-local-server <b>group group-name authentication username-include</b>]  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server ...</b>],  [edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server ...</b>],  [edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server ...</b>]</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>
<b>Description</b>	Specify that the interface name is concatenated with the username during the subscriber authentication or DHCP client authentication process. Use the statement at the <b>[edit ... dhcpv6]</b> 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="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## ip-address-first

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<b>Syntax</b>	ip-address-first;
<b>Hierarchy Level</b>	[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">pool-match-order</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">pool-match-order</a> ], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">pool-match-order</a> ], [edit system services <a href="#">dhcp-local-server pool-match-order</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1 for EX Series switches.
<b>Description</b>	Configure the extended DHCP local server to use the IP address method to determine which address-assignment pool to use. The local server uses the IP address in the gateway IP address if one is present in the DHCP client PDU. If no gateway IP address is present, the local server uses the IP address of the receiving interface to find the address-assignment pool. The DHCP local server uses this method by default when no method is explicitly specified.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 83</a></li><li>• <a href="#">Extended DHCP Local Server Overview on page 4</a></li><li>• <a href="#">Address-Assignment Pools Overview on page 18</a></li><li>• <a href="#">Configuring a DHCP Server on Switches (CLI Procedure)</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 <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>	<pre> [edit system services <b>dhcp-local-server</b>], [edit system services dhcp-local-server <b>dhcpv6</b>], [edit forwarding-options <b>dhcp-relay</b>], [edit forwarding-options dhcp-relay <b>dhcpv6</b>], [edit system services dhcp-local-server <b>group</b> <i>group-name</i>], [edit system services dhcp-local-server dhcpv6 <b>group</b> <i>group-name</i>], [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>] </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 115</a></li> <li>• <a href="#">Configuring Detection of DHCP Local Server Client Connectivity on page 76</a></li> <li>• <a href="#">Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116</a></li> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44</a></li> </ul>

- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients

## logical-system-name (DHCP Local Server)

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<b>Syntax</b>	logical-system-name;
<b>Hierarchy Level</b>	[edit system services <a href="#">dhcp-local-server authentication username-include</a> ], [edit system services dhcp-local-server <a href="#">dhcpv6 authentication username-include</a> ], [edit system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication username-include</a> ], [edit system services dhcp-local-server <a href="#">group group-name authentication username-include</a> ] [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...] [edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a> ...], [edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Specify that the logical system name be concatenated with the username during the subscriber authentication or DHCP client process. No logical system name is concatenated if the configuration is in the default logical system.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a></li></ul>

## mac-address (DHCP Local Server)

<b>Syntax</b>	mac-address;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>group group-name authentication username-include</b>]</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 DHCP client authentication process.
<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="#">Using External AAA Authentication Services with DHCP on page 58</a></li> </ul>

## method

<b>Syntax</b>	<pre> method {   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>	<pre> [edit system services dhcp-local-server <i>liveness-detection</i>], [edit system services dhcp-local-server dhcpv6 <i>liveness-detection</i>], [edit forwarding-options dhcp-relay <i>liveness-detection</i>], [edit forwarding-options dhcp-relay dhcpv6 <i>liveness-detection</i>], [edit system services dhcp-local-server group <i>group-name</i> <i>liveness-detection</i>], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <i>liveness-detection</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> <i>liveness-detection</i>], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>liveness-detection</i>] </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 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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></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>],  [edit system services dhcp-local-server liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [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.</p> <p>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><i>milliseconds</i> — Specify the minimum interval value for BFD liveliness detection.</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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## minimum-receive-interval

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<b>Syntax</b>	<code>minimum-receive-interval <i>milliseconds</i>;</code>
<b>Hierarchy Level</b>	<code>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>], [edit forwarding-options</code> <code>  dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method</code> <code>  <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method</code> <code>  <a href="#">bfd</a>]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 12.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<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>	<i>milliseconds</i> — Specify the minimum receive interval value. <b>Range:</b> 1 through 255,000
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. 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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## multiplier

<b>Syntax</b>	<code>multiplier <i>number</i>;</code>
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],  [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>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [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.  Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<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>	<p><b>number</b>—Maximum allowable number of hello packets missed by the neighbor.  <b>Range:</b> 1 through 255  <b>Default:</b> 3</p>
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.  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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></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> ], [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a> ], [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> ], [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [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. 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. 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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## no-arp (DHCP Local Server)

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

## option-60 (DHCP Local Server)

<b>Syntax</b>	option-60;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server 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 Option 60 (Vendor Class Identifier) from the client PDU be concatenated with the username during the subscriber authentication or DHCP client authentication process.
<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="#">Using External AAA Authentication Services with DHCP on page 58</a></li> </ul>

## option-82 (DHCP Local Server Authentication)

<b>Syntax</b>	<code>option-82 &lt;circuit-id&gt; &lt;remote-id&gt;;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server 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>	<p>Specify the type of Option 82 information from the client PDU that is concatenated with the username during the subscriber authentication or DHCP client authentication process. You can specify either, both, or neither of the Agent Circuit ID and 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 you specify that neither suboption is supplied, the raw payload of Option 82 from the PDU is concatenated to the username.</p>
<b>Options</b>	<p><b>circuit-id</b>—(Optional) Agent Circuit ID suboption (suboption 1).</p> <p><b>remote-id</b>—(Optional) Agent Remote ID suboption (suboption 2).</p>
<b>Required Privilege Level</b>	<p><b>system</b>—To view this statement in the configuration.</p> <p><b>system-control</b>—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 58</a></li> </ul>

## option-82 (DHCP Local Server Pool Matching)

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<b>Syntax</b>	option-82;
<b>Hierarchy Level</b>	[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">pool-match-order</a> ], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">pool-match-order</a> ], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">pool-match-order</a> ], [edit system services dhcp-local-server <a href="#">pool-match-order</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure the extended DHCP local server to use the option 82 value in the DHCP client DHCP PDU together with the ip-address-first method to determine which address-assignment pool to use. You must configure the <b>ip-address-first</b> statement before configuring the <b>option-82</b> statement. The DHCP local server first determines which address-assignment pool to use based on the ip-address-first method. Then, the local server matches the option 82 value in the client PDU with the option 82 configuration in the address-assignment pool. This statement is supported for IPv4 address-assignment pools only.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 83</a></li><li>• <a href="#">Extended DHCP Local Server Overview on page 4</a></li><li>• <a href="#">Address-Assignment Pools Overview on page 18</a></li></ul>

## overrides (DHCP Local Server)

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

<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Extended DHCP Local Server Overview on page 4</a></li><li>• <a href="#">Overriding Default DHCP Local Server Configuration Settings on page 63</a></li><li>• <a href="#">Deleting DHCP Local Server and DHCP Relay Override Settings on page 70</a></li><li>• <a href="#">Configuring a DHCP Server on Switches (CLI Procedure)</a></li></ul>

## password (DHCP Local Server)

<b>Syntax</b>	<code>password password-string;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">dhcpv6 authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">group group-name authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">dhcpv6 authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">group group-name authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">dhcpv6 authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">group group-name authentication</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server authentication</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">dhcpv6 authentication</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">group group-name authentication</a>],</p> <p>[edit system services <a href="#">dhcp-local-server authentication</a>],</p> <p>[edit system services dhcp-local-server <a href="#">dhcpv6</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication</a>],</p> <p>[edit system services dhcp-local-server <a href="#">group group-name 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>
<b>Description</b>	Configure the password that is sent to the external AAA authentication server for subscriber authentication or DHCP client authentication.
<b>Options</b>	<i>password-string</i> —Authentication password.
<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="#">Using External AAA Authentication Services with DHCP on page 58</a></li> </ul>

## pool (DHCP Local Server Overrides)

**Syntax** `pool pool-name;`

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* system services dhcp-local-server overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* system services dhcp-local-server dhcpv6 overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* system services dhcp-local-server dhcpv6 group *group-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* system services dhcp-local-server dhcpv6 group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* system services dhcp-local-server group *group-name* overrides [process-inform](#)],  
 [edit logical-systems *logical-system-name* system services dhcp-local-server group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit routing-instances *routing-instance-name* system services dhcp-local-server overrides [process-inform](#)],  
 [edit routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 overrides [process-inform](#)],  
 [edit routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* overrides [process-inform](#)],  
 [edit routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* overrides [process-inform](#)],  
 [edit routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit system services dhcp-local-server overrides [process-inform](#)],  
 [edit system services dhcp-local-server dhcpv6 overrides [process-inform](#)],  
 [edit system services dhcp-local-server dhcpv6 group *group-name* overrides [process-inform](#)],  
 [edit system services dhcp-local-server dhcpv6 group *group-name* interface *interface-name* overrides [process-inform](#)],  
 [edit system services dhcp-local-server group *group-name* overrides [process-inform](#)],  
 [edit system services dhcp-local-server group *group-name* interface *interface-name* overrides [process-inform](#)]

**Release Information** Statement introduced in Junos OS Release 11.4.  
 Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

<b>Description</b>	Configure DHCP or DHCPv6 local server to reply to DHCP information request messages (DHCPINFORM for DHCPv4 and INFORMATION-REQUEST for DHCPv6) with information taken from the specified pool without interacting with AAA.
<b>Options</b>	<b>pool-name</b> —Name of the address pool, which must be configured within <b>family inet</b> for DHCP local server and within <b>family inet6</b> for DHCPv6 local server.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Enabling Processing of Client Information Requests on page 67</a></li> <li>• <a href="#">Overriding Default DHCP Local Server Configuration Settings on page 63</a></li> </ul>

## pool-match-order

<b>Syntax</b>	<pre>pool-match-order {   external-authority;   ip-address-first;   option-82; }</pre>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server</b>],</p> <p>[edit system services <b>dhcp-local-server</b>]</p>
<b>Release Information</b>	Statement introduced in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1.
<b>Description</b>	<p>Configure the order in which the DHCP local server uses information in the DHCP client PDU to determine how to obtain an address for the client.</p> <p>The remaining statements are explained separately.</p>
<b>Default</b>	DHCP local server uses the <b>ip-address-first</b> method to determine which address pool to use.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 83</a></li> <li>• <a href="#">Extended DHCP Local Server Overview on page 4</a></li> <li>• <a href="#">Configuring a DHCP Server on Switches (CLI Procedure)</a></li> </ul>

## process-inform

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

The remaining statement is explained separately.

<b>Default</b>	Information request messages are not processed.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Enabling Processing of Client Information Requests on page 67</a></li><li>• <a href="#">Overriding Default DHCP Local Server Configuration Settings on page 63</a></li><li>• <a href="#">Configuring a DHCP Server on Switches (CLI Procedure)</a></li></ul>

## radius-disconnect (DHCP Local Server)

<b>Syntax</b>	radius-disconnect;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server reconfigure <a href="#">trigger</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 reconfigure <a href="#">trigger</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit system services dhcp-local-server reconfigure <a href="#">trigger</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 reconfigure <a href="#">trigger</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> reconfigure <a href="#">trigger</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> reconfigure <a href="#">trigger</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</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 10.4.</p>
<b>Description</b>	Configure all DHCP clients or only the DHCP clients serviced by the specified group of interfaces to be reconfigured when a RADIUS-initiated disconnect is received by the DHCP client or group of clients. A group configuration takes precedence over a DHCP local server configuration.
<b>Default</b>	The client is deleted when a RADIUS-initiated disconnect is received.
<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="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> <li>• <a href="#">Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect on page 73</a></li> </ul>

## rapid-commit (DHCPv6 Local Server)

<b>Syntax</b>	rapid-commit;
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server <a href="#">dhcpv6 overrides</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group group-name overrides</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">group group-name interface interface-name overrides</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server dhcpv6 ...</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server dhcpv6 ...</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server dhcpv6 ...</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 DHCPv6 local server to recognize the Rapid Commit option (DHCPv6 option 14) in DHCPv6 solicit messages sent from the DHCPv6 client. When rapid commit is enabled for both DHCPv6 local server and the DHCPv6 client, a two-message handshake is used instead of the standard four-message handshake. You can enable rapid commit support on DHCPv6 local server globally, for a named group, or for a specific interface.</p>
<b>Default</b>	Rapid commit support is not enabled.
<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="#">Enabling DHCPv6 Rapid Commit Support on page 69</a></li> <li>• <a href="#">Overriding Default DHCP Local Server Configuration Settings on page 63</a></li> </ul>

## reconfigure (DHCP Local Server)

**Syntax**

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

**Hierarchy Level**

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

**Release Information**

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

**Description**

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

The remaining statements are explained separately.

**Required Privilege Level**

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

- Related Documentation**
- [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)
  - [Configuring a DHCP Server on Switches \(CLI Procedure\)](#)

## relay-agent-interface-id (DHCP Local Server)

<b>Syntax</b>	relay-agent-interface-id;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<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 or DHCP client authentication process.
<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="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## relay-agent-remote-id (DHCP Local Server)

<b>Syntax</b>	relay-agent-remote-id;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server 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> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 authentication <a href="#">username-include</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</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 DHCP client authentication process.
<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="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## routing-instance-name (DHCP Local Server)

<b>Syntax</b>	routing-instance-name;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>group group-name authentication username-include</b>]</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 routing instance name be concatenated with the username during the subscriber authentication or DHCP client authentication process. No routing instance name is concatenated if the configuration is in the default routing instance.
<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**
- [Using External AAA Authentication Services with DHCP on page 58](#)

## service-profile (DHCP Local Server)

<b>Syntax</b>	<code>service-profile <i>dynamic-profile-name</i>;</code>
<b>Hierarchy Level</b>	<p>[edit system services <a href="#">dhcp-local-server</a>],  [edit system services dhcp-local-server <a href="#">dhcpv6</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],  [edit system services dhcp-local-server <a href="#">group</a> <i>group-name</i>],  [edit system services dhcp-local-server group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],  [edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a> ...],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...],  [edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 11.2.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	<p>Specify the default subscriber service or 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 local server clients, include the <b>service-profile</b> statement at the <b>[edit system services dhcp-local-server]</b> hierarchy level.</li> <li>• To specify the default service for a named group of interfaces, include the <b>service-profile</b> statement at the <b>[edit system services dhcp-local-server group <i>group-name</i>]</b> 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 <b>[edit system services dhcp-local-server group <i>group-name</i> interface <i>interface-name</i>]</b> hierarchy level.</li> <li>• For DHCPv6 clients, use the <b>service-profile</b> statement at the <b>[edit system services dhcp-local-server dhcpv6]</b> hierarchy level.</li> </ul>
<b>Options</b>	<b><i>dynamic-profile-name</i></b> —Name of the dynamic profile that defines the service.
<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="#">Extended DHCP Local Server Overview on page 4</a></li> <li>• Default Subscriber Service Overview</li> <li>• Configuring a Default Subscriber Service</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>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay liveness-detection], [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [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>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## strict (DHCP Local Server)


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<b>Syntax</b>	strict;
<b>Hierarchy Level</b>	<pre>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>], [edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>], [edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>], [edit system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>]</pre>
<b>Release Information</b>	Statement introduced in Junos OS Release 10.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Specify whether the server denies a client to bind when the client does not indicate that it accepts reconfigure messages. This feature is available only for DHCPv6.
<b>Default</b>	Accept solicit messages from clients that do not support reconfiguration and permit them to bind.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li><li>• <a href="#">Preventing Binding of Clients That Do Not Support Reconfigure Messages on page 74</a></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>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">detection-time</a>],  [edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">detection-time</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">detection-time</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],  [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 style="display: flex; align-items: center;">  <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> </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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## threshold (transmit-interval)

<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="#">transmit-interval</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],</p> <p>[edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">transmit-interval</a>],</p> <p>[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],</p> <p>[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>	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>	<p><i>milliseconds</i> — Threshold value.</p> <p><b>Range:</b> 0 through 4,294,967,295 (<math>2^{32} - 1</math>)</p>
<div>  <p><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.</p> </div>	
<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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## timeout (DHCP Local Server)

<b>Syntax</b>	<code>timeout <i>timeout-value</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.</p>
<b>Description</b>	Configure the initial value in seconds between attempts to reconfigure all DHCP clients or only the DHCP clients serviced by the specified group of interfaces.
<b>Options</b>	<p><b><i>timeout-value</i></b>—Initial retry timeout value.</p> <p><b>Range:</b> 1 through 10 seconds</p> <p><b>Default:</b> 2 seconds</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="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> <li>• <a href="#">Configuring Dynamic Reconfiguration Attempts for DHCP Clients on page 71</a></li> </ul>

## token (DHCP Local Server)

<b>Syntax</b>	<code>token <i>token-value</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.</p>
<b>Description</b>	<p>Configure a plain-text token for all DHCP clients or only the DHCP clients serviced by the specified group of interfaces. The token enables rudimentary entity authentication to protect against inadvertently instantiated DHCP servers. A null token (empty string) indicates that the configuration token functionality is not enabled. A group configuration takes precedence over a DHCP local server configuration. For more information about tokens, see RFC 3118, <i>Authentication for DHCP Messages</i>, section 4.</p>
<b>Options</b>	<p><b><i>token-value</i></b>—Plain-text alphanumeric string.</p> <p><b>Default:</b> null (empty string)</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="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> <li>• <a href="#">Configuring a Token for DHCP Local Server Authentication on page 73</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>],          [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],          [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>],          [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method  <a href="#">bfd</a>],          [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [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.          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.          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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## trigger (DHCP Local Server)

<b>Syntax</b>	<pre>trigger {     radius-disconnect; }</pre>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">reconfigure</a>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">reconfigure</a>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 10.0.</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 10.4.</p>
<b>Description</b>	<p>Configure behavior in response to a trigger for all DHCP clients or only the DHCP clients serviced by the specified group of interfaces.</p> <p>The remaining statement is 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>• <a href="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> <li>• <a href="#">Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect on page 73</a></li> <li>• <a href="#">radius-disconnect on page 186</a></li> </ul>

## use-primary (DHCP Local Server)

<b>Syntax</b>	<code>use-primary primary-profile-name;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <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> system services dhcp-local-server group <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <b>dynamic-profile</b> <i>profile-name</i>],</p> <p>[edit system services dhcp-local-server <b>dynamic-profile</b> <i>profile-name</i>]</p> <p>[edit system services dhcp-local-server group <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>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	Specify the dynamic profile to configure as the primary dynamic profile. The primary dynamic profile is instantiated when the first subscriber or DHCP client logs in. Subsequent subscribers (or clients) are not assigned the primary dynamic profile; instead, they are assigned the dynamic profile specified for the interface. When the first subscriber (or client) logs out, the next subscriber (or client) that logs in is assigned the primary dynamic profile.
<b>Options</b>	<b>primary-profile-name</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>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77</a></li> </ul>

## user-prefix (DHCP Local Server)

<b>Syntax</b>	<code>user-prefix <i>user-prefix-string</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server authentication <b>username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server <b>group group-name authentication username-include</b>],</p> <p>[edit system services <b>dhcp-local-server authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>dhcpv6 authentication username-include</b>],</p> <p>[edit system services dhcp-local-server dhcpv6 <b>group group-name authentication username-include</b>],</p> <p>[edit system services dhcp-local-server <b>group group-name authentication username-include</b>]</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 user prefix that is concatenated with the username during the subscriber authentication or DHCP client authentication process.
<b>Options</b>	<i>user-prefix-string</i> —User prefix string.
<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**
- [Using External AAA Authentication Services with DHCP on page 58](#)

## username-include (DHCP Local Server)

<b>Syntax</b>	<pre>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 system services <a href="#">dhcp-local-server authentication</a>], [edit system services dhcp-local-server <a href="#">dhcpv6 authentication</a>], [edit system services dhcp-local-server dhcpv6 <a href="#">group group-name authentication</a>], [edit system services dhcp-local-server <a href="#">group group-name authentication</a>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system   services <a href="#">dhcp-local-server</a> ...], [edit logical-systems <i>logical-system-name</i> system services <a href="#">dhcp-local-server</a> ...], [edit routing-instances <i>routing-instance-name</i> system services <a href="#">dhcp-local-server</a> ...]</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>
<b>Description</b>	<p>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.</p> <p>The statements are explained separately. The <a href="#">option-60</a> and <a href="#">option-82</a> statements are not supported in the DHCPv6 hierarchy levels. The <a href="#">client-id</a>, <a href="#">relay-agent-interface-id</a>, <a href="#">relay-agent-remote-id</a> and relay-agent-subscriber-id statements are supported in the DHCPv6 hierarchy levels only.</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="#">Using External AAA Authentication Services with DHCP on page 58</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## version (BFD)

---

<b>Syntax</b>	version (0   1   automatic);
<b>Hierarchy Level</b>	[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a> ], [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> ], [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [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. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure the BFD protocol version to detect.
<b>Options</b>	<b>0</b> —Use BFD protocol version 0.  <b>1</b> —Use BFD protocol version 1.  <b>automatic</b> —Autodetect the BFD protocol version. <b>Default:</b> automatic
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. 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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## CHAPTER 8

# DHCP Relay Agent Configuration Statements

- [\[edit forwarding-options dhcp-relay\] Hierarchy Level on page 205](#)

### [\[edit forwarding-options dhcp-relay\] Hierarchy Level](#)

---

```
forwarding-options {
  dhcp-relay {
    active-server-group server-group-name;
  }
  arp-inspection;
  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 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 profile-name;
}
group group-name {
    ... the group subhierarchy appears after the main [edit forwarding-options
        dhcp-relay] hierarchy ...
}
liveness-detecton {
    ... the liveness-detection subhierarchy appears after the main [edit
        forwarding-options dhcp-relay] hierarchy ...
}
overrides {
    ... the overrides subhierarchy appears after the main [edit forwarding-options
        dhcp-relay] hierarchy ...
}
relay-agent-interface-id {
    prefix;
    user-interface-description;
}
}
relay-option {
    default-action;
    equals;
    option-number;
    starts-with;
}
}
server-group;
service-profile;
)
duplicate-clients-on-interface;
dynamic-profile profile-name {
    aggregate-clients (merge |replace);
    use-primary profile-name;
}
forward-snooped-clients (all-interfaces | configured-interfaces |
    non-configured-interfaces);
group group-name {
    active-server-group server-group-name;
    authentication {
        password password-string;
        username-include {
            circuit-type;
            delimiter delimiter-character;
            domain-name domain-name-string;
            logical-system-name;
            mac-address;
            option-60;
            option-82 <circuit-id> <remote-id>;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    }
    dynamic-profile profile-name{
        aggregate-clients (merge |replace);
    }
}

```

```

        use-primary profile-name;
    }
    interface;
    liveness-detection;
    overrides;
    relay-option;
    relay-option-82 ;
    service-profile;
}
}
liveness-detection {
    failure-action (clear-binding |clear-binding-if-interface-up |log-only);
}
method {
    bfd {
        detection-time {
            threshold milliseconds;
        }
        holddown-interval;
        minimum--interval;
        minimum-receive-interval;
        multiplier;
        no-adaptation;
        session-mode;
    }
    transmit-interval {
        minimum-interval milliseconds;
        threshold milliseconds;
    }
    version;
}
overrides {
    (allow-snooped-clients | no-allow-snooped-clients);
    always-write-giaddr;
    always-write-option-82;
    client-discover-match <option60-and-option82>;
    disable-relay;
    interface-client-limit number;
    layer2-unicast-replies;
    no-allow-snooped-clients;
    no-arp;
    no-bind-on-request;
    no-unicast-replies;
    proxy-mode;
    replace-ip-source-with giaddr;
    send-release-on-delete;
    trust-option-82;
}
relay-option {
    default-action {
        drop;
        forward-only;
        local-server-group group-name;
        relay-server-group group-name;
    }
    equals {

```

```
        ascii string;  
        hexadecimal string;  
    }  
    }  
    option-number (60 | 77);  
}  
starts-with {  
    ascii string;  
    hexadecimal string;  
}  
relay-option-82 {  
    circuit-id (value | ... the following prefix statement ...) {  
        prefix {  
            host-name;  
            logical-system-name;  
            routing-instance-name;  
        }  
        use-interface-description (device | logical);  
    }  
}  
server-group {  
    server-group-name {  
        ip-address;  
    }  
}  
service-profile name:  
}
```

- Related Documentation**
- Notational Conventions Used in Junos OS Configuration Hierarchies
  - [edit forwarding-options] Hierarchy Level

## access (Dynamic Access Routes)

**Syntax**

```
access {
  route prefix {
    next-hop next-hop;
    metric route-cost;
    preference route-distance;
    tag route-tag;
  }
}
```

**Hierarchy Level** [edit dynamic-profiles routing-options]

**Release Information** Statement introduced in Junos OS Release 9.5.

**Description** Dynamically configure access routes.



**BEST PRACTICE:** We recommend that you always include the **access-internal** stanza in the dynamic-profile when the **access** stanza is present for framed-route support.

**Options** The remaining statements are explained separately.

**Required Privilege Level**

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

**Related Documentation**

- Configuring Dynamic Access Routes for Subscriber Management

## access-internal (Dynamic Access-Internal Routes)

---

**Syntax**    `access-internal {  
              route subscriber-ip-address {  
                  qualified-next-hop underlying-interface {  
                      mac-address address;  
                  }  
              }  
          }`

**Hierarchy Level**    [edit dynamic-profiles routing-options]

**Release Information**    Statement introduced in Junos OS Release 9.5.

**Description**    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.



.....  
**BEST PRACTICE:** We recommend that you always include the `access-internal` stanza in the dynamic-profile when the `access` stanza is present for framed-route support.  
.....

The remaining statements are explained separately.

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


**Related Documentation**

- Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management
- Configuring Dynamic Access-Internal Routes for PPP Subscriber Management

## 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],  [edit forwarding-options dhcp-relay <b>dhcpv6</b>],  [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],  [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>dhcpv6</b>],  [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b>],  [edit logical-systems <i>logical-system-name</i> forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>],  [edit logical-systems <i>logical-system-name</i> forwarding-options <b>group</b> <i>group-name</i>],  [edit logical-systems <i>logical-system-name</i> forwarding-options <b>group</b> <i>group-name</i> <b>dhcpv6</b>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-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> <b>dhcpv6</b>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay]  [edit routing-instances <i>routing-instance-name</i> forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> <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 <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>Apply a DHCP relay agent configuration to the named group of DHCP server addresses. Use the statement at the <b>[edit ... 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 28</a></li> <li>• <a href="#">Configuring Active Server Groups on page 112</a></li> <li>• <a href="#">Group-Specific DHCP Relay Options on page 34</a></li> <li>• <a href="#">dhcp-relay on page 223</a></li> </ul>

## allow-snooped-clients

<b>Syntax</b>	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>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Support at the [edit ... <b>dhcpv6</b>] 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 ... <b>dhcpv6</b>] hierarchy levels to explicitly enable snooping support on the router 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 28</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li> <li>• <a href="#">DHCP Snooping Support on page 15</a></li> </ul>

## always-write-giaddr

<b>Syntax</b>	<code>always-write-giaddr;</code>
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [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>	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>	<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 28</a></li> <li>• <a href="#">dhcp-relay on page 223</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>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [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.  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.  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 28</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 [circuit-id] [remote-id];     relay-agent-interface-id;     relay-agent-remote-id;     relay-agent-subscriber-id;     routing-instance-name;     user-prefix <i>user-prefix-string</i>;   } }</pre>
<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 223</a></li> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</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>],  [edit system services dhcp-local-server dhcpv6 liveness-detection <a href="#">method</a>],  [edit forwarding-options dhcp-relay liveness-detection <a href="#">method</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection <a href="#">method</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection <a href="#">method</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection <a href="#">method</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection <a href="#">method</a>],  [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.  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.  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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</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="#">Enabling and Disabling Insertion of Option 82 Information on page 108</a></li> <li>• <a href="#">Configuring Agent Circuit ID Information on page 109</a></li> </ul>

## circuit-type (DHCP Relay Agent)

---

<b>Syntax</b>	circuit-type;
<b>Hierarchy Level</b>	[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a> ], [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a> ], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay ...</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay ...</a> ], [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay ...</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches. Support at the [edit ... <a href="#">dhcpv6</a> ] hierarchy levels introduced in Junos OS Release 11.4.
<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 [edit ... <a href="#">dhcpv6</a> ] hierarchy levels to configure DHCPv6 support.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a></li><li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</a></li></ul>

## client-discover-match (DHCP Relay Agent)

<b>Syntax</b>	client-discover-match <option60-and-option82>;
<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 9.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<b>Description</b>	<p>Configure DHCP relay to use option 60 and option 82 information to uniquely identify DHCP subscribers or clients when primary subscriber or client identification fails. The statement always uses the <b>option60-and-option82</b> option. Specifying the option has no effect.</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 28</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li> </ul>

## client-id (DHCP Relay Agent)

---

<b>Syntax</b>	client-id;
<b>Hierarchy Level</b>	[edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a> ], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a> ...]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<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>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a></li><li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</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>],  [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [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>],  [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>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [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.  Statement introduced in Junos OS Release 12.3R2 for EX Series switches.  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.  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 58</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</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>], [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>], [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>], [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method  <a href="#">bfd</a>], [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>], [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. 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. 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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</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;
}
service-profile dynamic-profile-name;
}
overrides {
    ...
}
relay-agent-interface-id {
    ...
}
relay-option {
    ...
}
}
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;
    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);
}
server-group {
    server-group-name {
        server-ip-address;
    }
}
duplicate-clients-on-interface;
dynamic-profile profile-name {
    aggregate-clients (merge | replace);
    use-primary primary-profile-name;
}
forward-snooped-clients (all-interfaces | configured-interfaces |
    non-configured-interfaces);
group group-name {
    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 {
  ...
}
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>;
  disable-relay;
  interface-client-limit number;
  layer2-unicast-replies;
  no-allow-snooped-clients;
  no-arp;
  no-bind-on-request;
  proxy-mode;
  replace-ip-source-with;
  send-release-on-delete;

```

```

    trust-option-82;
  }
  relay-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);
    }
  }
  server-group {
    server-group-name {
      server-ip-address;
    }
  }
  service-profile dynamic-profile-name;
}

```

**Hierarchy Level** [edit forwarding-options],  
 [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]

**Release Information** Statement introduced in Junos OS Release 8.3.  
 Statement introduced in Junos OS Release 12.1 for EX Series switches.

**Description** 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.

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.

The extended DHCP and DHCPv6 relay agent options configured with the **dhcp-relay** and **dhcpv6** statements are incompatible with the DHCP/BOOTP relay agent options configured with the **bootp** 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.

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 28](#)
- [DHCPv6 Relay Agent Overview on page 33](#)
- [DHCP Relay Proxy Overview on page 31](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)

## dhcpx6 (DHCP Relay Agent)

```
Syntax  dhcpx6 {
    active-server-group server-group-name;
    authentication {
        password password-string;
        username-include {
            circuit-type;
            client-id;
            delimiter delimiter-character;
            domain-name domain-name-string;
            logical-system-name;
            relay-agent-interface-id;
            relay-agent-remote-id;
            relay-agent-subscriber-id;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    }
    dynamic-profile profile-name {
        aggregate-clients (merge | replace);
        use-primary primary-profile-name;
    }
    group group-name {
        active-server-group server-group-name;
        authentication {
            ...
        }
        dynamic-profile profile-name {
            ...
        }
    }
    interface interface-name {
        exclude;
        liveness-detection {
            failure-action (clear-binding | clear-binding-if-interface-up | log-only);
            method {
                bfd {
                    version (0 | 1 | automatic);
                    minimum-interval milliseconds;
                    minimum-receive-interval milliseconds;
                    multiplier number;
                    no-adaptation;
                    transmit-interval {
                        minimum-interval milliseconds;
                        threshold milliseconds;
                    }
                    detection-time {
                        threshold milliseconds;
                    }
                }
                session-mode (automatic | multihop | singlehop);
                holddown-interval milliseconds;
            }
        }
    }
}
```

```

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

```

```

    service-profile dynamic-profile-name;
}

```

<b>Hierarchy Level</b>	[edit forwarding-options dhcp-relay], [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 dhcp-relay], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.3 for EX Series switches.
<b>Description</b>	<p>Configure DHCPv6 relay options on the router or switch and enable the router or switch to function as a DHCPv6 relay agent. A DHCPv6 relay agent forwards DHCPv6 request and reply packets between a DHCPv6 client and a DHCPv6 server.</p> <p>The DHCPv6 relay agent server is fully compatible with the extended DHCP local server and DHCP relay agent. However, the options configured with the <b>dhcpv6</b> statement are incompatible with the DHCP/BOOTP relay agent options configured with the <b>bootp</b> statement. As a result, the DHCPv6 relay agent and the DHCP/BOOTP relay agent cannot be enabled on the router or switch at the same time.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. 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 223</a></li> <li>• <a href="#">DHCPv6 Relay Agent Overview on page 33</a></li> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a></li> </ul>

## disable-relay

---

<b>Syntax</b>	disable-relay;
<b>Hierarchy Level</b>	[edit forwarding-options dhcp-relay <a href="#">overrides</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a> ], [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> ], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a> ], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a> ], [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 8.3. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Disable DHCP relay on specific interfaces in a group.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. 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 28</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>],  [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [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>],  [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>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>]  [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.  Statement introduced in Junos OS Release 12.3R2 for EX Series switches.  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.  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 58</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## drop (DHCP Relay Agent Option)

---

<b>Syntax</b>	drop;
<b>Hierarchy Level</b>	[edit forwarding-options dhcp-relay relay-option (default-action   equals   starts-with)], [edit forwarding-options dhcp-relay dhcpv6 relay-option (default-action   equals   starts-with)], [edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (default-action   equals   starts-with)], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> relay-option (default-action   equals   starts-with)], [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]
<b>Release Information</b>	Statement introduced in Junos OS Release 12.3. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<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>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>Using DHCP Option Information to Selectively Process DHCP Client Traffic</li></ul>

## duplicate-clients-on-interface (DHCP Relay Agent)

<b>Syntax</b>	duplicate-clients-on-interface;
<b>Hierarchy Level</b>	[edit forwarding-options <a href="#">dhcp-relay</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ], [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 10.2. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure DHCP relay agent to include the client subinterface when distinguishing between duplicate DHCP clients (clients with the same MAC address or client ID) in the same subnet. By default, DHCP relay distinguishes clients by subnet. This feature is supported on DHCPv4 only.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring DHCP Duplicate Client Support on page 60</a></li> <li>• <a href="#">Enabling and Disabling Insertion of Option 82 Information on page 108</a></li> </ul>

## dynamic-profile (DHCP Relay Agent)

---

<b>Syntax</b>	<code>dynamic-profile <i>profile-name</i> {     aggregate-clients (merge   replace);     use-primary <i>primary-profile-name</i>; }</code>
<b>Hierarchy Level</b>	<code>[edit forwarding-options dhcp-relay], [edit forwarding-options <b>dhcp-relay</b> <b>dhcpv6</b>], [edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-name</i>], [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-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 ...]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 9.2. Support at the <code>[edit ... <b>dhcpv6</b>]</code> hierarchy levels introduced in Junos OS Release 11.4. 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.  M120 and M320 routers do not support DHCPv6.
<b>Options</b>	<b><i>profile-name</i></b> —Name of the dynamic profile.  The remaining statements are explained separately.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. 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 223</a></li><li>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77</a></li><li>• <a href="#">Grouping Interfaces with Common DHCP Configurations on page 60</a></li><li>• <a href="#">Configuring a Default Subscriber Service</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> ], [edit system services dhcp-local-server dhcpv6 <a href="#">liveness-detection</a> ], [edit forwarding-options dhcp-relay <a href="#">liveness-detection</a> ], [edit forwarding-options dhcp-relay dhcpv6 <a href="#">liveness-detection</a> ], [edit system services dhcp-local-server group <i>group-name</i> <a href="#">liveness-detection</a> ], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">liveness-detection</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">liveness-detection</a> ], [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. 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. 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 115</a></li> <li>• <a href="#">Configuring Detection of DHCP Local Server Client Connectivity on page 76</a></li> <li>• <a href="#">Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116</a></li> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</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>	[edit forwarding-options <a href="#">dhcp-relay</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ], [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 10.4. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<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>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">DHCP Snooping Support on page 15</a></li><li>• <a href="#">Configuring DHCP Snooping for DHCP Relay Agent on page 99</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>;
    disable-relay;
    interface-client-limit number;
    layer2-unicast-replies;
    no-allow-snooped-clients;
    no-arp;
    no-bind-on-request;
    proxy-mode;
    replace-ip-source-with;
    send-release-on-delete;
    trust-option-82;
}
relay-agent-interface-id {
    prefix prefix;
    use-interface-description (logical | device);
}
relay-option {
    option-number option-number;
    default-action {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }
    equals (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }
    starts-with (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }
}
relay-option-82 {
    circuit-id {
        prefix prefix;
        use-interface-description (logical | device);
    }
}
service-profile dynamic-profile-name;
}

```

<b>Hierarchy Level</b>	[edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay <a href="#">dhcpv6</a> ], [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]
<b>Release Information</b>	Statement introduced in Junos OS Release 8.3. Support at the [edit ... <a href="#">dhcpv6</a> ] hierarchy levels introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
<b>Description</b>	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 ... <a href="#">dhcpv6</a> ] hierarchy levels to configure DHCPv6 support.
<b>Options</b>	<b><i>group-name</i></b> —Name of a group of interfaces that have a common DHCP or DHCPv6 relay agent configuration.  The remaining statements are explained separately.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. 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 223</a></li><li>• <a href="#">Extended DHCP Relay Agent Overview on page 28</a></li><li>• <a href="#">Group-Specific DHCP Relay Options on page 34</a></li><li>• <a href="#">Grouping Interfaces with Common DHCP Configurations on page 60</a></li><li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a></li><li>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77</a></li></ul>

## holddown-interval

---

<b>Syntax</b>	<code>holddown-interval <i>milliseconds</i>;</code>
<b>Hierarchy Level</b>	<code>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>], [edit forwarding-options</code> <code>  dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method</code> <code>  <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],</code> <code>[edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method</code> <code>  <a href="#">bfd</a>]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 12.1. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure the time (in milliseconds) for which Bidirectional Forwarding Detection (BFD) holds a session up notification.
<b>Options</b>	<b><i>milliseconds</i></b> —Interval specifying how long a BFD session must remain up before a state change notification is sent. <b>Range:</b> 0 through 255,000 <b>Default:</b> 0
<b>Required Privilege Level</b>	<b>routing</b> —To view this statement in the configuration. <b>routing-control</b> —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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## interface (DHCP Relay Agent)

**Syntax**

```
interface interface-name {
  exclude;
  overrides {
    allow-snooped-clients;
    always-write-giaddr;
    always-write-option-82;
    client-discover-match <option60-and-option82>;
    disable-relay;
    interface-client-limit number;
    layer2-unicast-replies;
    no-allow-snooped-clients;
    no-arp;
    proxy-mode;
    replace-ip-source-with;
    send-release-on-delete;
    trust-option-82;
  }
  service-profile dynamic-profile-name;
  trace;
  upto upto-interface-name;
}
```

**Hierarchy Level**

```
[edit forwarding-options dhcp-relay dhcpv6 group group-name],
[edit forwarding-options dhcp-relay group group-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.

Options **upto** and **exclude** introduced in Junos OS Release 9.1.

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 one or more interfaces, or a range of interfaces, that are within a specified group on which the DHCP or DHCPv6 relay agent is enabled. You can repeat the **interface** *interface-name* statement to specify multiple interfaces within a group, but you cannot specify the same interface in more than one group. Also, you cannot use an interface that is being used by the DHCP local server. Use the statement at the **[edit ... dhcpv6]** hierarchy levels to configure DHCPv6 support.



**NOTE:** DHCP values are supported in Integrated Routing and Bridging (IRB) configurations. When you configure an IRB interface in a network that is using DHCP, the DHCP information (for example, authentication, address assignment, and so on) is propagated in the associated bridge domain. This enables the DHCP server to configure client IP addresses residing within the bridge domain. IRB currently only supports static DHCP configurations. For additional information about how to configure IRB, see the JUNOS® MX Series 3D Universal Edge Routers Solutions, Release 12.3.

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

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

**overrides**—Override the specified default configuration settings for the interface. The [overrides](#) statement is described separately.

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

The remaining statements are explained separately.

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

**Related Documentation**

- [Extended DHCP Relay Agent Overview on page 28](#)
- [Grouping Interfaces with Common DHCP Configurations on page 60](#)
- [Using External AAA Authentication Services with DHCP on page 58](#)

## 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>],  [edit forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [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.  Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.  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.  <b>Range:</b> 1 through 500,000</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.  interface-control—To add this statement to the configuration.</p>

- Related Documentation**
- [dhcp-relay on page 223](#)
  - [Extended DHCP Relay Agent Overview on page 28](#)
  - [Group-Specific DHCP Relay Options on page 34](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 90](#)

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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 maintain-subscriber]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.1. 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. 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</a></li></ul>

## interface-name (DHCP Relay Agent)

<b>Syntax</b>	interface-name;
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay ...],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay ...]</p>
<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>
<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>	<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="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## layer2-unicast-replies

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<b>Syntax</b>	layer2-unicast-replies;
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>], [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>], [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>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>], [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 28</a></li><li>• <a href="#">dhcp-relay on page 223</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 <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>	<pre> [edit system services <b>dhcp-local-server</b>], [edit system services dhcp-local-server <b>dhcpv6</b>], [edit forwarding-options <b>dhcp-relay</b>], [edit forwarding-options dhcp-relay <b>dhcpv6</b>], [edit system services dhcp-local-server <b>group group-name</b>], [edit system services dhcp-local-server dhcpv6 <b>group group-name</b>], [edit forwarding-options dhcp-relay <b>group group-name</b>], [edit forwarding-options dhcp-relay dhcpv6 <b>group group-name</b>] </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 115</a></li> <li>• <a href="#">Configuring Detection of DHCP Local Server Client Connectivity on page 76</a></li> <li>• <a href="#">Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 116</a></li> <li>• <a href="#">Example: Configuring Group Liveness Detection for DHCP Local Server Clients on page 44</a></li> </ul>

- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients

## local-server-group (DHCP Relay Agent Option)

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<b>Syntax</b>	<code>local-server-group <i>local-server-group</i>;</code>
<b>Hierarchy Level</b>	<code>[edit forwarding-options dhcp-relay relay-option (default-action   equals   starts-with)],</code> <code>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (default-action   equals</code> <code>  starts-with)],</code> <code>[edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code> <code>forwarding-options <a href="#">dhcp-relay</a> ...],</code> <code>[edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 12.3. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	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.  The <b>local-server-group</b> option is not supported for DHCPv6 relay agent.
<b>Options</b>	<b><i>local-server-group</i></b> —Name of DHCP local server group.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• Using DHCP Option Information to Selectively Process DHCP Client Traffic</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 58</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</a></li> </ul>

## mac-address (DHCP Relay Agent)

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<b>Syntax</b>	mac-address;
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>], [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>], [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>], [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>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>], [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. 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. 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 58</a></li></ul>

## method

<b>Syntax</b>	<pre> method {   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>	<pre> [edit system services dhcp-local-server <i>liveness-detection</i>], [edit system services dhcp-local-server dhcpv6 <i>liveness-detection</i>], [edit forwarding-options dhcp-relay <i>liveness-detection</i>], [edit forwarding-options dhcp-relay dhcpv6 <i>liveness-detection</i>], [edit system services dhcp-local-server group <i>group-name</i> <i>liveness-detection</i>], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <i>liveness-detection</i>], [edit forwarding-options dhcp-relay group <i>group-name</i> <i>liveness-detection</i>], [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <i>liveness-detection</i>] </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 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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></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>],  [edit system services dhcp-local-server liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [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.</p> <p>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.</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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</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>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],  [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>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method  <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [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.  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.  <b>Range:</b> 1 through 255,000</p>
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.  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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## multiplier

<b>Syntax</b>	<code>multiplier <i>number</i>;</code>
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],  [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>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],  [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.  Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<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>	<p><b>number</b>—Maximum allowable number of hello packets missed by the neighbor.  <b>Range:</b> 1 through 255  <b>Default:</b> 3</p>
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.  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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

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## next-hop (Dynamic Access-Internal Routes)

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<b>Syntax</b>	<code>next-hop <i>next-hop</i>;</code>
<b>Hierarchy Level</b>	[edit dynamic-profiles routing-options <b>access</b> route <i>prefix</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.5.
<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>• Configuring Dynamic Access Routes for Subscriber Management</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> ], [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a> ], [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> ], [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [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. 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. 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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li></ul>

## no-allow-snooped-clients

<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 28</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li> <li>• <a href="#">DHCP Snooping Support on page 15</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>],  [edit forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [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.  Support at the <b>[edit ... dhcpv6]</b> hierarchy levels introduced in Junos OS Release 11.4.  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.  interface-control—To add this statement to the configuration.</p>

- Related Documentation**
- [Extended DHCP Relay Agent Overview on page 28](#)
  - [Overriding the Default DHCP Relay Configuration Settings on page 90](#)
  - [Disabling Automatic Binding of Stray DHCP Requests on page 107](#)

## no-arp (DHCP Relay Agent)


<b>Syntax</b>	no-arp;
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],          [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],          [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],          [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],          [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],          [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>],          [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],          [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],          [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 9.3.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
<b>Description</b>	Turn off ARP table population in a distrusted environment.
<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 28</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li> </ul>

## option-60 (DHCP Relay Agent)


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<b>Syntax</b>	option-60;
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay authentication <a href="#">username-include</a>], [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>], [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>], [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>], [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>], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>], [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 58</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 58</a></li> </ul>

## option-number (DHCP Relay Agent Option)

<b>Syntax</b>	<code>option-number <i>option-number</i>;</code>
<b>Hierarchy Level</b>	<p>[edit forwarding-options <b>dhcp-relay</b> <i>relay-option</i>],          [edit forwarding-options <b>dhcp-relay dhcpv6</b> <i>relay-option</i>],          [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <i>relay-option</i>],          [edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i> <i>relay-option</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> ...]</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 <b>[edit forwarding-options dhcp-relay dhcpv6]</b> 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>  <p><b>NOTE:</b> EX Series switches do not support the User Class Options.</p> </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>Using DHCP Option Information to Selectively Process DHCP Client Traffic</li> <li>Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure)</li> </ul>

## overrides (DHCP Relay Agent)

<b>Syntax</b>	<pre> 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;   no-arp;   no-bind-on-request;   proxy-mode;   replace-ip-source-with;   send-release-on-delete;   trust-option-82; } </pre>
<b>Hierarchy Level</b>	<pre> [edit forwarding-options dhcp-relay], [edit forwarding-options dhcp-relay <b>dhcpv6</b>], [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i> <b>interface</b> <i>interface-name</i>], [edit forwarding-options dhcp-relay <b>dhcpv6</b> <b>group</b> <i>group-name</i>], [edit forwarding-options dhcp-relay <b>dhcpv6</b> <b>group</b> <i>group-name</i> <b>interface</b> <i>interface-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>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>Override the default configuration settings for the extended DHCP relay agent. Specifying the <b>overrides</b> statement with no subordinate statements removes all DHCP relay agent overrides at that hierarchy level. 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>The following statements are supported at both the <b>[edit ... dhcp-relay]</b> and <b>[edit ... dhcpv6]</b> hierarchy levels. All other statements are supported at the <b>dhcp-relay</b> hierarchy levels only.</p> <ul style="list-style-type: none"> <li>• <b>allow-snooped-clients</b></li> <li>• <b>interface-client-limit</b></li> <li>• <b>no-allow-snooped-clients</b></li> <li>• <b>no-bind-on-request</b></li> <li>• <b>send-release-on-delete</b></li> </ul>

The remaining statements are explained separately.

<b>Required Privilege Level</b>	interface—To view this statement in the configuration. 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 28</a></li><li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li><li>• <a href="#">Deleting DHCP Local Server and DHCP Relay Override Settings on page 70</a></li><li>• <a href="#">dhcp-relay on page 223</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>],  [edit forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">authentication</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">authentication</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">authentication</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">authentication</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">authentication</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">authentication</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">authentication</a>],  [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 58</a></li> <li>• <a href="#">Configuring Passwords for Usernames on page 80</a></li> </ul>

## preference (Subscriber Management)

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<b>Syntax</b>	<code>preference route-distance;</code>
<b>Hierarchy Level</b>	[edit dynamic-profiles routing-options <a href="#">access</a> route <i>prefix</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.5.
<b>Description</b>	Dynamically configure the distance for an access route.
<b>Options</b>	<i>route-distance</i> —Either the specific distance you want to assign to the access route or the distance variable ( <code>\$junos-framed-route-distance</code> ). The distance variable is dynamically replaced with the value in Framed-Route Attribute [22].
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>Configuring Dynamic Access Routes for Subscriber Management</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> <i>relay-agent-interface-id</i>],</p> <p>[edit forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> <i>relay-agent-interface-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>dhcpv6</b> group <i>group-name</i> <i>relay-agent-interface-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay relay-option-82 <i>circuit-id</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> relay-option-82 <i>circuit-id</i>]</p>
<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>
<b>Description</b>	<p>Add a prefix to the base option 82 Agent Circuit ID information in DHCP packets destined for a DHCP server. The prefix can consist of any combination of the hostname, logical system name, and routing instance name. Use the statement at the [edit ... <b>dhcpv6</b>] hierarchy levels to configure DHCPv6 support.</p> <p>If you include only the hostname, only the logical system name, or only the routing instance name in the prefix, the format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces with stacked virtual LANs (S-VLANs) is one of the following:</p> <pre> host-name:(fe   ge)-fpc/pic/port:svlan-id-vlan-id logical-system-name:(fe   ge)-fpc/pic/port:svlan-id-vlan-id routing-instance-name:(fe   ge)-fpc/pic/port:svlan-id-vlan-id </pre> <p>If you include both the logical system name and the routing instance name in the prefix, the format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs is as follows:</p>

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

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

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

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

**Options** *prefix*—Any of the following:

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

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

**Related Documentation**

- [Enabling and Disabling Insertion of Option 82 Information on page 108](#)
- [Configuring an Option 82 Prefix on page 109](#)
- [Inserting DHCPv6 Interface-ID Option \(Option 18\) In DHCPv6 Packets on page 114](#)

## proxy-mode

<b>Syntax</b>	proxy-mode;
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>]  [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.  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.  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 31</a></li> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 28</a></li> <li>• <a href="#">Enabling DHCP Relay Proxy Mode on page 112</a></li> </ul>

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

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<b>Syntax</b>	<pre>relay-agent-interface-id {     <i>prefix</i> <i>prefix</i>;     use-interface-description (logical   device): }</pre>
<b>Hierarchy Level</b>	<pre>[edit forwarding-options dhcp-relay <i>dhcpv6</i>], [edit forwarding-options dhcp-relay <i>dhcpv6</i> group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> forwarding-options <i>dhcp-relay dhcpv6</i> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>     forwarding-options dhcp-relay <i>dhcpv6</i> ...], [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <i>dhcpv6</i> ...]</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</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="#">dhcp-relay on page 223</a></li><li>• <a href="#">Extended DHCP Relay Agent Overview on page 28</a></li><li>• <a href="#">DHCPv6 Relay Agent Overview on page 33</a></li><li>• <a href="#">Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets on page 114</a></li></ul>

## relay-agent-remote-id (DHCPv6 Relay Agent)

<b>Syntax</b>	relay-agent-remote-id;
<b>Hierarchy Level</b>	<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 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> 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 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>
<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>
<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.
<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 33</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</a></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 dhcp-relay dhcpv6], [edit forwarding-options dhcp-relay group group-name], [edit forwarding-options dhcp-relay dhcpv6 group group-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 ...] </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>Using DHCP Option Information to Selectively Process DHCP Client Traffic</li> </ul>

## relay-option-82

<b>Syntax</b>	<pre> relay-option-82 {   circuit-id {     prefix <i>prefix</i>;     use-interface-description (logical   device);   } } </pre>
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay],  [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> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],  [edit 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 <b>group</b> <i>group-name</i>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 8.3.  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>If you enable insertion of option 82 information in DHCP packets, you must specify at least the <b>circuit-id</b> statement to include the Agent Circuit ID suboption (suboption 1) of the DHCP relay agent information option.</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.  interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Enabling and Disabling Insertion of Option 82 Information on page 108</a></li> <li>• <a href="#">dhcp-relay on page 223</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>	<p>[edit forwarding-options dhcp-relay relay-option (default-action   equals   starts-with), [edit forwarding-options dhcp-relay dhcpv6 relay-option (default-action   equals   starts-with), [edit forwarding-options dhcp-relay group <i>group-name</i> relay-option (default-action   equals   starts-with), [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> relay-option (default-action   equals   starts-with), [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a> ...], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a> ...], [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 12.3R2 for EX Series switches.</p>
<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>	<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>Using DHCP Option Information to Selectively Process DHCP Client Traffic</li></ul>

## replace-ip-source-with

<b>Syntax</b>	replace-ip-source-with giaddr;
<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 9.6.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>
<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>	<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 28</a></li> <li>• <a href="#">Replacing the DHCP Relay Request and Release Packet Source Address on page 92</a></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 58</a></li> <li>• <a href="#">Creating Unique Usernames for DHCP Clients on page 81</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>],  [edit forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <a href="#">overrides</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <a href="#">overrides</a>],  [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 28</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li> <li>• <a href="#">Sending Release Messages When Clients Are Deleted on page 106</a></li> </ul>

## server-group

<b>Syntax</b>	<pre>server-group {     server-group-name {         server-ip-address;     } }</pre>
<b>Hierarchy Level</b>	<p>[edit forwarding-options dhcp-relay],          [edit forwarding-options <a href="#">dhcp-relay dhcpv6</a>],          [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay</a>],          [edit logical-systems <i>logical-system-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a>],          [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a>],          [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay dhcpv6</a>],          [edit routing-instances <i>routing-instance-name</i> forwarding-options <a href="#">dhcp-relay</a>],          [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 8.3.          Support at the <a href="#">[edit ... dhcpv6]</a> hierarchy levels introduced in Junos OS Release 11.4.          Statement introduced in Junos OS Release 12.1 for EX Series switches.</p>
<b>Description</b>	<p>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.</p>
<b>Options</b>	<p><b><i>server-group-name</i></b>—Name of the group of DHCP or DHCPv6 server addresses.</p> <p><b><i>server-ip-address</i></b>—IP address of the DHCP server belonging to this named server group. Use IPv6 addresses when configuring DHCPv6 support. You can configure a maximum of five IP addresses in each named server group.</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.          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 223</a></li> <li>• <a href="#">Extended DHCP Relay Agent Overview on page 28</a></li> <li>• <a href="#">Configuring Server Groups on page 111</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],  [edit forwarding-options dhcp-relay <b>dhcpv6</b>],  [edit forwarding-options dhcp-relay <b>group</b> <i>group-name</i>],  [edit forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],  [edit forwarding-options dhcp-relay dhcpv6 <b>group</b> <i>group-name</i>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-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 ...]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 11.2.  Statement introduced in Junos OS Release 12.3R2 for EX Series switches.  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.  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 223</a></li> <li>• <a href="#">Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces on page 77</a></li> <li>• <a href="#">Grouping Interfaces with Common DHCP Configurations on page 60</a></li> <li>• <a href="#">Default Subscriber Service Overview</a></li> <li>• <a href="#">Configuring a Default Subscriber Service</a></li> </ul>

## session-mode


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<b>Syntax</b>	session-mode (automatic   multihop   singlehop);
<b>Hierarchy Level</b>	[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a> ], [edit forwarding-options dhcp-relay liveness-detection], [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a> ], [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. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	Configure the session mode.
<b>Options</b>	<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.  <b>multihop</b> —Configure multihop BFD sessions.  <b>single-hop</b> —Configure single hop BFD sessions.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. 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 on page 44</a></li><li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></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>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">detection-time</a>],  [edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">detection-time</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">detection-time</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">detection-time</a>],  [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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## threshold (transmit-interval)

<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="#">transmit-interval</a>],  [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method bfd <a href="#">transmit-interval</a>],  [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>	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>	<p><i>milliseconds</i> — Threshold value.</p> <p><b>Range:</b> 0 through 4,294,967,295 (<math>2^{32} - 1</math>)</p>
<div style="display: flex; align-items: center;">  <div> <p><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.</p> </div> </div>	
<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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## transmit-interval

<b>Syntax</b>	<pre>transmit-interval {     threshold <i>milliseconds</i>;     minimum-interval <i>milliseconds</i>; }</pre>
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],          [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],          [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>],          [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method  <a href="#">bfd</a>],          [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [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.          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.          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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>

## trust-option-82

<b>Syntax</b>	trust-option-82;
<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>	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 94</a></li> <li>• <a href="#">Overriding the Default DHCP Relay Configuration Settings on page 90</a></li> </ul>

## use-interface-description

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

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

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

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

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



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

<b>Options</b>	<b>logical</b> —Use the textual description that is configured for the logical interface.
	<b>device</b> —Use the textual description that is configured for the device interface.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	• <a href="#">Enabling and Disabling Insertion of Option 82 Information on page 108</a>
	• <a href="#">Using a Textual Description in Option 82 on page 111</a>
	• <a href="#">Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets on page 114</a>

## 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 [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>Specify the dynamic profile to configure as the primary dynamic profile. The primary dynamic profile is instantiated when the first subscriber logs in. Subsequent subscribers are not assigned the primary dynamic profile; instead, they are assigned the dynamic profile specified for the interface. When the first subscriber logs out, the next subscriber that logs in is assigned the primary dynamic profile.</p> <p>Use the statement at the [edit ... <b>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 77](#)

## 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>],  [edit forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> authentication <a href="#">username-include</a>],  [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>],  [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>],  [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>],  [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>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay authentication <a href="#">username-include</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 authentication <a href="#">username-include</a>],  [edit routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> authentication <a href="#">username-include</a>],  [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.  Statement introduced in Junos OS Release 12.3R2 for EX Series switches.  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.  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 58</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. 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 on page 81</a></li> <li>• <a href="#">Using External AAA Authentication Services with DHCP on page 58</a></li> </ul>

## version (BFD)

<b>Syntax</b>	version (0   1   automatic);
<b>Hierarchy Level</b>	<p>[edit system services dhcp-local-server liveness-detection method <a href="#">bfd</a>],          [edit system services dhcp-local-server dhcpv6 liveness-detection method <a href="#">bfd</a>],          [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>],          [edit system services dhcp-local-server group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [edit system services dhcp-local-server dhcpv6 group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [edit forwarding-options dhcp-relay group <i>group-name</i> liveness-detection method <a href="#">bfd</a>],          [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.          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>0—Use BFD protocol version 0.</p> <p>1—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.          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 on page 44</a></li> <li>• <a href="#">Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients</a></li> </ul>



## PART 3

# Administration

- [Verifying and Managing DHCP Local Server Configurations on page 297](#)
- [Verifying and Managing DHCP Relay Agent Configurations on page 299](#)
- [DHCP Local Server Monitoring Commands on page 301](#)
- [DHCP Relay Agent Monitoring Commands on page 337](#)



## CHAPTER 9

# Verifying and Managing DHCP Local Server Configurations

- [Verifying and Managing DHCP Local Server Configuration on page 297](#)
- [Verifying and Managing DHCPv6 Local Server Configuration on page 297](#)

## Verifying and Managing DHCP Local Server Configuration

---

- Purpose** View or clear information about client address bindings and statistics for the extended DHCP local server.
- Action**
- To display the address bindings in the client table on the extended DHCP local server:  
user@host> [show dhcp server binding](#)
  - To display extended DHCP local server statistics:  
user@host> [show dhcp server statistics](#)
  - To clear the binding state of a DHCP client from the client table on the extended DHCP local server:  
user@host> [clear dhcp server binding](#)
  - To clear all extended DHCP local server statistics:  
user@host> [clear dhcp server statistics](#)
- Related Documentation**
- [Junos OS Operational Mode Commands](#)

## Verifying and Managing DHCPv6 Local Server Configuration

---

- Purpose** View or clear information about client address bindings and statistics for the DHCPv6 local server.
- Action**
- To display the address bindings in the client table on the DHCPv6 local server:  
user@host> [show dhcpv6 server binding](#)
  - To display DHCPv6 local server statistics:  
user@host> [show dhcpv6 server statistics](#)

- To clear all DHCPv6 local server statistics:

```
user@host> clear dhcpv6 server binding
```

- To clear all DHCPv6 local server statistics:

```
user@host> clear dhcpv6 server statistics
```

**Related  
Documentation**

- Junos OS Operational Mode Commands

## CHAPTER 10

# Verifying and Managing DHCP Relay Agent Configurations

- [Verifying and Managing DHCP Relay Configuration on page 299](#)
- [Verifying and Managing DHCPv6 Relay Configuration on page 299](#)

## 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](#)

• To display extended DHCP relay agent statistics:

user@host> [show dhcp relay statistics](#)

• To clear the binding state of DHCP relay agent clients:

user@host> [clear dhcp relay binding](#)

• To clear all extended DHCP relay agent statistics:

user@host> [clear dhcp relay statistics](#)

**Related Documentation** • [Junos OS Operational Mode Commands](#)

## 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**

- Junos OS Operational Mode Commands

## CHAPTER 11

# DHCP Local Server Monitoring Commands

## clear dhcp server binding

**Syntax**    `clear dhcp server binding`  
               `<address>`  
               `<all>`  
               `<interface interface-name>`  
               `<interfaces-vlan>`  
               `<interfaces-wildcard>`  
               `<logical-system logical-system-name>`  
               `<routing-instance routing-instance-name>`

**Release Information**    Command introduced in Junos OS Release 9.0.  
                               Options *interfaces-vlan* and *interfaces-wildcard* added in Junos OS Release 12.1.

**Description**    Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table on the extended DHCP local server.

**Options**    *address*—(Optional) Clear the binding state for the DHCP client, using one of the following entries:

- *ip-address*—The specified IP address.
- *mac-address*—The specified MAC address.
- *session-id*—The specified session ID.

*all*—(Optional) Clear the binding state for all DHCP clients.

*interface interface-name*—(Optional) Clear the binding state for DHCP clients on the specified interface.



**NOTE:** This option clears all bindings whose initial login requests were received over the specified interface. Dynamic demux login requests are not received over the dynamic demux interface, but rather the underlying interface of the dynamic demux interface. To clear a specific dynamic demux interface, use the *ip-address* or *mac-address* options.

*interfaces-vlan*—(Optional) Clear the binding state on the interface VLAN ID and S-VLAN ID.

*interfaces-wildcard*—(Optional) Clear bindings on a set of interfaces. This option supports the use of the wildcard character (\*).

*logical-system logical-system-name*—(Optional) Clear the binding state for DHCP clients on the specified logical system.

*routing-instance routing-instance-name*—(Optional) Clear the binding state for DHCP clients on the specified routing instance.

<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• Clearing DHCP Bindings for Subscriber Access</li><li>• <a href="#">show dhcp server binding on page 319</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear dhcp server binding &lt;ip-address&gt; on page 304</a> <a href="#">clear dhcp server binding all on page 304</a> <a href="#">clear dhcp server binding interface on page 304</a> <a href="#">clear dhcp server binding &lt;interfaces-vlan&gt; on page 304</a> <a href="#">clear dhcp server binding &lt;interfaces-wildcard&gt; on page 304</a>
<b>Output Fields</b>	See <a href="#">show dhcp server binding</a> for an explanation of output fields.

## Sample Output

### `clear dhcp server binding <ip-address>`

The following sample output displays the address bindings in the DHCP client table on the extended DHCP local server before and after the **clear dhcp server binding** command is issued.

```
user@host> show dhcp server binding
```

```
2 clients, (0 bound, 0 selecting, 0 renewing, 0 rebinding)
```

IP address	Hardware address	Type	Lease expires at
100.20.32.1	90:00:00:01:00:01	active	2007-01-17 11:38:47 PST
100.20.32.3	90:00:00:02:00:01	active	2007-01-17 11:38:41 PST

```
user@host> clear dhcp server binding 10.20.32.1
```

```
user@host> show dhcp server binding
```

```
1 clients, (0 bound, 0 selecting, 0 renewing, 0 rebinding)
```

IP address	Hardware address	Type	Lease expires at
100.20.32.3	90:00:00:02:00:01	active	2007-01-17 11:38:41 PST

### `clear dhcp server binding all`

The following command clears all DHCP local server bindings:

```
user@host> clear dhcp server binding all
```

### `clear dhcp server binding interface`

The following command clears DHCP local server bindings on a specific interface:

```
user@host> clear dhcp server binding interface fe-0/0/2
```

### `clear dhcp server binding <interfaces-vlan>`

The following command uses the *interfaces-vlan* option to clear all DHCP local server bindings on top of the underlying interface **ae0**, which clears DHCP bindings on all demux VLANs on top of **ae0**:

```
user@host> clear dhcp server binding ae0
```

### `clear dhcp server binding <interfaces-wildcard>`

The following command uses the *interfaces-wildcard* option to clear all DHCP local server bindings over a specific interface:

```
user@host> clear dhcp server binding ge-1/0/0.*
```

## clear dhcp server statistics

---

<b>Syntax</b>	clear dhcp server statistics <interface <i>interface-name</i> > <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	Clear all extended Dynamic Host Configuration Protocol (DHCP) local server statistics.
<b>Options</b>	<p><b>logical-system <i>logical-system-name</i></b>—(Optional) Clear the statistics for DHCP clients on the specified logical system. If you do not specify a logical system, statistics are cleared for the default logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Clear the statistics for DHCP clients on the specified routing instance. If you do not specify a routing instance, statistics are cleared for the default routing instance.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">clear dhcp server statistics on page 306</a>
<b>Output Fields</b>	See <a href="#">show dhcp server statistics</a> for an explanation of output fields.

## Sample Output

### clear dhcp server statistics

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

```
user@host> show dhcp server statistics
Packets dropped:
  Total                  0

Messages received:
  BOOTREQUEST           89163
  DHCPDECLINE           0
  DHCPDISCOVER          8110
  DHCPINFORM            0
  DHCPRELEASE           0
  DHCPREQUEST           81053

Messages sent:
  BOOTREPLY              32420
  DHCPOFFER              8110
  DHCPACK                8110
  DHCPNAK                8100
```

```
user@host> clear dhcp server statistics
user@host> show dhcp server 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 server binding

<b>Syntax</b>	<pre>clear dhcpv6 server 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 9.6.</p> <p>Options <i>interfaces-vlan</i> and <i>interfaces-wildcard</i> added in Junos OS Release 12.1.</p>
<b>Description</b>	Clear the binding state of a Dynamic Host Configuration Protocol for IPv6 (DHCPv6) client from the client table on the extended DHCPv6 local server.
<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>interface interface-name</b>—(Optional) Clear the binding state for DHCPv6 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) Clear bindings on a set of interfaces. This option supports the use of the wildcard character (*).</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>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• Clearing DHCP Bindings for Subscriber Access</li> <li>• <a href="#">show dhcpv6 server binding on page 327</a></li> </ul>
<b>List of Sample Output</b>	<p><a href="#">clear dhcpv6 server binding all on page 308</a></p> <p><a href="#">clear dhcpv6 server binding &lt;ipv6-prefix&gt; on page 308</a></p>

[clear dhcpv6 server binding interface on page 308](#)  
[clear dhcpv6 server binding <interfaces-vlan> on page 308](#)  
[clear dhcpv6 server binding <interfaces-wildcard> on page 308](#)

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

## Sample Output

**clear dhcpv6 server  
binding all**

The following command clears all DHCPv6 local server bindings:

```
user@host> clear dhcpv6 server binding all
```

**clear dhcpv6 server  
binding <ipv6-prefix>**

The following command clears DHCPv6 local server bindings for a specific IPv6 prefix:

```
user@host> clear dhcpv6 server binding 14/0x00010001/0x02b3be8f/0x00109400/0x0005
```

**clear dhcpv6 server  
binding interface**

The following command clears DHCPv6 local server bindings on a specific interface:

```
user@host> clear dhcpv6 server binding interface fe-0/0/2
```

**clear dhcpv6 server  
binding  
<interfaces-vlan>**

The following command uses the *interfaces-vlan* option to clear all DHCPv6 local server bindings on top of the underlying interface **ae0**, which clears DHCPv6 bindings on all demux VLANs on top of **ae0**:

```
user@host> clear dhcpv6 server binding interface ae0
```

**clear dhcpv6 server  
binding  
<interfaces-wildcard>**

The following command uses the *interfaces-wildcard* option to clear all DHCPv6 local server bindings over a specific interface:

```
user@host> clear dhcpv6 server binding ge-1/0/0.*
```


## clear dhcpv6 server statistics

<b>Syntax</b>	clear dhcpv6 server statistics <interface <i>interface-name</i> > <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Clear all extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.
<b>Options</b>	<p><b>logical-system <i>logical-system-name</i></b>—(Optional) Clear the statistics for DHCPv6 clients on the specified logical system. If you do not specify a logical system, statistics are cleared for the default logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Clear the statistics for DHCPv6 clients on the specified routing instance. If you do not specify a routing instance, statistics are cleared for the default routing instance.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show dhcpv6 server statistics on page 333</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear dhcpv6 server statistics on page 309</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

clear dhcpv6 server statistics      user@host> clear dhcpv6 server statistics

## request dhcp server reconfigure

<b>Syntax</b>	<code>request dhcp server reconfigure (all   <i>address</i>   interface <i>interface-name</i>   logical-system <i>logical-system-name</i>   routing-instance <i>routing-instance-name</i>)</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	<p>Initiate reconfiguration processing for the specified DHCP clients if they are in the bound state. If the clients are in the reconfiguring state, this command has no effect. If the clients are in any state other than bound or reconfiguring, this command has the same effect as the <b>clear dhcp server binding</b> command.</p> <p>When the local server state machine starts the reconfiguration process on a bound client, the client transitions to the reconfiguring state and the local server sends a forcerenew message to the client. Because the client was in the bound state before entering the reconfiguring state, all subscriber (or DHCP client) services, such as forwarding and statistics, continue to work. An exponential back-off timer determines the interval at which the forcerenew message is sent. If the final attempt is unsuccessful, the client is returned to its original state by default. You can optionally include the <b>clear-on-abort</b> statement to configure the client to be cleared when reconfiguration fails.</p>
<b>Options</b>	<p><b>all</b>—Initiate reconfiguration for all DHCP clients.</p> <p><b><i>address</i></b>—Initiate reconfiguration for DHCP client with the specified IP address or MAC address.</p> <p><b>interface <i>interface-name</i></b>—Initiate reconfiguration for all DHCP clients on this logical interface (clients whose initial login requests were received over the specified interface).</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p> <b>NOTE:</b> You cannot use the <b>interface <i>interface-name</i></b> option with the <b>request dhcp server reconfigure</b> command for DHCP passive clients (clients that are added as a result of DHCP snooped packets). For passive clients, the interface is not guaranteed to be the next-hop interface to the client, as is the case for active clients.</p> </div> <p><b>logical-system <i>logical-system-name</i></b>—Initiate reconfiguration for all DHCP clients on the specified logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—Initiate reconfiguration reconfigured for all DHCP clients in the specified routing instance.</p>
<b>Required Privilege Level</b>	view

**Related Documentation** • [Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70](#)

**List of Sample Output** [request dhcp server reconfigure on page 311](#)

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

## Sample Output

`request dhcp server  
reconfigure`      `user@host> request dhcp server reconfigure interface fe-0/0/0.100`

## request dhcpv6 server reconfigure

<b>Syntax</b>	<b>request dhcpv6 server reconfigure</b> ( <b>all</b>   <b>address</b>   <b>client-id</b>   <b>interface</b> <i>interface-name</i>   <b>logical-system</b> <i>logical-system-name</i>   <b>routing-instance</b> <i>routing-instance-name</i>   <b>session-id</b> )
<b>Release Information</b>	Command introduced in Junos OS Release 10.4. Command introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	<p>Initiate reconfiguration processing for the specified DHCPv6 clients if they are in the bound state. If the clients are in the reconfiguring state, this command has no effect. If the clients are in any state other than bound or reconfiguring, this command has the same effect as the <b>clear dhcpv6 server binding</b> command.</p> <p>When the local server state machine starts the reconfiguration process on a bound client, the client transitions to the reconfigure state and the local server sends a reconfigure message to the client. Because the client was in the bound state before entering the reconfiguring state, all subscriber (or DHCP client) services, such as forwarding and statistics, continue to work. An exponential back-off timer determines the interval at which the reconfigure message is sent. If the final attempt is unsuccessful, the client is returned to its original state by default. You can optionally include the <b>clear-on-abort</b> statement to configure the client to be cleared when reconfiguration fails.</p>
<b>Options</b>	<p><b>all</b>—Initiate reconfiguration for all DHCPv6 clients.</p> <p><b>address</b>—Initiate reconfiguration for DHCPv6 client with the specified IPv6 address.</p> <p><b>client-id</b>—Initiate reconfiguration for DHCPv6 client with the specified client ID.</p> <p><b>interface</b> <i>interface-name</i>—Initiate reconfiguration for all DHCPv6 clients on this logical interface (clients whose initial login requests were received over the specified interface).</p> <p><b>logical-system</b> <i>logical-system-name</i>—Initiate reconfiguration for all DHCPv6 clients on the specified logical system.</p> <p><b>routing-instance</b> <i>routing-instance-name</i>—Initiate reconfiguration reconfigured for all DHCPv6 clients in the specified routing instance.</p> <p><b>session-id</b>—Initiate reconfiguration for DHCPv6 client with the specified session ID.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring Extended DHCP Local Server Dynamic Client Reconfiguration on page 70</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request dhcpv6 server reconfigure on page 313</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request dhcpv6 server user@host> request dhcpv6 server reconfigure 2001::2/16
reconfigure
```

## request system reboot

---

<b>Syntax</b>	request system reboot <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <media (compact-flash   disk   removable-compact-flash   usb)> <message " <i>text</i> "> <other-routing-engine>
<b>Syntax (EX Series Switches)</b>	request system reboot <all-members> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <local> <media (external   internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine> <slice <i>slice</i> >
<b>Syntax (TX Matrix Router)</b>	request system reboot <all-chassis   all-lcc   lcc <i>number</i>   scc> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> "> <other-routing-engine>
<b>Syntax (TX Matrix Plus Router)</b>	request system reboot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> "> <other-routing-engine> <partition (1   2   alternate)>
<b>Syntax (MX Series Router)</b>	request system reboot <all-members> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <local> <media (external   internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.

Option **other-routing-engine** introduced in Junos OS Release 8.0.

Command introduced in Junos OS Release 9.0 for EX Series switches.

Option **sfc** introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Option **both-routing-engines** introduced in Junos OS Release 12.1.

**Description** Reboot the software.

**Options** **none**—Reboot the software immediately.

**all-chassis**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, reboot all routers connected to the TX Matrix or TX Matrix Plus router, respectively.

**all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, reboot all line card chassis connected to the TX Matrix or TX Matrix Plus router, respectively.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on all members of the Virtual Chassis configuration.

**at time**—(Optional) Time at which to reboot the software, specified in one of the following ways:

- **now**—Stop or reboot the software immediately. This is the default.
- **+minutes**—Number of minutes from now to reboot the software.
- **yymmddhhmm**—Absolute time at which to reboot the software, specified as year, month, day, hour, and minute.
- **hh:mm**—Absolute time on the current day at which to stop the software, specified in 24-hour time.

**both-routing-engines**—(Optional) Reboot both Routing Engines at the same time.

**in minutes**—(Optional) Number of minutes from now to reboot the software. This option is an alias for the **at +minutes** option.

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, the number of a specified line card chassis connected to the TX Matrix or TX Matrix Plus router, respectively. Replace **number** with a value from 0 through 3.

**local**—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the local Virtual Chassis member.

**media (compact-flash | disk | removable-compact-flash | usb)**—(Optional) Boot medium for next boot. (The options **removable-compact-flash** and **usb** pertain to the J Series routers only.)

**media (external | internal)**—(EX Series switches and MX Series routers only) (Optional) Reboot the boot media:

- **external**—Reboot the external mass storage device.

- **internal**—Reboot the internal flash device.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**message "*text*"**—(Optional) Message to display to all system users before stopping or rebooting the software.

**other-routing-engine**—(Optional) Reboot the other Routing Engine from which the command is issued. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is rebooted. Similarly, if you issue the command from the backup Routing Engine, the master Routing Engine is rebooted.

**partition**—(TX Matrix Plus routers only) (Optional) Reboot using the specified partition on the boot media. This option has the following suboptions:

- **1**—Reboot from partition 1.
- **2**—Reboot from partition 2.
- **alternate**—Reboot from the alternate partition.

**scc**—(TX Matrix routers only) (Optional) Reboot the Routing Engine on the TX Matrix switch-card chassis. If you issue the command from re0, re0 is rebooted. If you issue the command from re1, re1 is rebooted.

**sfc *number***—(TX Matrix Plus routers only) (Optional) Reboot the Routing Engine on the TX Matrix Plus switch-fabric chassis. If you issue the command from re0, re0 is rebooted. If you issue the command from re1, re1 is rebooted. Replace *number* with 0.

**slice *slice***—(EX Series switches only) (Optional) Reboot a partition on the boot media. This option has the following suboptions:

- **1**—Power off partition 1.
- **2**—Power off partition 2.
- **alternate**—Reboot from the alternate partition.

**Additional Information** Reboot requests are recorded in the system log files, which you can view with the **show log** command (see show log). Also, the names of any running processes that are scheduled to be shut down are changed. You can view the process names with the **show system processes** command (see show system processes).

On a TX Matrix or TX Matrix Plus router, if you issue the **request system reboot** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are rebooted. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are rebooted.



**NOTE:** Before issuing the `request system reboot` command on a TX Matrix Plus router with no options or the `all-chassis`, `all-lcc`, `lcc number`, or `sfc` options, verify that master Routing Engine for all routers in the routing matrix are in the same slot number. If the master Routing Engine for a line-card chassis is in a different slot number than the master Routing Engine for a TX Matrix Plus router, the line-card chassis might become logically disconnected from the routing matrix after the `request system reboot` command.



**NOTE:** To reboot a router that has two Routing Engines, reboot the backup Routing Engine (if you have upgraded it) first, and then reboot the master Routing Engine.

<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear system reboot</a></li> <li>• <a href="#">request system halt</a></li> <li>• <a href="#">request system reboot</a></li> <li>• <a href="#">Rebooting and Halting a QFX Series Product</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system reboot on page 318</a> <a href="#">request system reboot (at 2300) on page 318</a> <a href="#">request system reboot (in 2 Hours) on page 318</a> <a href="#">request system reboot (Immediately) on page 318</a> <a href="#">request system reboot (at 1:20 AM) on page 318</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

**request system reboot**      user@host> request system reboot  
Reboot the system ? [yes,no] (no)

**request system reboot  
(at 2300)**      user@host> request system reboot at 2300 message ?Maintenance time!?  
Reboot the system ? [yes,no] (no) yes  
  
shutdown: [pid 186]  
\*\*\* System shutdown message from root@berry.network.net \*\*\*  
System going down at 23:00

**request system reboot  
(in 2 Hours)**      The following example, which assumes that the time is 5 PM (17:00), illustrates  
three different ways to request the system to reboot in two hours:

```
user@host> request system reboot at +120
user@host> request system reboot in 120
user@host> request system reboot at 19:00
```

**request system reboot  
(Immediately)**      user@host> request system reboot at now

**request system reboot  
(at 1:20 AM)**      To reboot the system at 1:20 AM, enter the following command. Because 1:20 AM is  
the next day, you must specify the absolute time.  
  
user@host> request system reboot at 06060120  
request system reboot at 120  
Reboot the system at 120? [yes,no] (no) yes

## show dhcp server binding

<b>Syntax</b>	<pre>show dhcp server binding &lt;address&gt; &lt;brief   detail   summary&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 9.0.</p> <p>Options <i>interfaces-vlan</i> and <i>interfaces-wildcard</i> added in Junos OS Release 12.1.</p>
<b>Description</b>	Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol (DHCP) local server.
<b>Options</b>	<p><b>address</b>—(Optional) Display DHCP binding information for a specific client identified by one of the following entries:</p> <ul style="list-style-type: none"> <li>• <i>ip-address</i>—The specified IP address.</li> <li>• <i>mac-address</i>—The specified MAC address.</li> <li>• <i>session-id</i>—The specified session ID.</li> </ul> <p><b>brief   detail   summary</b>—(Optional) Display the specified level of output about active client bindings. The default is <b>brief</b>, which produces the same output as <b>show dhcp server binding</b>.</p> <p><b>interface interface-name</b>—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.</p> <p><b>interfaces-vlan</b>—(Optional) Show the binding state information on the interface VLAN ID and S-VLAN ID.</p> <p><b>interfaces-wildcard</b>—(Optional) The set of interfaces on which to show the binding state information. This option supports the use of the wildcard character (*).</p> <p><b>logical-system logical-system-name</b>—(Optional) Display information about active client bindings for DHCP clients on the specified logical system.</p> <p><b>routing-instance routing-instance-name</b>—(Optional) Display information about active client bindings 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>• Clearing DHCP Bindings for Subscriber Access</li> <li>• Verifying and Managing Agent Circuit Identifier-Based Dynamic VLAN Configuration</li> <li>• <a href="#">clear dhcp server binding on page 302</a></li> </ul>

**List of Sample Output**

- [show dhcp server binding on page 322](#)
- [show dhcp server binding detail on page 322](#)
- [show dhcp server binding detail \(ACI Interface Set Configured\) on page 322](#)
- [show dhcp server binding interface <vlan-id> on page 323](#)
- [show dhcp server binding interface <svlan-id> on page 323](#)
- [show dhcp server binding <ip-address> on page 323](#)
- [show dhcp server binding <session-id> on page 323](#)
- [show dhcp server binding summary on page 323](#)
- [show dhcp server binding <interfaces-vlan> on page 323](#)
- [show dhcp server binding <interfaces-wildcard> on page 323](#)

**Output Fields** Table 16 on page 320 lists the output fields for the **show dhcp server binding** command. Output fields are listed in the approximate order in which they appear.

**Table 16: show dhcp server 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> 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>brief detail</b>
Session Id	Session ID of the subscriber session.	<b>brief detail</b>
Hardware address	Hardware address of the DHCP client.	<b>brief detail</b>
Expires	Number of seconds in which lease expires.	<b>brief detail</b>
State	State of the address binding table on the extended DHCP local server: <ul style="list-style-type: none"> <li>• <b>BOUND</b>—Client has active IP address lease.</li> <li>• <b>FORCERENEW</b>—Client has received forcere Renew message from server.</li> <li>• <b>INIT</b>—Initial state.</li> <li>• <b>RELEASE</b>—Client is releasing IP address lease.</li> <li>• <b>RENEWING</b>—Client sending request to renew IP address lease.</li> <li>• <b>REQUESTING</b>—Client requesting a DHCP server.</li> <li>• <b>SELECTING</b>—Client receiving offers from DHCP servers.</li> </ul>	<b>brief detail</b>
Interface	Interface on which the request was received.	<b>brief</b>

Table 16: show dhcp server binding Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Lease Expires</b>	Date and time at which the client's IP address lease expires.	<b>detail</b>
<b>Lease Expires in</b>	Number of seconds in which lease expires.	<b>detail</b>
<b>Lease Start</b>	Date and time at which the client's IP address lease started.	<b>detail</b>
<b>Last Packet Received</b>	Date and time at which the router received the last packet.	<b>detail</b>
<b>Incoming Client Interface</b>	Client's incoming interface.	<b>detail</b>
<b>Client Interface Svlan Id</b>	S-VLAN ID of the client's incoming interface.	<b>detail</b>
<b>Client Interface Vlan Id</b>	VLAN ID of the client's incoming interface.	<b>detail</b>
<b>Demux Interface</b>	Name of the IP demultiplexing (demux) interface.	<b>detail</b>
<b>Server IP Address or Server Identifier</b>	IP address of DHCP server.	<b>detail</b>
<b>Server Interface</b>	Interface of DHCP server.	<b>detail</b>
<b>Client Pool Name</b>	Name of address pool used to assign client IP address lease.	<b>detail</b>
<b>ACI Interface Set Name</b>	Internally generated name of the dynamic agent circuit identifier (ACI) interface set.	<b>detail</b>
<b>ACI Interface Set Index</b>	Index number of the dynamic ACI interface set.	<b>detail</b>
<b>ACI Interface Set Session ID</b>	Identifier of the dynamic ACI interface set entry in the session database.	<b>detail</b>

## Sample Output

### show dhcp server binding

```
user@host> show dhcp server binding
```

IP address	Session Id	Hardware address	Expires	State	Interface
100.20.20.15	6	00:10:94:00:00:01	86180	BOUND	ge-1/0/0.0
100.20.20.16	7	00:10:94:00:00:02	86180	BOUND	ge-1/0/0.0
100.20.20.17	8	00:10:94:00:00:03	86180	BOUND	ge-1/0/0.0
100.20.20.18	9	00:10:94:00:00:04	86180	BOUND	ge-1/0/0.0
100.20.20.19	10	00:10:94:00:00:05	86180	BOUND	ge-1/0/0.0

### show dhcp server binding detail

```
user@host> show dhcp server binding detail
```

Client IP Address: 100.20.20.15

```

  Hardware Address:      00:10:94:00:00:01
  State:                 BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)

  Lease Expires:         2009-07-21 10:10:25 PDT
  Lease Expires in:      86151 seconds
  Lease Start:           2009-07-20 10:10:25 PDT
  Incoming Client Interface: ge-1/0/0.0
  Server Ip Address:     100.20.20.9
  Server Interface:      none
  Session Id:            6
  Client Pool Name:      6
  Client IP Address:     100.20.20.16
  Hardware Address:      00:10:94:00:00:02
  State:                 BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)

  Lease Expires:         2009-07-21 10:10:25 PDT
  Lease Expires in:      86151 seconds
  Lease Start:           2009-07-20 10:10:25 PDT
  Incoming Client Interface: ge-1/0/0.0
  Server Ip Address:     100.20.20.9
  Server Interface:      none
  Session Id:            7
  Client Pool Name:      7

```

### show dhcp server binding detail (ACI)

```
user@host> show dhcp server binding detail
```

Client IP Address: 100.20.22.14

```

  Hardware Address:      00:00:64:34:01:02

```

**Interface Set Configured)**

```

State:                                BOUND(LOCAL_SERVER_STATE_BOUND)
Lease Expires:                        2012-03-13 09:53:32 PDT
Lease Expires in:                     82660 seconds
Lease Start:                          2012-03-12 10:23:32 PDT
Last Packet Received:                 2012-03-12 10:23:32 PDT
Incoming Client Interface:             demux0.1073741827
Client Interface Svlan Id:             1802
Client Interface Vlan Id:              302
Demux Interface:                       demux0.1073741832
Server Identifier:                     100.20.200.202
Session Id:                            11
Client Pool Name:                      poolA
Client Profile Name:                   DEMUXprofile
ACI Interface Set Name:                aci-1002-demux0.1073741827
ACI Interface Set Index:              2
ACI Interface Set Session ID:         6

```

**show dhcp server binding interface <vlan-id>**

```

user@host> show dhcp server 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 server binding interface <svlan-id>**

```

user@host> show dhcp server 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 server binding <ip-address>**

```

user@host> show dhcp server binding 100.20.20.19
IP address      Session Id  Hardware address  Expires  State  Interface
100.20.20.19    10         00:10:94:00:00:05 86081    BOUND  ge-1/0/0.0

```

**show dhcp server binding <session-id>**

```

user@host> show dhcp server binding 6
IP address      Session Id  Hardware address  Expires  State  Interface
200.20.20.15    6          00:10:94:00:00:01 86124    BOUND  ge-1/0/0.0

```

**show dhcp server binding summary**

```

user@host> show dhcp server binding summary
3 clients, (2 init, 1 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)

```

**show dhcp server binding <interfaces-vlan>**

```

user@host> show dhcp server 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  ge-1/0/0.1073741827

```

**show dhcp server binding <interfaces-wildcard>**

```

user@host> show dhcp server 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  ge-1/3/0.110
192.168.0.7     22         00:10:94:00:00:02 86361    BOUND  ge-1/3/0.110

```

## show dhcp server statistics

---

Syntax	<b>show dhcp server statistics</b> <b>&lt;logical-system <i>logical-system-name</i>&gt;</b> <b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b>
Release Information	Command introduced in Junos OS Release 9.0.
Description	Display extended Dynamic Host Configuration Protocol (DHCP) local server statistics.
Options	<b>logical-system <i>logical-system-name</i></b> —(Optional) Display information about extended DHCP local server statistics on the specified logical system. If you do not specify a logical system, statistics are displayed for the default logical system.  <b>routing-instance <i>routing-instance-name</i></b> —(Optional) Display information about extended DHCP local server statistics on the specified routing instance. If you do not specify a routing instance, statistics are displayed for the default routing instance.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">clear dhcp server statistics on page 305</a></li></ul>
List of Sample Output	<a href="#">show dhcp server statistics on page 326</a>
Output Fields	<a href="#">Table 17 on page 325</a> lists the output fields for the <b>show dhcp server statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 17: show dhcp server statistics Output Fields

Field Name	Field Description
<b>Packets dropped</b>	<p>Number of packets discarded by the extended DHCP local server because of errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of packets discarded by the extended DHCP local server</li> <li>• <b>Authentication</b>—Number of packets discarded because they could not be authenticated</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>Dynamic profile</b>—Number of packets discarded due to dynamic profile information</li> <li>• <b>Invalid server address</b>—Number of packets discarded because an invalid server address was specified</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 local server could not send</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>

## Sample Output

**show dhcp server  
statistics**

```
user@host> show dhcp server statistics
Packets dropped:
  Total                0

Messages received:
  BOOTREQUEST          25
  DHCPDECLINE          0
  DHCPDISCOVER         10
  DHCPINFORM           0
  DHCPRELEASE          4
  DHCPREQUEST          10

Messages sent:
  BOOTREPLY            20
  DHCPOFFER            10
  DHCPACK              10
  DHCPNAK              0
  DHCPFORCERENEW       0
```

## show dhcpv6 server binding

<b>Syntax</b>	<pre>show dhcpv6 server binding &lt;address&gt; &lt;brief   detail   summary&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 9.6.</p> <p>Options <i>interfaces-vlan</i> and <i>interfaces-wildcard</i> added in Junos OS Release 12.1.</p>
<b>Description</b>	Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server.
<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>brief   detail   summary</b>—(Optional) Display the specified level of output about active client bindings. The default is <b>brief</b>, which produces the same output as <b>show dhcpv6 server binding</b>.</p> <p><b>interface interface-name</b>—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.</p> <p><b>interfaces-vlan</b>—(Optional) Show the binding state information on the interface VLAN ID and S-VLAN ID.</p> <p><b>interfaces-wildcard</b>—(Optional) The set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).</p> <p><b>logical-system logical-system-name</b>—(Optional) Display information about active client bindings for DHCPv6 clients on the specified logical system.</p> <p><b>routing-instance routing-instance-name</b>—(Optional) Display information about active client bindings 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>• Clearing DHCP Bindings for Subscriber Access</li> <li>• <a href="#">clear dhcpv6 server binding on page 307</a></li> </ul>

**List of Sample Output**

- [show dhcpv6 server binding on page 330](#)
- [show dhcpv6 server binding detail on page 330](#)
- [show dhcpv6 server binding interface on page 330](#)
- [show dhcpv6 server binding interface detail on page 330](#)
- [show dhcpv6 server binding <prefix> on page 331](#)
- [show dhcpv6 server binding <session-id> on page 331](#)
- [show dhcpv6 server binding <interfaces-vlan> on page 331](#)
- [show dhcpv6 server binding <interfaces-wildcard> on page 331](#)
- [show dhcpv6 server binding <interfaces-wildcard> on page 331](#)
- [show dhcpv6 server binding summary on page 332](#)

**Output Fields** [Table 18 on page 328](#) lists the output fields for the **show dhcpv6 server binding** command. Output fields are listed in the approximate order in which they appear.

**Table 18: show dhcpv6 server 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> releasing)	Summary counts of the total number of DHCPv6 clients and the number of DHCPv6 clients in each state.	<b>summary</b>
<b>Prefix</b>	Client's DHCPv6 prefix, or prefix used to support multiple address assignment.	<b>brief detail</b>
<b>Session Id</b>	Session ID of the subscriber session.	<b>brief detail</b>
<b>Expires</b>	Number of seconds in which lease expires.	<b>brief detail</b>
<b>State</b>	State of the address binding table on the extended DHCPv6 local server: <ul style="list-style-type: none"> <li>• <b>BOUND</b>—Client has active IP address lease.</li> <li>• <b>INIT</b>—Initial state.</li> <li>• <b>RECONFIGURE</b>—Server has sent reconfigure message to client.</li> <li>• <b>RELEASE</b>—Client is releasing IP address lease.</li> <li>• <b>RENEWING</b>—Client sending request to renew IP address lease.</li> <li>• <b>REQUESTING</b>—Client requesting a DHCPv6 server.</li> <li>• <b>SELECTING</b>—Client receiving offers from DHCPv6 servers.</li> </ul>	<b>brief detail</b>
<b>Interface</b>	Interface on which the DHCPv6 request was received.	<b>brief</b>
<b>Client IPv6 Address</b>	Client's IPv6 address.	<b>detail</b>
<b>Client IPv6 Prefix</b>	Client's IPv6 prefix.	<b>detail</b>
<b>Client DUID</b>	Client's DHCP Unique Identifier (DUID).	<b>brief detail</b>

Table 18: show dhcpv6 server binding Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Lease expires</b>	Date and time at which the client's IP address lease expires.	<b>detail</b>
<b>Lease expires in</b>	Number of seconds in which lease expires.	<b>detail</b>
<b>Lease Start</b>	Date and time at which the client's address lease was obtained.	<b>detail</b>
<b>Incoming Client Interface</b>	Client's incoming interface.	<b>detail</b>
<b>Server IP Address</b>	IP address of DHCPv6 server.	<b>detail</b>
<b>Server Interface</b>	Interface of DHCPv6 server.	<b>detail</b>
<b>Client Pool Name</b>	Address pool used to assign IPv6 address.	<b>detail</b>
<b>Client Prefix Pool Name</b>	Address pool used to assign IPv6 prefix.	<b>detail</b>
<b>Client Id length</b>	Length of the DHCPv6 client ID, in bytes.	<b>detail</b>
<b>Client Id</b>	ID of the DHCPv6 client.	<b>detail</b>

## Sample Output

### show dhcpv6 server binding

```
user@host> show dhcpv6 server binding
Prefix                Session Id  Expires  State  Interface  Client DUID
2001:bd8:1111:2222::/64 6            86321    BOUND  ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:01
2001:bd8:1111:2222::/64 7            86321    BOUND  ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
2001:bd8:1111:2222::/64 8            86321    BOUND  ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:03
2001:bd8:1111:2222::/64 9            86321    BOUND  ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:04
2001:bd8:1111:2222::/64 10           86321    BOUND  ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:05
2002::1/74            11          86321    BOUND  ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:06
```

### show dhcpv6 server binding detail

```
user@host> show dhcpv6 server binding detail
Session Id: 6
  Client IPv6 Prefix:      2001:bd8:1111:2222::/64
  Client DUID:             LL_TIME0x1-0x2e159c0-00:10:94:00:00:01

  State:
  BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)
    Lease Expires:         2009-07-21 10:41:15 PDT
    Lease Expires in:      86308 seconds
    Lease Start:           2009-07-20 10:41:15 PDT
    Incoming Client Interface: ge-1/0/0.0
    Server Ip Address:      0.0.0.0
    Server Interface:       none
    Client Id Length:      14
    Client Id:
    /0x00010001/0x02e159c0/0x00109400/0x0001

Session Id: 7
  Client IPv6 Address:     2002::1/128
  Client IPv6 Prefix:      2001:bd8:1111:2222::/64
  Client DUID:             LL_TIME0x1-0x2e159c0-00:10:94:00:00:02

  State:
  BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)
    Lease Expires:         2009-07-21 10:41:15 PDT
    Lease Expires in:      86308 seconds
    Lease Start:           2009-07-20 10:41:15 PDT
    Incoming Client Interface: ge-1/0/0.0
    Server Ip Address:      0.0.0.0
    Client Pool Name:       bos-v6-pool
    Client Prefix Pool Name: bos-v6-prefix-pool
    Client Id Length:      14
    Client Id:
    /0x00010001/0x02e159c0/0x00109400/0x0002
```

### show dhcpv6 server binding interface

```
user@host> show dhcpv6 server binding interface ge-1/0/0:10-101
Prefix                Session Id  Expires  State  Interface  Client DUID
2001:bd8:1111:2222::/64 1            86055    BOUND  ge-1/0/0.100
LL_TIME0x1-0x4b0a53b9-00:10:94:00:00:01
```

**show dhcpv6 server  
binding interface detail**

```

user@host> show dhcpv6 server binding interface ge-1/0/0:10-101 detail
Session Id: 7
  Client IPv6 Prefix:          2001:bd8:1111:2222::/64
  Client DUID:                 LL_TIME0x1-0x2e159c0-00:10:94:00:00:02

  State:                       BOUND(bound)
  Lease Expires:               2009-07-21 10:41:15 PDT
  Lease Expires in:           86136 seconds
  Lease Start:                 2009-07-20 10:41:15 PDT
  Incoming Client Interface:   ge-1/0/0.0
  Server Ip Address:           0.0.0.0
  Server Interface:            none
  Client Id Length:            14
  Client Id:                   /0x00010001/0x02e159c0/0x00109400/0x0002

```

**show dhcpv6 server  
binding <prefix>**

```

user@host> show dhcpv6 server binding 14/0x00010001/0x02b3be8f/0x00109400/0x0005
detail
Session Id: 7
  Client IPv6 Prefix:          2001:bd8:1111:2222::/64
  Client DUID:                 LL_TIME0x1-0x2e159c0-00:10:94:00:00:02

  State:                       BOUND(bound)
  Lease Expires:               2009-07-21 10:41:15 PDT
  Lease Expires in:           86136 seconds
  Lease Start:                 2009-07-20 10:41:15 PDT
  Incoming Client Interface:   ge-1/0/0.0
  Server Ip Address:           0.0.0.0
  Server Interface:            none
  Client Id Length:            14
  Client Id:                   /0x00010001/0x02e159c0/0x00109400/0x0002

```

**show dhcpv6 server  
binding <session-id>**

```

user@host> show dhcpv6 server binding 8
Prefix          Session Id Expires State Interface Client DUID
2001:DB8::/32   8          86235 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:03

```

**show dhcpv6 server  
binding  
<interfaces-vlan>**

```

user@host> show dhcpv6 server 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 server  
binding  
<interfaces-wildcard>**

```

user@host> show dhcpv6 server 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 server  
binding**

```

user@host> show dhcpv6 server binding ge-1/3/*
Prefix          Session Id Expires State Interface Client DUID
2001:DB8::/32   22          79681 BOUND ge-1/3/0.110

```

```
<interfaces-wildcard> 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 server      user@host> show dhcpv6 server binding summary
binding summary          5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```

## show dhcpv6 server statistics

---

<b>Syntax</b>	<b>show dhcpv6 server statistics</b> <b>&lt;logical-system <i>logical-system-name</i>&gt;</b> <b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.
<b>Options</b>	<p><b>logical-system <i>logical-system-name</i></b>—(Optional) Display information about extended DHCPv6 local server statistics on the specified logical system. If you do not specify a logical system, statistics are displayed for the default logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Display information about extended DHCPv6 local server statistics on the specified routing instance. If you do not specify a routing instance, 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 server statistics on page 309</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show dhcpv6 server statistics on page 335</a>
<b>Output Fields</b>	<a href="#">Table 19 on page 334</a> lists the output fields for the <b>show dhcpv6 server statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 19: show dhcpv6 server statistics Output Fields

Field Name	Field Description
<b>Packets dropped</b>	<p>Number of packets discarded by the extended DHCPv6 local server because of errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of packets discarded by the extended DHCPv6 local server</li> <li>• <b>Strict Reconfigure</b>—Number of solicit messages discarded because the client does not support reconfiguration</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>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 DHCPv6 local server could not send</li> </ul>
<b>Messages received</b>	<p>Number of DHCPv6 messages received.</p> <ul style="list-style-type: none"> <li>• <b>DHCPV6_CONFIRM</b>—Number of DHCPv6 CONFIRM PDUs received.</li> <li>• <b>DHCPV6_DECLINE</b>—Number of DHCPv6 DECLINE PDUs received.</li> <li>• <b>DHCPV6_INFORMATION_REQUEST</b>—Number of DHCPv6 INFORMATION-REQUEST PDUs received.</li> <li>• <b>DHCPV6_REBIND</b>—Number of DHCPv6 REBIND PDUs received.</li> <li>• <b>DHCPV6_RELAY_FORW</b>—Number of DHCPv6 RELAY-FORW PDUs received.</li> <li>• <b>DHCPV6_RELAY_REPL</b>—Number of DHCPv6 RELAY-REPL PDUs received.</li> <li>• <b>DHCPV6_RELEASE</b>—Number of DHCPv6 RELEASE PDUs received.</li> <li>• <b>DHCPV6_RENEW</b>—Number of DHCPv6 RENEW PDUs received.</li> <li>• <b>DHCPV6_REQUEST</b>—Number of DHCPv6 REQUEST PDUs received.</li> <li>• <b>DHCPV6_SOLICIT</b>—Number of DHCPv6 SOLICIT PDUs 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>DHCPV6_REPLY</b>—Number of DHCPv6 ADVERTISE PDUs transmitted.</li> <li>• <b>DHC6_RECONFIGURE</b>—Number of DHCPv6 RECONFIGURE PDUs transmitted.</li> </ul>

## Sample Output

**show dhcpv6 server  
statistics**

user@host> **show dhcpv6 server statistics**

Dhcpv6 Packets dropped:

Total 0

Messages received:

DHCPV6_DECLINE	0
DHCPV6_SOLICIT	9
DHCPV6_INFORMATION_REQUEST	0
DHCPV6_RELEASE	0
DHCPV6_REQUEST	5
DHCPV6_CONFIRM	0
DHCPV6_RENEW	0
DHCPV6_REBIND	0
DHCPV6_RELAY_FORW	0
DHCPV6_RELAY_REPL	0

Messages sent:

DHCPV6_ADVERTISE	9
DHCPV6_REPLY	5
DHCPV6_RECONFIGURE	0



## CHAPTER 12

# DHCP Relay Agent Monitoring Commands

## clear dhcp relay binding

---

<b>Syntax</b>	<b>clear dhcp relay binding</b> <b>&lt;address&gt;</b> <b>&lt;all&gt;</b> <b>&lt;interface <i>interface-name</i>&gt;</b> <b>&lt;interfaces-vlan&gt;</b> <b>&lt;interfaces-wildcard&gt;</b> <b>&lt;logical-system <i>logical-system-name</i>&gt;</b> <b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.3. Options <b>all</b> and <b>interface</b> added in Junos OS Release 8.4. Options <b>interfaces-vlan</b> and <b>interfaces-wildcard</b> added in Junos OS Release 12.1. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.
<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>• Clearing DHCP Bindings for Subscriber Access</li><li>• <a href="#">show dhcp relay binding on page 349</a></li></ul>

**List of Sample Output** [clear dhcp relay binding on page 339](#)  
[clear dhcp relay binding all on page 339](#)  
[clear dhcp relay binding interface on page 339](#)  
[clear dhcp relay binding <interfaces-vlan> on page 339](#)  
[clear dhcp relay binding <interfaces-wildcard> on page 339](#)

**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> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
Syntax	Syntax for EX Series switches:  <code>show dhcp relay statistics</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
Release Information	Command introduced in Junos OS Release 8.3. Statement introduced in Junos OS Release 12.1 for EX Series switches. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.
Description	Clear all Dynamic Host Configuration Protocol (DHCP) relay statistics.
Options	<code>logical-system <i>logical-system-name</i></code> —(On routers only) (Optional) Perform this operation on the specified logical system. If you do not specify a logical system name, statistics are cleared for the default logical system.  <code>routing-instance <i>routing-instance-name</i></code> —(Optional) Perform this operation on the specified routing instance. If you do not specify a routing instance name, statistics are cleared for the default routing instance.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">show dhcp relay statistics on page 354</a></li></ul>
List of Sample Output	<a href="#">clear dhcp relay statistics on page 342</a>
Output Fields	<a href="#">Table 20 on page 341</a> lists the output fields for the <code>clear dhcp relay statistics</code> command.

Table 20: 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>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> </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                               0

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

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

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

```
user@host> show dhcp relay statistics
Packets dropped:
  Total                               0

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

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

## clear 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 Switches.</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>• Clearing DHCP Bindings for Subscriber Access</li> <li>• <a href="#">show dhcpv6 relay binding on page 357</a></li> </ul>

- List of Sample Output**    [clear dhcpv6 relay binding on page 345](#)  
                                  [clear dhcpv6 relay binding <prefix> on page 345](#)  
                                  [clear dhcpv6 relay binding all on page 345](#)  
                                  [clear dhcv6p relay binding interface on page 345](#)  
                                  [clear dhcpv6 relay binding <interfaces-vlan> on page 345](#)  
                                  [clear dhcpv6 relay binding <interfaces-wildcard> on page 345](#)
- 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 dhcpv6 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
```

The following command uses the *interfaces-wildcard* option to clear all DHCPv6 relay

`clear dhcpv6 relay`      agent bindings over a specific interface:  
`binding`  
`<interfaces-wildcard>`    `user@host> clear dhcpv6 relay binding ge-1/0/0.*`

## clear dhcpv6 relay statistics

---

<b>Syntax</b>	<code>clear dhcpv6 relay statistics</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 11.4. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.3R2 for EX Series switches.
<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.  <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 348</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

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

<b>Syntax</b>	<pre>show dhcp relay binding &lt;address&gt; &lt;brief&gt; &lt;detail&gt; &lt;interface interface-name&gt; &lt;interfaces-vlan&gt; &lt;interfaces-wildcard&gt; &lt;ip-address   mac-address&gt; &lt;logical-system logical-system-name&gt; &lt;routing-instance routing-instance-name&gt; &lt;summary&gt;</pre>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.3.</p> <p>Options <b>interface</b> and <b>mac-address</b> added in Junos OS Release 8.4.</p> <p>Options <b>interfaces-vlan</b> and <b>interfaces-wildcard</b> added in Junos OS Release 12.1.</p> <p>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.</p>
<b>Description</b>	Display the address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.
<b>Options</b>	<p><b>address</b>—(Optional) Display DHCP binding information for a specific client identified by one of the following entries:</p> <ul style="list-style-type: none"> <li><i>ip-address</i>—The specified IP address.</li> <li><i>mac-address</i>—The specified MAC address.</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 dhcp relay binding</b>.</p> <p><b>detail</b>—(Optional) Display detailed client binding information.</p> <p><b>interface interface-name</b>—(Optional) Perform this operation on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.</p> <p><b>interfaces-vlan</b>—(Optional) Show the binding state information on the interface VLAN ID and S-VLAN ID.</p> <p><b>interfaces-wildcard</b>—(Optional) The set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).</p> <p><b>logical-system logical-system-name</b>—(Optional) Perform this operation on the specified logical system.</p> <p><b>routing-instance routing-instance-name</b>—(Optional) Perform this operation on the specified routing instance.</p> <p><b>summary</b>—(Optional) Display a summary of DHCP client information.</p>

**Required Privilege Level** view

**Related Documentation**

- Clearing DHCP Bindings for Subscriber Access
- [clear dhcp relay binding on page 338](#)

**List of Sample Output**

- [show dhcp relay binding on page 352](#)
- [show dhcp relay binding detail on page 352](#)
- [show dhcp relay binding interface on page 352](#)
- [show dhcp relay binding interface vlan-id on page 352](#)
- [show dhcp relay binding interface svlan-id on page 352](#)
- [show dhcp relay binding ip-address on page 353](#)
- [show dhcp relay binding mac-address on page 353](#)
- [show dhcp relay binding session-id on page 353](#)
- [show dhcp relay binding <interfaces-vlan> on page 353](#)
- [show dhcp relay binding <interfaces-wildcard> on page 353](#)
- [show dhcp relay binding summary on page 353](#)

**Output Fields** [Table 21 on page 350](#) lists the output fields for the **show dhcp relay binding** command. Output fields are listed in the approximate order in which they appear.

**Table 21: 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>
<b>IP address</b>	IP address of the DHCP client.	<b>briefdetail</b>
<b>Session Id</b>	Session ID of the subscriber session.	<b>briefdetail</b>
<b>Hardware address</b>	Hardware address of the DHCP client.	<b>briefdetail</b>
<b>Expires</b>	Number of seconds in which the lease expires.	<b>briefdetail</b>
<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>

Table 21: show dhcp relay binding Output Fields (*continued*)

Field Name	Field Description	Level of Output
<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>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
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

### 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

```
user@host> show dhcp relay binding interface ge-1/1/0:10-100
```

```
show dhcp relay
binding interface
svlan-id
```

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	ge-1/0/0.1073741827

```
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	ge-1/3/0.110
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

---

Syntax	<code>show dhcp relay statistics</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
Syntax	Syntax for EX Series switches:  <code>show dhcp relay statistics</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
Release Information	Command introduced in Junos OS Release 8.3. Command introduced in Junos OS Release 12.1 for EX Series switches. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.
Description	Display Dynamic Host Configuration Protocol (DHCP) relay statistics.
Options	<code>logical-system <i>logical-system-name</i></code> —(On routers only) (Optional) Perform this operation on the specified logical system. If you do not specify a logical system name, statistics are displayed for the default logical system.  <code>routing-instance <i>routing-instance-name</i></code> —(Optional) Perform this operation on the specified routing instance. If you do not specify a routing instance name, statistics are displayed for the default routing instance.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">clear dhcp relay statistics on page 340</a></li></ul>
List of Sample Output	<a href="#">show dhcp relay statistics on page 356</a>
Output Fields	<a href="#">Table 22 on page 355</a> lists the output fields for the <code>show dhcp relay statistics</code> command. Output fields are listed in the approximate order in which they appear.

Table 22: 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>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>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>

## Sample Output

**show dhcp relay  
statistics**

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

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

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

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

## show dhcpv6 relay binding

<b>Syntax</b>	<pre>show dhcpv6 relay binding &lt;address   client-id   session-id&gt; &lt;brief&gt; &lt;detail&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; &lt;summary&gt;</pre>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 11.4.</p> <p>Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches.</p> <p>Command introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p><i>interfaces-vlan</i> and <i>interfaces-wildcard</i> options introduced in Junos OS Release 12.1.</p>
<b>Description</b>	Display the DHCPv6 address bindings in the Dynamic Host Configuration Protocol (DHCP) 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>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 interface-name</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) Show the binding state information on the interface VLAN ID and S-VLAN ID.</p> <p><b>interfaces-wildcard</b>—(Optional) The set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).</p> <p><b>logical-system logical-system-name</b>—(Optional) Perform this operation on the specified logical system.</p> <p><b>routing-instance routing-instance-name</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
- [clear dhcpv6 relay binding on page 343](#)

**List of Sample Output**

- [show dhcpv6 relay binding on page 360](#)
- [show dhcpv6 relay binding \(address\) on page 360](#)
- [show dhcpv6 relay binding \(client-id\) on page 360](#)
- [show dhcpv6 relay binding detail on page 360](#)
- [show dhcpv6 relay binding detail \(Multi-Relay Topology\) on page 361](#)
- [show dhcpv6 relay binding \(session-id\) on page 362](#)
- [show dhcpv6 relay binding \(interfaces-vlan\) on page 362](#)
- [show dhcpv6 relay binding \(interfaces-wildcard\) on page 362](#)
- [show dhcpv6 relay binding \(interfaces-wildcard\) on page 362](#)
- [show dhcpv6 relay binding summary on page 362](#)

**Output Fields** Table 23 on page 358 lists the output fields for the **show dhcpv6 relay binding** command. Output fields are listed in the approximate order in which they appear.

**Table 23: show dhcpv6 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 DHCPv6 clients and the number of DHCPv6 clients in each state.	<b>summary</b>
Client IPv6 Prefix	Prefix of the DHCPv6 client.	<b>briefdetail</b>
Client DUID	DHCP for IPv6 Unique Identifier (DUID) of the client.	<b>briefdetail</b>
Session Id	Session ID of the subscriber (DHCP client) session.	<b>briefdetail</b>
Expires	Number of seconds in which the lease expires.	<b>briefdetail</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>briefdetail</b>
Interface	Incoming client interface.	<b>brief</b>

Table 23: show dhcpv6 relay binding Output Fields (*continued*)

Field Name	Field Description	Level of Output
<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>Incoming Client Interface</b>	Client's incoming interface.	detail
<b>Server Address</b>	IP address of the DHCPv6 server.  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
<b>Next Hop Server Facing Relay</b>	Next-hop address in the direction of the DHCPv6 server.	detail
<b>Server Interface</b>	Interface of the DHCPv6 server.	detail
<b>Relay Address</b>	IP address of the relay.	detail
<b>Client Pool Name</b>	Address pool that granted the client lease.	
<b>Client ID Length</b>	Length of client ID.	All levels
<b>Client Id</b>	Client ID.	All levels

## 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
  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 (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
  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

```
user@host> show dhcpv6 relay binding detail
Session Id: 1
```

**binding detail**

```
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
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**

```
user@host > show dhcpv6 relay binding detail
Session Id: 13
Client IPv6 Prefix:      3000:0:0:8001::5/128
```

**(Multi-Relay  
Topology)**

```

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-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> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 11.4. Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Switches. 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 347</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show dhcpv6 relay statistics on page 365</a>
<b>Output Fields</b>	<a href="#">Table 24 on page 363</a> 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 24: 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>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 24: 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>

## Sample Output

`show dhcpv6 relay statistics`

```
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
```

## show route extensive

<b>Syntax</b>	show route extensive <destination-prefix> <logical-system (all   logical-system-name)>
<b>Syntax (EX Series Switches)</b>	show route extensive <destination-prefix>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. 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 372</a> <a href="#">show route extensive (Access Route) on page 378</a> <a href="#">show route extensive (Route Reflector) on page 378</a> <a href="#">show route extensive (FRR and LFA) on page 378</a> <a href="#">show route extensive (FRR and LFA) on page 379</a>
<b>Output Fields</b>	Table 25 on page 366 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 25: 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 25: show route extensive Output Fields (*continued*)

Field Name	Field Description
<i>route-destination</i> (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). <ul style="list-style-type: none"> <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> </li> </ul>
TSI	Protocol header information.
label stacking	<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>
[ <i>protocol, preference</i> ]	<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>
Level	<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>
Route Distinguisher	IP subnet augmented with a 64-bit prefix.

Table 25: show route extensive Output Fields (*continued*)

Field Name	Field Description
<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 show route detail 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 <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).
<b>Indirect next hops</b>	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.
<b>State</b>	State of the route (a route can be in more than one state). See the Output Field table in the show route detail command.

Table 25: show route extensive Output Fields (*continued*)

Field Name	Field Description
<b>Session ID</b>	The BFD session ID number that represents the protection using MPLS fast reroute (FRR) and loop-free alternate (LFA).
<b>Inactive reason</b>	<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>
<b>Local AS</b>	Autonomous system (AS) number of the local routing device.
<b>Age</b>	How long the route has been known.
<b>AIGP</b>	Accumulated interior gateway protocol (AIGP) BGP attribute.
<b>Metric</b>	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.
<b>MED-plus-IGP</b>	Metric value for BGP path selection to which the IGP cost to the next-hop destination has been added.

Table 25: show route extensive Output Fields (*continued*)

Field Name	Field Description
<b>TTL-Action</b>	<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>
<b>Task</b>	Name of the protocol that has added the route.
<b>Announcement bits</b>	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.
<b>AS path</b>	<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>
<b>AS path: I &lt;Originator&gt;</b>	(For route reflected output only) Originator ID attribute set by the route reflector.
<b>VC Label</b>	MPLS label assigned to the Layer 2 circuit virtual connection.
<b>MTU</b>	Maximum transmission unit (MTU) of the Layer 2 circuit.
<b>VLAN ID</b>	VLAN identifier of the Layer 2 circuit.
<b>Cluster list</b>	(For route reflected output only) Cluster ID sent by the route reflector.
<b>Originator ID</b>	(For route reflected output only) Address of router that originally sent the route to the route reflector.
<b>Prefixes bound to route</b>	Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.
<b>Communities</b>	Community path attribute for the route. See the Output Field table in the show route detail command for all possible values for this field.

Table 25: show route extensive Output Fields (*continued*)

Field Name	Field Description
<b>Layer2-info: encaps</b>	Layer 2 encapsulation (for example, VPLS).
<b>control flags</b>	Control flags: <b>none</b> or Site Down.
<b>mtu</b>	Maximum transmission unit (MTU) information.
<b>Label-Base, range</b>	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.
<b>status vector</b>	Layer 2 VPN and VPLS network layer reachability information (NLRI).
<b>Localpref</b>	Local preference value included in the route.
<b>Router ID</b>	BGP router ID as advertised by the neighbor in the open message.
<b>Primary Routing Table</b>	In a routing table group, the name of the primary routing table in which the route resides.
<b>Secondary Tables</b>	In a routing table group, the name of one or more secondary tables in which the route resides.
<b>Originating RIB</b>	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.
<b>Node path count</b>	Number of nodes in the path.
<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-kernel 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-kernel 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-kernel 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)
299776 (1 entry, 1 announced)
TSI:
KRT in-kernel 299776 /52 -> {Flood}
  *RSVP Preference: 7
    Next hop type: Flood
    Next-hop reference count: 130
    Flood nexthop branches exceed maximum
    Address: 0x8ea65d0

...

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-kerne 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-kerne 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+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+179
        AS path: I
        Communities: Layer2-info: encaps:VPLS, control flags:, mtu: 0
        Label-base: 800008, range: 8, status-vector: 0x9F

...

l2circuit.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: l2 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 (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

```

```

user@host> show route 20:31:2:0 extensive

```

**show route extensive  
(FRR and LFA)**

```

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-kernel 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  
(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-kernel 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 protocol

<b>Syntax</b>	<pre>show route protocol <i>protocol</i> &lt;brief   detail   extensive   terse&gt; &lt;logical-system (all   <i>logical-system-name</i>)&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>show route protocol <i>protocol</i> &lt;brief   detail   extensive   terse&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>ospf2</b> and <b>ospf3</b> options introduced in Junos OS Release 9.2.</p> <p><b>ospf2</b> and <b>ospf3</b> options introduced in Junos OS Release 9.2 for EX Series switches.</p> <p><b>flow</b> option introduced in Junos OS Release 10.0.</p> <p><b>flow</b> option introduced in Junos OS Release 10.0 for EX Series switches.</p>
<b>Description</b>	Display the route entries in the routing table that were learned from a particular protocol.
<b>Options</b>	<p><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>.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b><i>protocol</i></b>—Protocol from which the route was learned:</p> <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.

Required Privilege Level	view
List of Sample Output	<a href="#">show route protocol access on page 384</a> <a href="#">show route protocol access-internal extensive on page 384</a> <a href="#">show route protocol arp on page 384</a> <a href="#">show route protocol bgp on page 385</a> <a href="#">show route protocol bgp detail on page 385</a> <a href="#">show route protocol bgp extensive on page 385</a> <a href="#">show route protocol bgp terse on page 386</a> <a href="#">show route protocol direct on page 386</a> <a href="#">show route protocol frr on page 386</a> <a href="#">show route protocol l2circuit detail on page 387</a> <a href="#">show route protocol l2vpn extensive on page 388</a> <a href="#">show route protocol ldp on page 388</a> <a href="#">show route protocol ldp extensive on page 389</a> <a href="#">show route protocol ospf (Layer 3 VPN) on page 390</a> <a href="#">show route protocol ospf detail on page 390</a> <a href="#">show route protocol rip on page 391</a> <a href="#">show route protocol rip detail on page 391</a> <a href="#">show route protocol ripng table inet6 on page 391</a> <a href="#">show route protocol static detail on page 391</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-kerne1 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: 12 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-kerne1 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-kerne1 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 395](#)
- [Troubleshooting Configuration Statements on page 403](#)



# Acquiring Troubleshooting Information

- [Tracing Extended DHCP Operations on page 395](#)
- [Tracing Extended DHCP Operations for Specific Interfaces on page 401](#)

## 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 400](#).

The extended DHCP traceoptions operations are described in the following sections:

- [Configuring the Extended DHCP Log Filename on page 397](#)
- [Configuring the Number and Size of Extended DHCP Log Files on page 397](#)
- [Configuring Access to the Extended DHCP Log File on page 398](#)
- [Configuring a Regular Expression for Extended DHCP Messages to Be Logged on page 398](#)

- [Configuring the Extended DHCP Tracing Flags on page 399](#)
- [Configuring the Severity Level to Filter Which Extended DHCP Messages Are Logged on page 399](#)
- [Tracing Extended DHCP Operations for Specific Interfaces on page 400](#)

## 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 395](#).

- 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 397](#).

- Configure the number and size of the log files.

See [“Configuring the Number and Size of Extended DHCP Log Files” on page 397](#).

- Configure access to the log file.

See [“Configuring Access to the Extended DHCP Log File” on page 398](#).

- Configure a regular expression to filter logging events.

See [“Configuring a Regular Expression for Extended DHCP Messages to Be Logged” on page 398](#).

- c. (Optional) Specify tracing flag options.

See [“Configuring the Extended DHCP Tracing Flags” on page 399](#).

- 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 399](#).

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 395](#).

- 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 397](#).

- Configure the number and size of the log files.

See [“Configuring the Number and Size of Extended DHCP Log Files” on page 397](#).

- Configure access to the log file.

See [“Configuring Access to the Extended DHCP Log File” on page 398](#).

- Configure a regular expression to filter logging events.

See [“Configuring a Regular Expression for Extended DHCP Messages to Be Logged” on page 398](#).

- c. (Optional) Specify tracing flag options.

See [“Configuring the Extended DHCP Tracing Flags” on page 399](#).

- 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 399](#).

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 395](#)

## CHAPTER 14

# Troubleshooting Configuration Statements

## interface-traceoptions (DHCP)

---

<b>Syntax</b>	<pre>interface-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>	Statement introduced in Junos OS Release 11.4. 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.

**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.
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<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Tracing Extended DHCP Operations for Specific Interfaces on page 400</a></li> </ul>
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## trace (DHCP Local Server)

<b>Syntax</b>	trace;
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> system services dhcp-local-server group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit system services dhcp-local-server dhcpv6 group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit system services dhcp-local-server group <i>group-name</i> <a href="#">interface</a> <i>interface-name</i>]</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>	Enable trace operations for a group of interfaces or for a specific interface within a group.
<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="#">Tracing Extended DHCP Operations on page 395</a></li> <li>• <a href="#">Tracing Extended DHCP Operations for Specific Interfaces on page 400</a></li> </ul>

## trace (DHCP Relay Agent)

<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>],</p> <p>[edit forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],</p> <p>[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>],</p> <p>[edit logical-systems <i>logical-system-name</i> forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay dhcpv6 group <i>group-name</i> <b>interface</b> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> forwarding-options dhcp-relay group <i>group-name</i> <b>interface</b> <i>interface-name</i>],</p> <p>[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>],</p> <p>[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 395</a></li> <li>• <a href="#">Tracing Extended DHCP Operations for Specific Interfaces on page 400</a></li> </ul>

## traceoptions (DHCP)

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<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>	Statement introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1 for EX Series switches.
<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. You can specify any of the following levels:

- **all**—Match all levels.
- **error**—Match error conditions.
- **info**—Match informational messages.
- **notice**—Match notice messages about conditions requiring special handling.
- **verbose**—Match verbose messages.
- **warning**—Match warning messages.

**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</b>	trace—To view this statement in the configuration.
<b>Level</b>	trace-control—To add this statement to the configuration.

<b>Related Documentation</b>	• <a href="#">Tracing Extended DHCP Operations on page 395</a>
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