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Documentation and Release Notes

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

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

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

Supported Platforms

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

- EX Series

Using the Examples in This Manual

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

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

Merging a Full Example

To merge a full example, follow these steps:

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

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

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

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

   ```plaintext
   [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.

```plaintext
commit {
  file ex-script-snippet.xsl;
}
```
2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

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

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

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

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

**Documentation Conventions**

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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="i.png" alt="i" /></td>
<td>Informational note</td>
<td>Indicates important features or instructions.</td>
</tr>
<tr>
<td>![!]</td>
<td>Caution</td>
<td>Indicates a situation that might result in loss of data or hardware damage.</td>
</tr>
<tr>
<td>![!]</td>
<td>Warning</td>
<td>Alerts you to the risk of personal injury or death.</td>
</tr>
<tr>
<td>![!]</td>
<td>Laser warning</td>
<td>Alerts you to the risk of personal injury from a laser.</td>
</tr>
<tr>
<td>![!]</td>
<td>Tip</td>
<td>Indicates helpful information.</td>
</tr>
<tr>
<td>![!]</td>
<td>Best practice</td>
<td>Alerts you to a recommended use or implementation.</td>
</tr>
</tbody>
</table>

Table 2 on page xviii defines the text and syntax conventions used in this guide.
# Table 2: Text and Syntax Conventions

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<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold text like this</strong></td>
<td>Represents text that you type.</td>
<td>To enter configuration mode, type the <code>configure</code> command:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>user@host&gt;</code> <code>configure</code></td>
</tr>
<tr>
<td><strong>Fixed-width text like this</strong></td>
<td>Represents output that appears on the terminal screen.</td>
<td><code>user@host&gt;</code> <code>show chassis alarms</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No alarms currently active</td>
</tr>
<tr>
<td><strong>Italic text like this</strong></td>
<td>Introduces or emphasizes important new terms.</td>
<td>• A policy term is a named structure that defines match conditions and actions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Identifies guide names.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Identifies RFC and internet draft titles.</td>
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<td></td>
<td></td>
<td>• <strong>Junos OS CLI User Guide</strong></td>
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<td></td>
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<td>• RFC 1997, <strong>BGP Communities Attribute</strong></td>
</tr>
<tr>
<td><strong>Italic text like this</strong></td>
<td>Represents variables (options for which you substitute a value) in commands or configuration statements.</td>
<td>Configure the machine’s domain name:</td>
</tr>
<tr>
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<td></td>
<td><code>[edit]</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>root@#</code> <code>set system domain-name</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>domain-name</code></td>
</tr>
<tr>
<td><strong>Text like this</strong></td>
<td>Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.</td>
<td>• To configure a stub area, include the <code>stub</code> statement at the <code>[edit protocols ospf area area-id]</code> hierarchy level.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The console port is labeled <code>CONSOLE</code>.</td>
</tr>
<tr>
<td><code>&lt; &gt;</code> (angle brackets)</td>
<td>Encloses optional keywords or variables.</td>
<td><code>stub &lt;default-metric metric&gt;;</code></td>
</tr>
<tr>
<td><code>{ }</code> (indention and braces)</td>
<td>Indicates a level in the configuration hierarchy.</td>
<td><code>rsvp { # Required for dynamic MPLS only</code></td>
</tr>
<tr>
<td></td>
<td>(pipe symbol)</td>
<td>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.</td>
</tr>
<tr>
<td># (pound sign)</td>
<td>Indicates a comment specified on the same line as the configuration statement to which it applies.</td>
<td><code>rsvp { # Required for dynamic MPLS only</code></td>
</tr>
<tr>
<td>[ ] (square brackets)</td>
<td>Encloses a variable for which you can substitute one or more values.</td>
<td><code>community name members [</code></td>
</tr>
<tr>
<td></td>
<td>(semicolon)</td>
<td>Identifies a leaf statement at a configuration hierarchy level.</td>
</tr>
<tr>
<td>Indention and braces ( {} )</td>
<td>Identifies a level in the configuration hierarchy.</td>
<td><code>[edit]</code></td>
</tr>
<tr>
<td>: (colon)</td>
<td>Identifies a leaf statement at a configuration hierarchy level.</td>
<td><code>routing-options {</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## GUI Conventions
Table 2: Text and Syntax Conventions (continued)

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

**Documentation Feedback**

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

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• Download the latest versions of software and review release notes: http://www.juniper.net/customers/csc/software/

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• 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

DHCP and DHCP Relay

- DHCP Services on page 3
- DHCP Local Server on page 21
- DHCPv6 Local Server on page 39
- DHCP Relay Agent on page 45
- DHCPv6 Relay Agent on page 85
- Configuring Groups of DHCP Interfaces on page 89
- DHCP Liveness Detection on page 95
- Managing DHCP Clients on page 101
- Forcing Dynamic Reconfiguration of Clients from a DHCP Local Server on page 111
- Managing IP Address Assignment on page 121
CHAPTER 1

DHCP Services

- Understanding DHCP Services for Switches on page 3
- Configuring DHCP Services (J-Web Procedure) on page 7
- Configuring a Switch as a DHCP Server (CLI Procedure) on page 14
- Configuring a DHCP Client (CLI Procedure) on page 17
- Configuring a DHCP SIP Server (CLI Procedure) on page 18

Understanding DHCP Services for Switches

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

This topic describes:
- DHCP Client/Server Model on page 3
- Using DHCP on page 4
- DHCP Relay Servers and DHCP Servers on page 4
- Legacy DHCP and Extended DHCP for Server Versions on page 5
- Configuring DHCP on a Switch on page 6
- How DHCP Works on page 6

DHCP Client/Server Model

DHCP IP address allocation works on a client/server model in which the server, in this case a switch, assigns the client reusable IP information from an address pool. A DHCP client might receive offer messages from multiple DHCP servers and can accept any one of the offers; however, the client usually accepts the first offer it receives. See Figure 1 on page 4.
Using DHCP

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

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

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

DHCP Relay Servers and DHCP Servers

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

Configure a switch to be a DHCP relay agent if you have locally attached hosts and a remote DHCP server.
Legacy DHCP and Extended DHCP for Server Versions

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

You cannot configure legacy DHCP and extended DHCP versions on the same switch. Because the newer extended DHCP server version has more features, we recommend that you configure the extended DHCP server if it is supported by the switch.

The extended DHCP server version has the following added features:

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

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

---

Legacy DHCP and extended DHCP servers can be configured at the hierarchy levels shown in Table 3 on page 5:

### Table 3: Legacy DHCP and Extended DHCP Server Hierarchy Levels

<table>
<thead>
<tr>
<th>DHCP Service</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended DHCP server</td>
<td>edit system services dhcp-local-server</td>
</tr>
<tr>
<td>Extended DHCP address pool</td>
<td>edit access address-assignment pool</td>
</tr>
<tr>
<td>Legacy DHCP server</td>
<td>edit system services dhcp</td>
</tr>
<tr>
<td>Legacy DHCP relay</td>
<td>edit forwarding-options helpers bootp</td>
</tr>
<tr>
<td>Extended DHCP relay</td>
<td>edit forwarding-options dhcp-relay</td>
</tr>
<tr>
<td>Legacy DHCP address pool</td>
<td>edit system services dhcp pool</td>
</tr>
</tbody>
</table>

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

Configuring DHCP on a Switch

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

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

For directions for configuring either a legacy DHCP server or an extended DHCP server, see Configuring a DHCP Server on Switches (CLI Procedure).

To configure a DHCP client, set the client’s DHCP interface address in the `[edit interfaces interface-name unit 0 family inet dhcp]` hierarchy. For directions for configuring a DHCP client on a switch, see “Configuring a DHCP Client (CLI Procedure)” on page 17.

How DHCP Works

DHCP consists of a four-step transfer process beginning with a broadcast DHCP discovery message from the client. As the second step, the client receives a DHCP offer message from the server. This message includes the IP address and mask, and some other specific parameters. The client then sends a DHCP request message to accept the IP address and other parameters that it received from the server in the previous step. The DHCP server sends a DHCP response message and removes the now-allocated address from the DHCP address pool. See Figure 2 on page 6.

Figure 2: DHCP Four-Step Transfer

1. Client discovers DHCP on switch
2. Switch offers DHCP to client
3. Client requests IP address from switch
4. Switch assigns IP address configuration to client

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

Related Documentation

- Configuring a DHCP Client (CLI Procedure) on page 17
- Configuring a DHCP Server on Switches (CLI Procedure)
Configuring DHCP Services (J-Web Procedure)

- Configuring DHCP Services (J-Web Procedure) on EX Series Switches on page 7
- Configuring DHCP Services on EX4300 Switches (J-Web Procedure) on page 10

Configuring DHCP Services (J-Web Procedure) on EX Series Switches

**NOTE:** This topic applies only to the J-Web Application package.

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

To configure the DHCP server:

1. Select **Configure > Services > DHCP**

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

3. Enter information into the DHCP Service Configuration pages as described in Table 4 on page 8

4. To apply the configuration, click **Apply**.

**NOTE:** After you make changes to the configuration on this page, you must commit the changes for them to take effect. To commit all changes to the active configuration, select Commit Options > Commit. See Using the Commit Options to Commit Configuration Changes for details about all commit options.
### Table 4: DHCP Service Configuration Pages Summary

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DHCP Pool Information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DHCP Subnet (required)</td>
<td>Specifies the subnet on which DHCP is configured.</td>
<td>Type an IP address prefix.</td>
</tr>
<tr>
<td>Address Range (Low) (required)</td>
<td>Specifies the lowest address in the IP address pool range.</td>
<td>Type an IP address that is part of the subnet specified in DHCP Subnet field.</td>
</tr>
<tr>
<td>Address Range (High) (required)</td>
<td>Specifies the highest address in the IP address pool range.</td>
<td>Type an IP address that is part of the subnet specified in DHCP Subnet. This address must be greater than the address specified in the Address Range (Low) field.</td>
</tr>
</tbody>
</table>
| Exclude Addresses      | Specifies addresses to exclude from the IP address pool.                | • To add an excluded address, type the address next to the **Add** button, and click **Add**.  
|                        |                                                                           | • To delete an excluded address, select the address in the Exclude Addresses box, and click **Delete**. |
| **Lease Time**         |                                                                           |                                                                            |
| Maximum Lease Time (Seconds) | Specifies the maximum length of time a client can hold a lease. (Dynamic BOOTP lease lengths can exceed this maximum time.) | Type a number from 60 through 4,294,967,295 (seconds). You can also type **infinite** to specify a lease that never expires. |
| Default Lease Time (Seconds) | Specifies the length of time a client can hold a lease for clients that do not request a specific lease length. | Type a number from 60 through 2,147,483,647 (seconds). You can also type **infinite** to specify a lease that never expires. |
| **Server Information** |                                                                           |                                                                            |
| Server Identifier      | Specifies the IP address of the DHCP server reported to a client.        | Type the IP address of the server. If you do not specify a server identifier, the primary address of the interface on which the DHCP exchange occurs is used. |
| Domain Name            | Specifies the domain name that clients must use to resolve hostnames.    | Type the name of the domain.                                               |
| Domain Search          | Specifies the order—from top to bottom—in which clients must append domain names when resolving hostnames using DNS. | • To add a domain name, type the name next to the **Add** button, and click **Add**.  
|                        |                                                                           | • To delete a domain name, select the name in the Domain Search box, and click **Delete**. |
| DNS Name Servers       | Defines a list of DNS servers that the client can use, in the specified order—from top to bottom. | • To add a DNS server, type an IP address next to the **Add** button, and click **Add**.  
|                        |                                                                           | • To remove a DNS server, select the IP address in the DNS Name Servers box, and click **Delete**. |
Table 4: DHCP Service Configuration Pages Summary (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
</table>
| Gateway Routers              | Defines a list of relay agents on the subnet, in the specified order—from top to bottom. | • To add a relay agent, type an IP address next to the Add button, and click Add.  
• To remove a relay agent, select the IP address in the Gateway Routers box, and click Delete. |
| WINS Servers                 | Defines a list of NetBIOS name servers, in the specified order—from top to bottom. | • To add a NetBIOS name server, type an IP address next to the Add button, and click Add.  
• To remove a NetBIOS name server, select the IP address in the WINS Servers box, and click Delete. |

**Boot Options**

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boot File</td>
<td>Specifies the path and filename of the initial boot file to be used by the client.</td>
<td>Type a path and filename.</td>
</tr>
<tr>
<td>Boot Server</td>
<td>Specifies the Trivial File Transfer Protocol (TFTP) server that the client uses to obtain the client configuration file.</td>
<td>Type the IP address or hostname of the TFTP server.</td>
</tr>
</tbody>
</table>

**DHCP Static Binding Information**

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP MAC Address (required)</td>
<td>Specifies the MAC address of the client to be permanently assigned a static IP address.</td>
<td>Type the hexadecimal MAC address of the client.</td>
</tr>
</tbody>
</table>
| Fixed IP Addresses (required)| Defines a list of IP addresses permanently assigned to the client. A static binding must have at least one fixed address assigned to it, but multiple addresses are also allowed. | • To add an IP address, type it next to the Add button, and click Add.  
• To remove an IP address, select it in the Fixed IP Addresses box, and click Delete. |
| Host Name                   | Specifies the name of the client used in DHCP messages exchanged between the server and the client. The name must be unique to the client within the subnet on which the client resides. | Type a client hostname.                                                   |
| Client Identifier           | Specifies the name of the client used by the DHCP server to index its database of address bindings. The name must be unique to the client within the subnet on which the client resides. | Type a client identifier in string form.                                    |
| Hexadecimal Client Identifier| Specifies the name of the client, in hexadecimal form, used by the DHCP server to index its database of address bindings. The name must be unique to the client within the subnet on which the client resides. | Type a client identifier in hexadecimal form.                                |
Configuring DHCP Services on EX4300 Switches (J-Web Procedure)

On EX4300 switches, use the DHCP Configuration page to create DHCP pools and set the DHCP parameters for them and to configure DHCP settings for existing DHCP pools and static bindings.

To configure the DHCP services on EX4300 switches:

1. Select Configure > Services > DHCP

2. Access a DHCP Configuration page:
   - To configure a DHCP pool for a subnet, click Add in the DHCP Pools box.
   - To configure DHCP groups, click Add in the DHCP Groups box.
   - To globally configure settings for existing DHCP pools and static bindings, click Configure Global DHCP Parameters.

3. Enter information into the DHCP Service Configuration pages as described in Table 5 on page 10

4. To apply the configuration, click OK.

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

Table 5: DHCP Service Configuration Pages Summary for EX4300 Switches

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP Groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Name</td>
<td>Specifies the name of the group.</td>
<td>Enter the name of the group.</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Family inet interface is listed, only if it is already configured with family inet.</td>
<td>Select the interface for the specific group.</td>
</tr>
<tr>
<td>DHCP Pool Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool Name</td>
<td>Specifies the name of an address-assignment pool.</td>
<td>Type the pool name.</td>
</tr>
<tr>
<td>Link Pool</td>
<td>Specifies the pool name to which it is linked.</td>
<td>Select the option from the list.</td>
</tr>
<tr>
<td>Network Address</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 5: DHCP Service Configuration Pages Summary for EX4300 Switches (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>Specifies the IP address pool range.</td>
<td>Type an IP address that is part of the subnet specified in the DHCP Subnet field.</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>Specifies the subnet specified in DHCP Subnet.</td>
<td>Type a subnet mask that is specified in the DHCP Subnet field.</td>
</tr>
<tr>
<td><strong>DHCP Pool Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool Name</td>
<td>Displays the name of an address-assignment pool.</td>
<td>The pool name is displayed.</td>
</tr>
<tr>
<td>Server Identifier</td>
<td>Specifies the IP address of the DHCP server reported to a client.</td>
<td>Type the IP address of the server. If you do not specify a server identifier, the primary address of the interface on which the DHCP exchange occurs is used.</td>
</tr>
<tr>
<td>TFTP Server</td>
<td>Specifies the Trivial File Transfer Protocol (TFTP) server that the client uses to obtain the client configuration file.</td>
<td>Enter the IP address of the TFTP server.</td>
</tr>
<tr>
<td>Maximum Lease Time (Seconds)</td>
<td>Specifies the maximum length of time a client can hold a lease. (Dynamic BOOTP lease lengths can exceed this maximum time.)</td>
<td>Type a number.</td>
</tr>
<tr>
<td>Boot File</td>
<td>Specifies the path and filename of the initial boot file to be used by the client.</td>
<td>Type a path and filename.</td>
</tr>
<tr>
<td>Boot Server</td>
<td>Specifies the TFTP server that provides the initial boot file to the client.</td>
<td>Type the IP address or hostname of the TFTP server.</td>
</tr>
<tr>
<td>Grace Period</td>
<td>Specifies the grace period for which a client can hold a lease.</td>
<td>Type the grace period in seconds.</td>
</tr>
</tbody>
</table>
| DNS Name Servers  | Defines a list of DNS servers the client can use.                        | • To add a DNS server, click **Add**. Type an IP address in the **Add IP Address** pop-up window.  
• Click **OK**  
• To remove a DNS server, select the IP address in the DNS Name Servers box, and click **Remove**. |
| WINS Servers      | Defines a list of NetBIOS name servers.                                   | • To add a NetBIOS name server, click **Add**. Type an IP address in the **Add IP Address** pop-up window.  
• Click **OK**  
• To remove a NetBIOS name server, select the IP address in the WINS Servers box, and click **Remove**. |
| Domain Name       | Specifies the domain name that clients must use to resolve hostnames.     | Type the name of the domain.                                                 |
### Table 5: DHCP Service Configuration Pages Summary for EX4300 Switches (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetBIOS Node Type</td>
<td>Specifies the NetBIOS node that provides the initial node file to the client.</td>
<td>Select the type from the list.</td>
</tr>
</tbody>
</table>
| Gateway Routers        | Defines a list of relay agents on the subnet, in the specified order—from top to bottom. | • To add a relay agent, click **Add**. Type an IP address in the **Add IP Address** pop-up window.  
  • Click **OK**.  
  • To remove a relay agent, select the IP address in the Gateway Routers box, and click **Remove**. |
| Option                 | Specifies the DHCP options.                                               | • To add a DHCP option, click **Add**. The Add DHCP Option pop-up window is displayed. Enter the following:  
  • Enter the DHCP **Code** in the Code box.  
  • Select the DHCP type from the **Type** list.  
  • Select the DHCP subtype from the **SubType** list.  
  • Enter the DHCP value in the **Value** box.  
  • Click **OK**.  
  • To remove a DHCP option, select the option in the Option box, and click **Remove**. |
| Option-82              |                                                                           |                                                                              |
| Circuit Identifier     | Identifies the circuit (interface or VLAN or both) on the switch on which the request was received. | Type the circuit identifier.                                                 |
| Ranges                 | Specifies the circuit identifier range.                                   | Type the range for the circuit identifier.                                   |
| Remote Identifier      | By default, the remote ID is the MAC address of the switch                | Type the remote identifier.                                                 |
| Ranges                 | Specifies the remote identifier range.                                    | Type the range for the remote identifier.                                    |
| Address Range          |                                                                           |                                                                              |
| Range Name             | Specifies the name of the range.                                          | Click **Add**. The Add Address Range pop-up window is displayed:  
  • Type the range name in the **Range Name** box. |
| Address Range          |                                                                           |                                                                              |
| Address Range (Low)    | Specifies the lowest address in the IP address pool range.                | Type an IP address that is part of the subnet specified in DHCP Subnet       |
Table 5: DHCP Service Configuration Pages Summary for EX4300 Switches (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address Range (High)</td>
<td>Specifies the highest address in the IP address pool range.</td>
<td>Type an IP address that is part of the subnet specified in DHCP Subnet. This address must be greater than the address specified in Address Range (Low).</td>
</tr>
<tr>
<td>Static Bindings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host Name</td>
<td>Specifies the name of the client used in DHCP messages exchanged between the server and the client. The name must be unique to the client within the subnet on which the client resides.</td>
<td>Type a client hostname.</td>
</tr>
<tr>
<td>MAC Address</td>
<td>Specifies the MAC address of the client to be permanently assigned a static IP address.</td>
<td>Type the hexadecimal MAC address of the client.</td>
</tr>
<tr>
<td>Fixed IP Address</td>
<td>Specifies the IP address of the client.</td>
<td>Type the IP address.</td>
</tr>
<tr>
<td>Global Settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duplicate clients on interface</td>
<td>Specifies the 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.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Pool Match Order</td>
<td>Specifies 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.</td>
<td>Select the pool match order.</td>
</tr>
<tr>
<td>Authentication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Password</td>
<td>Specifies the password that is sent to the external AAA authentication server for subscriber authentication.</td>
<td>Type the password.</td>
</tr>
<tr>
<td>Username-include</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Type</td>
<td>Specifies the circuit type that is linked with the username.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Interface Name</td>
<td>Name of the interface.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Mac Address</td>
<td>Specifies the MAC address of the client PDU that is linked with the username during the subscriber authentication process.</td>
<td>To enable this option, select the check box.</td>
</tr>
</tbody>
</table>
### Table 5: DHCP Service Configuration Pages Summary for EX4300 Switches (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Function</th>
<th>Your Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical System Name</td>
<td>Specifies that the logical system name that is linked with the username during the subscriber authentication process.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Option-60</td>
<td>Specifies the payload of Option 60 (Vendor Class Identifier) from the client PDU be linked with the username during the subscriber authentication process.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Routing Instance Name</td>
<td>Specifies the routing instance name that is linked with the username during the subscriber authentication process.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Option-82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Identifier</td>
<td>Specifies the name of the client used by the DHCP server to index its database of address bindings. The name must be unique to the client within the subnet on which the client resides.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Remote Identifier</td>
<td>Specifies the remote ID option in the client.</td>
<td>To enable this option, select the check box.</td>
</tr>
<tr>
<td>Domain Name</td>
<td>Specifies the domain name that clients must use to resolve hostnames.</td>
<td>Type the domain name.</td>
</tr>
<tr>
<td>User Prefix</td>
<td>Specifies the prefix to the username as defined by the user.</td>
<td>Type the prefix.</td>
</tr>
<tr>
<td>Delimiter</td>
<td>Specifies a character that separates components that make up the username.</td>
<td>Type the delimiter.</td>
</tr>
</tbody>
</table>

**Related Documentation**

- Understanding DHCP Services for Switches on page 3
- Monitoring DHCP Services

### Configuring a Switch as a DHCP Server (CLI Procedure)

**NOTE:** This topic applies to Junos OS for EX Series switches and QFX Series switches with support for the Enhanced Layer 2 Software (ELS) configuration style. If your switch runs software that does not support ELS, see Configuring a DHCP Server on Switches (CLI Procedure). For ELS details, see Getting Started with Enhanced Layer 2 Software.

A Dynamic Host Configuration Protocol (DHCP) server provides a framework to pass configuration information to client hosts on a TCP/IP network. A switch acting as a DHCP
server can dynamically allocate IP addresses and other configuration parameters, minimizing the overhead that is required to add clients to the network.

A DHCP configuration consists of two components—an optional reconfiguration of default settings on DHCP clients and the configuration of a DHCP server. This topic covers configuration of the switch as a local DHCP server using DHCP for IPv4 (DHCPv4). For information about DHCPv6 local server, see “DHCPv6 Local Server Overview” on page 40.

This topic describes the following task:

1. **Configuring the Switch as a Local DHCP Server on page 15**

**Configuring the Switch as a Local DHCP Server**

To configure a switch as a local DHCP server, you must configure a DHCP address pool and indicate IP addresses for the pool. The switch, operating as the DHCP server, dynamically distributes the IP addresses from this pool. The switch can dynamically assign additional configuration parameters, such as default gateway, to provide the client with information about the network.

Multiple address pools can be configured for a DHCP server. DHCP maintains the state information about all configured pools. Clients are assigned addresses from pools with subnets that match the interface on which the DHCPDISCOVER packet sent by the client is received on the server. When more than one pool exists on the same interface, addresses are assigned on a rotating basis from all available pools.

You must ensure that you do not assign addresses that are already in use in the network to the address pools. The DHCP server does not check whether the addresses are already in use in the network before it assigns them to clients.

1. Configure a Layer 3 interface with an IP address on which the DHCP server will be reachable:

   ```
   [edit]
   user@switch# set interfaces interface-name unit unit-number family family address address/prefix-length
   user@switch# set vlans vlan-name vlan-id vlan-id
   user@switch# set vlans vlan-name l3-interface irb-name
   user@switch# set interfaces irb-name l3-interface irb-name family family address address/prefix-length
   ```

   For example:

   ```
   [edit]
   user@switch# set interfaces ge-0/0/1 unit 0 family inet address 192.0.2.1/24
   user@switch# set vlans server vlan-id 301
   user@switch# set vlans server l3-interface irb.301
   user@switch# set interfaces irb.301 family inet address 192.0.2.2/24
   ```

2. Configure the DHCP server for the Layer 3 interface:

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

```
[edit]
user@switch# set system services dhcp-local-server group server1 interface ge-0/0/1
user@switch# set system services dhcp-local-server group server1 interface irb.301
```

3. Create an address pool for IPv4 addresses that can be assigned to clients. The addresses in the pool must be on the subnet in which the DHCP clients reside. Do not include addresses that are already in use on the network.

```
[edit]
user@switch# set access address-assignment pool pool-name family family network address/prefix-length
```

For example:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet network 198.51.100.0/24
```

4. (Optional) Define a range of addresses in the address-assignment pool. The range is a subset of addresses within the pool that can be assigned to clients. If no range is specified, then all addresses within the pool are available for assignment. Configure the name of the range and the lower and upper boundaries of the addresses in the range:

```
[edit]
user@switch# set access address-assignment pool pool-name family family range range-name low low-IP-address
user@switch# set access address-assignment pool pool-name family family range range-name high high-IP-address
```

For example:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet range range1 low 198.51.100.1
user@switch# set access address-assignment pool pool1 family inet range range1 high 198.51.100.2
```

5. (Optional) Configure one or more routers as the default gateway on the client’s subnet:

```
[edit]
user@switch# set access address-assignment pool pool-name family family dhcp-attributes router gateway-ip-address
```

For example:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet dhcp-attributes router 198.1.1.254
```

6. (Optional) Configure the IP address that is used as the source address for the DHCP server in messages exchanged with the client. Clients use this information to distinguish between lease offers.
For example:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet dhcp-attributes
    server-identifier 198.51.100.254
```

7. (Optional) Specify the maximum time period, in seconds, that a client holds the lease for an assigned IP address if the client does not renew the lease:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet dhcp-attributes
    maximum-lease-time seconds
```

For example:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet dhcp-attributes
    maximum-lease-time 43,200
```

8. (Optional) Specify user-defined options to be included in DHCP packets:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet dhcp-attributes
    option option-id-number option-type option-value
```

For example:

```
[edit]
user@switch# set access address-assignment pool pool1 family inet dhcp-attributes
    option 98 string test98
```

**Related Documentation**
- Configuring a DHCP Client (CLI Procedure) on page 17
- Configuring a DHCP SIP Server (CLI Procedure) on page 18

## Configuring a DHCP Client (CLI Procedure)

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

DHCP configuration consists of two components, configuration of DHCP clients and configuration of a DHCP server. Client configuration determines how clients send a message requesting an IP address, whereas a DHCP server configuration enables the server to send an IP address configuration back to the client. This topic describes configuring a DHCP client. For directions for configuring a DHCP server, see Configuring a DHCP Server on Switches (CLI Procedure) or “Configuring a DHCP Server on Switches (CLI Procedure)” on page 14.
You can change DHCP client configurations from the switch, using client identifiers to indicate which clients you want to configure.

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

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

The options that you can configure are listed in Table 6 on page 18. Replace the variable `configuration-statement` with one or more of the statements listed in this table. If you do not explicitly configure these options, the switch uses default values for them.

### Table 6: DHCP Client Settings

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

### Related Documentation

- Configuring a DHCP Server on Switches (CLI Procedure)
- Understanding DHCP Services for Switches on page 3

### Configuring a DHCP SIP Server (CLI Procedure)

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

To configure a SIP server using the `address` option:
[edit system services dhcp]
user@switch# set sip-server address

For example, to configure one address:

[edit system services dhcp]
user@switch set sip-server 192.168.0.11

To configure a SIP server using the name option:

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

For example, to configure a name:

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

Related Documentation
• Configuring a DHCP Client (CLI Procedure) on page 17
• Understanding DHCP Services for Switches on page 3
CHAPTER 2

DHCP Local Server

- Extended DHCP Local Server Overview on page 22
- Example: Minimum Extended DHCP Local Server Configuration on page 27
- Overriding Default DHCP Local Server Configuration Settings on page 28
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
- Configuring a Token for DHCP Local Server Authentication on page 31
- Centrally Configured Opaque DHCP Options on page 32
- Port Number Requirements for DHCP Firewall Filters on page 36
- Verifying and Managing DHCP Local Server Configuration on page 37
Extended DHCP Local Server Overview
Junos OS includes an extended DHCP local server that enhances traditional DHCP server operation by providing additional address assignment and client configuration functionality and flexibility in a subscriber-aware environment. The extended DHCP local server enables service providers to take advantage of external address-assignment pools and integrated RADIUS-based configuration capabilities in addition to the continued support of traditional local address pools. The address-assignment pools are considered external because they are external to the DHCP local server. The pools are managed independently of the DHCP local server, and can be shared by different client applications, such as DHCP or PPPoE access. Table 7 on page 23 provides a comparison of the extended DHCP local server and a traditional DHCP local server.

The extended DHCP local server provides an IP address and other configuration information in response to a client request. The 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 DHCP client authentication. You can configure the dynamic profile and authentication support on a global basis or for a specific group of interfaces.

Table 7: Comparing the Extended DHCP Local Server to the Traditional DHCP Local Server

<table>
<thead>
<tr>
<th>Feature</th>
<th>Extended DHCP Local Server</th>
<th>Traditional DHCP Local Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local address pools</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>External, centrally-managed address pools</td>
<td>X</td>
<td>–</td>
</tr>
<tr>
<td>Local configuration</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>External configuration using information from address-assignment pools or RADIUS servers</td>
<td>X</td>
<td>–</td>
</tr>
<tr>
<td>Dynamic-profile attachment</td>
<td>X</td>
<td>–</td>
</tr>
<tr>
<td>RADIUS-based subscriber authentication, and configuration using RADIUS attributes and Juniper Networks VSAs</td>
<td>X</td>
<td>–</td>
</tr>
<tr>
<td>IPv6 client support</td>
<td>X</td>
<td>–</td>
</tr>
<tr>
<td>Default minimum client configuration</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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.
NOTE: If you delete the DHCP server configuration, DHCP server bindings might still remain. To ensure that DHCP bindings are removed, issue the `clear dhcp server binding` command before you delete the DHCP server configuration.

This overview covers:

- Interaction Among the DHCP Client, Extended DHCP Local Server, and Address-Assignment Pools on page 24
- Providing DHCP Client Configuration Information on page 25
- Minimal Configuration for Clients on page 26
- DHCP Local Server and Address-Assignment Pools on page 26

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 you are using a router or a switch. However, there are some differences in the details of usage.

- On routers—in a typical carrier edge network configuration, the DHCP client is on the subscriber's computer or customer premises equipment (CPE), 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 (such as, DNS server address), 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 might need to configure the local address-assignment pool to provide the configuration information, such as DNS server, 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 8 on page 25 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 8: Information in Authentication Grant

<table>
<thead>
<tr>
<th>Attribute Number</th>
<th>Attribute Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADIUS attribute 8</td>
<td>Framed-IP-Address</td>
<td>Client IP address</td>
</tr>
<tr>
<td>RADIUS attribute 9</td>
<td>Framed-IP-Netmask</td>
<td>Subnet mask for client IP address (DHCP option 1)</td>
</tr>
<tr>
<td>Juniper Networks VSA 26-4</td>
<td>Primary-DNS</td>
<td>Primary domain server (DHCP option 6)</td>
</tr>
<tr>
<td>Juniper Networks VSA 26-5</td>
<td>Secondary-DNS</td>
<td>Secondary domain server (DHCP option 6)</td>
</tr>
<tr>
<td>Juniper Networks VSA 26-6</td>
<td>Primary-WINS</td>
<td>Primary WINS server (DHCP option 44)</td>
</tr>
<tr>
<td>Juniper Networks VSA 26-7</td>
<td>Secondary-WINS</td>
<td>Secondary WINS server (DHCP option 44)</td>
</tr>
<tr>
<td>RADIUS attribute 27</td>
<td>Session-Timeout</td>
<td>Lease time</td>
</tr>
</tbody>
</table>
Table 8: Information in Authentication Grant (continued)

<table>
<thead>
<tr>
<th>Attribute Number</th>
<th>Attribute Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADIUS attribute 88</td>
<td>Framed-Pool</td>
<td>Address assignment pool name</td>
</tr>
</tbody>
</table>

| 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 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 external address-assignment pools (external to the DHCP local server). The external address-assignment pools are managed by the **authd** process, independently of the DHCP local server, and 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.
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.

Related Documentation

- Address-Assignment Pools Overview on page 121
- Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 122
- Dynamic Profile Attachment to DHCP Subscriber Interfaces Overview
- Using External AAA Authentication Services with DHCP on page 101
- Assign a Specific IP Address to a Client Using DHCP Option 50 and DHCPv6 IA_NA Option on page 128
- Graceful Routing Engine Switchover for DHCP
- High Availability Using Unified ISSU in the PPP Access Network
- Tracing Extended DHCP Operations
- Verifying and Managing DHCP Local Server Configuration on page 37
- Example: Minimum Extended DHCP Local Server Configuration on page 27
- Example: Extended DHCP Local Server Configuration with Optional Pool Matching on page 123
- Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine

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.
NOTE: If you delete the DHCP server configuration, DHCP server bindings might still remain. To ensure that DHCP bindings are removed, issue the clear dhcp server binding command before you delete the DHCP server configuration.

Related Documentation

- Extended DHCP Local Server Overview on page 22

Overriding Default DHCP Local Server Configuration Settings

Subscriber management enables you to override certain default DHCP local server configuration settings. You can override the 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 local server configuration options, include the overrides statement and its subordinate statements at the [edit system services dhcp-local-server] 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] 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 interface-name] hierarchy level.

- To configure overrides for DHCPv6 local server at the global level, group level, or per-interface, use the corresponding statements at the [edit system services dhcp-local-server dhcpv6] hierarchy level.
To override default DHCP local server configuration settings:

1. (DHCPv4 and DHCPv6) Specify that you want to configure override options.
   - DHCPv4 overrides.
     Global override:
     ```
     [edit system services dhcp-local-server]
     user@host# edit overrides
     ```
     Grouplevel override:
     ```
     [edit system services dhcp-local-server]
     user@host# edit group group-name overrides
     ```
     Per-interface override:
     ```
     [edit system services dhcp-local-server]
     user@host# edit group group-name overrides interface interface-name
     ```
   - DHCPv6 overrides.
     Global override:
     ```
     [edit system services dhcp-local-server dhcpv6]
     user@host# edit overrides
     ```
     Group level override:
     ```
     [edit system services dhcp-local-server dhcpv6]
     user@host# edit group group-name overrides
     ```
     Per-interface override:
     ```
     [edit system services dhcp-local-server dhcpv6]
     user@host# edit group group-name overrides interface interface-name
     ```

2. (Optional) Override the maximum number of DHCP clients allowed per interface.
   See "Specifying the Maximum Number of DHCP Clients Per Interface" on page 106.

3. (Optional) Configure DHCP client auto logout.
   See "Automatically Logging Out DHCP Clients" on page 127.

4. (Optional) Enable processing of information requests from clients.
   See "Enabling Processing of Client Information Requests" on page 108.

5. (Optional) Specify that DHCP NAK and FORCERENEW messages support option 82 information.
   See Configuring DHCP Message Exchange Between DHCP Server and Clients in Different VRFs.

6. (Optional, DHCPv6 only) Specify a delegated pool name to use for DHCPv6 multiple address assignment.
See Specifying the Delegated Address-Assignment Pool to Be Used for DHCPv6 Prefix Delegation.

7. (Optional, DHCPv6 only) Enable DHCPv6 rapid commit support.
   See “Enabling DHCPv6 Rapid Commit Support” on page 41.

8. (Optional, DHCPv6 only) Specify that DHCPv6 local server return DNS server addresses as IA_NA or IA_PD suboptions rather than as a global DHCPv6 option.
   See Overriding How the DNS Server Address Is Returned in a DHCPv6 Multiple Address Environment.

9. (Optional, DHCPv6 only) Automatically log out existing client when new client solicits on same interface.
   See Automatically Logging Out DHCPv6 Clients.

10. (Optional) Specify that when the DHCP or DHCPv6 local server receives a Discover or Solicit message that has a client ID that matches the existing client entry, the local server deletes the existing client entry.
    See DHCP Behavior When Renegotiating While in Bound State.

11. (Optional, DHCPv4 and DHCPv6) Specify that a short lease be sent to the client.
    See Configuring DHCP Asymmetric Leasing.

12. (Optional, DHCPv4 and DHCPv6) Specify DHCP attributes globally or for groups.
    See Configuring DHCP Attributes Outside Address Assignment Pools.

13. (Optional) Delete DHCP override settings.
    See “Deleting DHCP Local Server and DHCP Relay Override Settings” on page 30.

Related Documentation
- Configuring Group-Specific DHCP Local Server Options on page 91
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30

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 `interface-client-limit` setting for a group named `marin20`:

```
[edit system services dhcp-local-server]
user@host# delete group marin20 overrides interface-client-limit
```

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
```

### 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 8yslu9E32K8r
  ```

  For DHCPv6:

  ```
  [edit system services dhcp-local-server dhcpv6 reconfigure]
  user@host# set token 8yslu9E32K8r
  ```

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

- Overriding Default DHCP Local Server Configuration Settings on page 28
- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46
- Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
- `token` on page 299
Centrally Configured Opaque DHCP Options
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.
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 9 on page 36 shows the DHCP options that you must not centrally configure on the RADIUS server.
### Table 9: Unsupported Opaque DHCP Options

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

### Related Documentation

- [Monitoring DHCP Options Configured on RADIUS Servers](#)

## Port Number Requirements for DHCP Firewall Filters

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

This requirement applies to both DHCP local server and DHCP relay, but it applies only when DHCP is provided by the jdhcpd process. MX Series routers 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 Routing Policies, Firewall Filters, and Traffic Policers Feature Guide.

Related Documentation

- Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine
- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46
- Understanding Dynamic Firewall Filters

Verifying and Managing DHCP Local Server Configuration

Purpose

View or clear information about client address bindings and statistics for the extended DHCP local server.

NOTE: If you delete the DHCP server configuration, DHCP server bindings might still remain. To ensure that DHCP bindings are removed, issue the `clear dhcp server binding` command before you delete the DHCP server configuration.

Action

- To display the address bindings in the client table on the extended DHCP local server:
  ```
  user@host> show dhcp server binding routing-instance customer routing instance
  ```
- To display extended DHCP local server statistics:
  ```
  user@host> show dhcp server statistics routing-instance customer routing instance
  ```
- 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 routing-instance customer routing instance
  ```
- To clear all extended DHCP local server statistics:
  ```
  user@host> clear dhcp server statistics routing-instance customer routing instance
  ```

Related Documentation

- CLI Explorer
CHAPTER 3

DHCPv6 Local Server

- DHCPv6 Local Server Overview on page 40
- Enabling DHCPv6 Rapid Commit Support on page 41
- Specifying the Delegated Address Pool for IPv6 Prefix Assignment on page 42
- Preventing Binding of Clients That Do Not Support Reconfigure Messages on page 42
- Verifying and Managing DHCPv6 Local Server Configuration on page 43
**DHCPv6 Local Server Overview**

The DHCPv6 local server is compatible with the DHCP local server and the 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 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

When a DHCPv6 client logs in, the DHCPv6 local server can optionally use 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.

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.

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

Based on the attributes that the DHCPv6 local server provides, RADIUS returns the information listed in Table 10 on page 40 to configure the client:

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

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.
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 22
- Using External AAA Authentication Services with DHCP on page 101
- Assign a Specific IP Address to a Client Using DHCP Option 50 and DHCPv6 IA_NA Option on page 128
- Configuring the DUlD Type Supported by DHCPv6 Servers
- Verifying and Managing DHCPv6 Local Server Configuration on page 43
- Example: Extended DHCPv6 Local Server Configuration

### Enabling DHCPv6 Rapid Commit Support

You can configure the DHCPv6 local server to support the DHCPv6 Rapid Commit option (DHCPv6 option 14). When rapid commit is enabled, 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 the `overrides` 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 28
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
- Extended DHCP Local Server Overview on page 22
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 28
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46

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.
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 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 Dynamic Client Reconfiguration of Extended Local Server Clients on page 114

### 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**
- CLI Explorer
CHAPTER 4

DHCP Relay Agent

- Extended DHCP Relay Agent Overview on page 46
- Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 49
- Example: Minimum DHCP Relay Agent Configuration on page 50
- DHCP Relay Proxy Overview on page 51
- Enabling DHCP Relay Proxy Mode on page 52
- Example: Configuring DHCP Relay Agent Selective Traffic Processing Based on DHCP Option Strings on page 53
- Using Layer 2 Unicast Transmission for DHCP Packets on page 58
- Sending Release Messages When Clients Are Deleted on page 58
- Disabling Automatic Binding of Stray DHCP Requests on page 59
- Using DHCP Relay Agent Option 82 Information on page 60
- Trusting Option 82 Information on page 67
- Overriding the Default DHCP Relay Configuration Settings on page 68
- Overriding Option 82 Information on page 71
- Changing the Gateway IP Address (giaddr) Field to the giaddr of the DHCP Relay Agent on page 72
- Replacing the DHCP Relay Request and Release Packet Source Address on page 72
- Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 72
- Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 77
- Configuring Named Server Groups on page 79
- Configuring Active Server Groups to Apply a Common DHCP Relay Agent Configuration to Named Server Groups on page 80
- Disabling DHCP Relay on page 80
- Verifying and Managing DHCP Relay Configuration on page 81
- Suppressing DHCP Access, Access-Internal, and Destination Routes on page 81
- Preventing DHCP from Installing Access, Access-Internal, and Destination Routes by Default on page 82
Extended DHCP Relay Agent Overview

You can configure extended DHCP relay options on the router or on the switch and enable the router (or switch) to function as a DHCP relay agent. A DHCP relay agent forwards DHCP request and reply packets between a DHCP client and a DHCP server.

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

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

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

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

NOTE: The extended DHCP relay agent options configured with the dhcp-relay statement are incompatible with the DHCP/BOOTP relay agent options configured with the bootp statement. As a result, you cannot enable both the extended DHCP relay agent and the DHCP/BOOTP relay agent on the router at the same time.

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

You can also configure the extended DHCP relay agent to support IPv6 clients. See “DHCPv6 Relay Agent Overview” on page 85 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.

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

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 differences 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 85
- 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 101
- DHCP Relay Proxy Overview on page 51
- Graceful Routing Engine Switchover for DHCP
- High Availability Using Unified ISSU in the PPP Access Network
- Verifying and Managing DHCP Relay Configuration on page 81
- Tracing Extended DHCP Operations
- Example: Minimum DHCP Relay Agent Configuration on page 50
- 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 53
- Example: Configuring DHCP and DHCPv6 Relay Agent Group-Level Selective Traffic Processing
- Example: Configuring a DHCP Firewall Filter to Protect the Routing Engine
Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure)

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

Before you begin:

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

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

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

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

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

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

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

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

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

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

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

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

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

   ```
   [edit forwarding-options dhcp-relay group group-name]
   user@switch# set server-group server-group-name
   user@switch# set overrides
   user@switch# set relay-option option-number 60
   ```
7. (Optional) Configure settings for a DHCP relay group interface that override the settings at the global and group levels, using these statements:

```c
[edit forwarding-options]
dhcp-relay {  
  server-group {  
    test 203.0.113.21;  
  }  
  active-server-group test;  
  group all {  
    interface fe-0/0/2.0;  
  }  
}
```

```
user@switch# exclude
user@switch# set overrides
user@switch# set trace
user@switch# set upto upto-interface-name
```

**Related Documentation**

- Configuring a DHCP Server on Switches (CLI Procedure)
- Configuring a DHCP Client (CLI Procedure) on page 17
- Understanding the Extended DHCP Relay Agent for EX Series Switches

**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:

```c
[edit forwarding-options]
dhcp-relay {  
  server-group {  
    test 203.0.113.21;  
  }  
  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 203.0.113.21. 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 46
DHCP Relay Proxy Overview

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

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

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

DHCP relay proxy provides the following benefits:

- DHCP server isolation and DoS protection—DHCP clients are unable to detect the DHCP servers, learn DHCP server addresses, or determine the number of servers that are providing DHCP support. Server isolation also provides denial-of-service (DoS) protection for the DHCP servers.

- Multiple lease offer selection—DHCP relay proxy receives lease offers from multiple DHCP servers and selects a single offer to send to the DHCP client, thereby reducing traffic in the network. Currently, the DHCP relay proxy selects the first offer received.

- Support for both numbered and unnumbered Ethernet interfaces—For DHCP clients connected through Ethernet interfaces, when the DHCP client obtains an address, the DHCP relay proxy adds an access internal host route specifying that interface as the outbound interface. The route is automatically removed when the lease time expires or when the client releases the address.

- Logical system support—DHCP relay proxy can be configured in a logical system, whereas a non-proxy mode DHCP relay cannot.

NOTE: 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 send 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 the 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 46
- Enabling DHCP Relay Proxy Mode on page 52
- Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 98

**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
   ```

---

### 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 53
- Overview on page 53
- Configuration on page 54
- Verification on page 56

### Requirements

This example uses the following hardware and software components:

- MX Series 3D Universal Edge Routers or 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 46.

- (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 89.

### 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 54
- Results on page 55

**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.

```plaintext
set forwarding-options dhcp-relay relay-option option-number 60
class default-action
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.
   
   ```plaintext
   [edit forwarding-options]
   user@host# edit dhcp-relay
   ```

2. Specify the DHCP option that DHCP relay agent uses to identify incoming client traffic.
   
   ```plaintext
   [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.
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 default-action drop

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-gold forward-only
           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 56

**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 46
- 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
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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68

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: 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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68

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:** Automatic binding of stray requests is enabled by default.

- 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.
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 overrides]
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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68

Using DHCP Relay Agent Option 82 Information

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

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

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

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

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

**NOTE:** The DHCPv6 relay agent provides similar Agent Circuit ID and Agent Remote ID support for DHCPv6 clients. For DHCPv6, subscriber management uses DHCPv6 option 18 to include the circuit ID in the packets that the relay agent sends to a DHCPv6 server, and option 37 to include the remote ID in the packets. See DHCPPv6 Relay Agent Options.

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

- Configuring Option 82 Information on page 61
- Including a Prefix in DHCP Options on page 63
- Including a Textual Description in DHCP Options on page 65

### Configuring Option 82 Information

You use the `relay-option-82` statement to configure the DHCP relay agent to insert option 82 information in DHCP packets that the relay agent receives from clients and forwards to a DHCP server. When you configure option 82, you can include one of the suboption statements to specify the type of information you want to include in the DHCP packets. If you configure option 82 without including one of the suboption statements, the Agent Circuit ID option is included by default. Use the `circuit-id` statement to include the Agent Circuit ID (suboption 1) in the packets, or the `remote-id` statement to include the Agent Remote ID (suboption 2).

You can optionally configure DHCP relay agent to include a prefix or the interface description as part of the suboption information. If you specify the `circuit-id` or `remote-id` statement without including any of the optional `prefix`, `use-interface-description`, `use-vlan-id`, `include-irb-and-l2`, or `no-vlan-interface-name` statements, the format of the Agent Circuit ID or Agent Remote ID information for Fast Ethernet (fe), Gigabit Ethernet (ge), and integrated routing and bridging (irb) interfaces is one of the following, depending on your network configuration:

- For Fast Ethernet or Gigabit Ethernet interfaces that do not use VLANs, stacked VLANs (S-VLANs), or bridge domains:
  
  \[(fe|ge)-fpc/pic/port.subunit\]

  **NOTE:** For remote systems, the `subunit` is required and is used to differentiate an interface.

- 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

**NOTE:** Integrated routing and bridging (IRB) provides simultaneous support for Layer 2 bridging and Layer 3 IP routing on the same interface. IRB enables you to route local packets to another routed interface or to another bridging domain that has a Layer 3 protocol configured.

The interface to bridge domain relationship might be implicit (the interface is mapped to the bridge domain by the system based on the VLAN tag) or explicit (the interface is mapped to the bridge domain by configuring it in the bridge domain definition). For the explicit case, tagging might not be relevant for the mapping.

In the case of an IRB interface, the format displays the Layer 2 interface instead of the IRB interface along with the bridge domain name. For IRB interfaces (or other pseudo devices) the default format is as follows:

- IRB interfaces that use bridge domains but do not use VLANs or S-VLANs:
  (fe | ge)-fpc/pic/port.subunit:bridge-domain-name

- IRB interfaces that use VLANs:
  (fe | ge)-fpc/pic/port.subunit:vlan-name

To include the IRB interface name with the Layer 2 interface name, configure the include-irb-and-l2 statement. The format is as follows:

- IRB interfaces that use bridge domains but do not use VLANs or S-VLANs:
  (fe | ge)-fpc/pic/port:bridge-domain-name+irb.subunit

- IRB interfaces that use VLANs:
  (fe | ge)-fpc/pic/port:vlan-name+irb.subunit

To include only the IRB interface name without the Layer 2 interface and bridge domain or VLAN, configure the no-vlan-interface-name statement. The format is as follows:

  irb.subunit

To enable insertion of option 82 information:

1. Specify that you want to configure option 82 support.
   ```
   [edit forwarding-options dhcp-relay]
   user@host# edit relay-option-82
   ```

2. Configure the DHCP relay agent to insert the Agent Circuit ID suboption, the Agent Remote ID suboption, or both.
   - To insert the Agent Circuit ID:
[edit forwarding-options dhcp-relay relay-option-82]
user@host# set circuit-id

- To insert the Agent Remote ID:

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

- To insert both, configure both set commands.

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

See "Including a Prefix in DHCP Options" on page 63.

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

See "Including a Textual Description in DHCP Options" on page 65.

Including a Prefix in DHCP Options

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

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

The prefix is separated from the DHCP option information by a colon (:), and it 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 device configured with the host-name statement at the [edit system] hierarchy level.
- If you include the logical-system-name option, the DHCP relay agent uses the logical system name configured with the logical-system statement at the [edit logical-system] hierarchy level.
- If you include the routing-instance-name option, the DHCP relay agent uses the routing instance name configured with the routing-instance statement at the [edit routing-instances] hierarchy level or at the [edit logical-system logical-system-name routing-instances] hierarchy level.

If you include the hostname and either or both of the logical system name and the routing instance name in the prefix, the hostname is followed by a forward slash (/). If you include both the logical system name and the routing instance name in the prefix, these values are separated by a semicolon (;).
The following examples show several possible formats for the DHCP option information when you specify the prefix statement for Fast Ethernet (fe) or Gigabit Ethernet (ge) interfaces with S-VLANs.

- If you include only the hostname in the prefix for Fast Ethernet or Gigabit Ethernet interfaces with S-VLANs:
  
  `hostname:(fe|ge)-fpc/pic/port:svlan-id-vlan-id`

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

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

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

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

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

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

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

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

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

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

For Fast Ethernet or Gigabit Ethernet interfaces that use VLANs but not S-VLANs, only the `vlan-id` value appears in the DHCP option format.

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

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

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

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

   - To configure the Agent Circuit ID:
     
     `user@host# edit forwarding-options dhcp-relay relay-option-82 circuit-id`

   - To configure the Agent Remote ID:
     
     `user@host# edit forwarding-options dhcp-relay relay-option-82 remote-id`

3. Specify that the prefix be included in the option 82 information. In this example, the prefix includes the hostname and logical system name.
To include the prefix with the Agent Circuit ID:

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

To include the prefix with the Agent Remote ID:

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

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

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

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

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

   - To configure option 18:
     ```bash
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit relay-agent-interface-id
     ```
   
   - To configure option 37:
     ```bash
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit relay-agent-remote-id
     ```

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

   - To include the prefix with option 18:
     ```bash
     [edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
     user@host# set prefix host-name logical-system-name
     ```
   
   - To include the prefix with option 37:
     ```bash
     [edit forwarding-options dhcp-relay dhcpv6 relay-agent-remote-id]
     user@host# set prefix host-name logical-system-name
     ```

Including a Textual Description in DHCP Options

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

You can include the textual interface description in the following DHCP options:

- DHCPv4 option 82 Agent Circuit ID (suboption 1)
- DHCPv4 option 82 Agent Remote ID (suboption 2)
- DHCPv6 option 18 Relay Agent Interface-ID
- DHCPv6 option 37 Relay Agent Remote-ID
The textual description is configured separately, using the `description` statement at the `
[edit interfaces interface-name]` hierarchy level. If you specify that the textual description is used and no description is configured for the interface, DHCP relay defaults to using the Layer 2 interface name.

In the case of integrated routing and bridging (IRB) interfaces, the textual description of the Layer 2 interface is used instead of the textual description of the IRB interface. If there is no description configured, the Layer 2 logical interface name is used.

**NOTE:** For IRB interfaces, the option 82 field must be able to uniquely identify the incoming interface based on either the Agent Circuit ID or Agent Remote ID. You can modify the information in the textual interface description to match the raw IFD (physical interface without a subunit) name and configure the option 82 field to use the interface description.

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

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

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

1. Specify that you want to configure option 82 support.
   ```
   [edit forwarding-options dhcp-relay]
   user@host# edit relay-option-82
   ```

2. Configure DHCP relay agent to insert the Agent Circuit ID, Agent Remote ID, or both.
   ```
   [edit forwarding-options dhcp-relay relay-option-82]
   user@host# edit circuit-id
   ```

3. Specify that the textual description is included in the option 82 information. In this example, the option 82 information includes the description used for the device interface.
   ```
   [edit forwarding-options dhcp-relay relay-option-82 circuit-id]
   user@host# set use-interface-description device
   ```

(DHCPv6) To configure the DHCPv6 option 18 or option 37 to include the textual interface description:

1. Specify that you want to configure DHCPv6 relay agent support.
   ```
   [edit forwarding-options dhcp-relay]
   user@host# edit dhcpv6
   ```
2. Configure DHCPv6 relay agent to insert option 18 (Relay Agent Interface-ID), option 37 (Relay Agent Remote-ID), or both.

   - To configure option 18:
     
     ```
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit relay-agent-interface-id
     ```

   - To configure option 37:
     
     ```
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit relay-agent-remote-id
     ```

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

   - To include the textual description in option 18:
     
     ```
     [edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
     user@host# set use-interface-description device
     ```

   - To include the textual description in option 37:
     
     ```
     [edit forwarding-options dhcp-relay dhcpv6 relay-agent-remote-id]
     user@host# set use-interface-description device
     ```

**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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68
Overriding the Default DHCP Relay Configuration Settings

You can override the default DHCP relay 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 interface-name]` hierarchy level.
- To configure overrides for DHCPv6 relay at the global level, group level, or per-interface, use the corresponding statements at the `[edit forwarding-options dhcp-relay dhcpv6]` hierarchy level.
To override default DHCP relay agent configuration settings:

1. (DHCPv4 and DHCPv6) Specify that you want to configure override options.
   - DHCPv4 overrides.
     Global override:
     ```
     [edit forwarding-options dhcp-relay]
     user@host# edit overrides
     ```
     Group-level override:
     ```
     [edit forwarding-options dhcp-relay]
     user@host# edit group group-name overrides
     ```
     Per-interface override:
     ```
     [edit forwarding-options dhcp-relay]
     user@host# edit group group-name interface interface-name overrides
     ```
   - DHCPv6 overrides.
     Global override:
     ```
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit overrides
     ```
     Group-level override:
     ```
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit group group-name overrides
     ```
     Per-interface override:
     ```
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit group group-name interface interface-name overrides
     ```
2. (DHCPv4 only) Enable DHCP relay proxy mode.
   See “Enabling DHCP Relay Proxy Mode” on page 52.
3. (DHCPv4 only) Overwrite the giaddr in DHCP packets that the DHCP relay agent forwards.
   See “Changing the Gateway IP Address (giaddr) Field to the giaddr of the DHCP Relay Agent” on page 72.
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 72.
5. (DHCPv4 only) Override the DHCP relay agent information option (option 82) in DHCP packets.
   See “Overriding Option 82 Information” on page 71.
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 58.

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 67.

8. (DHCPv4 and DHCPv6) Override the maximum number of DHCP clients allowed per interface.
   See “Specifying the Maximum Number of DHCP Clients Per Interface” on page 106.

9. (DHCPv4 only) Configure client auto logout.
   See “DHCP Auto Logout Overview” on page 124.

10. (DHCPv4 and DHCPv6) Enable or disable support for DHCP snooped clients on interfaces.
    See “Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent” on page 72.

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

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 58.

13. (Optional) Specify that when the DHCP or DHCPv6 relay agent receives a Discover or Solicit message that has a client ID that matches the existing client entry, the relay agent deletes the existing client entry.
    See DHCP Behavior When Renegotiating While in Bound State.

14. (DHCPv6 only) Automatically log out existing client when new client solicits on same interface.
    See Automatically Logging Out DHCPv6 Clients.

15. (DHCPv4 only) Disable the DHCP relay agent on specific interfaces.
    See “Disabling DHCP Relay” on page 80.
16. (DHCPv4 and DHCPv6) Disable automatic binding of stray DHCP requests.
   See “Disabling Automatic Binding of Stray DHCP Requests” on page 59.

17. (DHCPv4 and DHCPv6) Assign a single-session DHCP dual-stack group to a specified
    group of subscribers. You must assign the group to both legs of the DHCP dual stack.
    See Configuring Single-Session DHCP Dual-Stack Support.

18. (Optional, DHCPv4 and DHCPv6) Specify that a short lease be sent to the client.
    See Configuring DHCP Asymmetric Leasing.

Related Documentation

- Configuring Group-Specific DHCP Relay Options on page 92
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30

### 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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68
Changing the Gateway IP Address (giaddr) Field to the giaddr of the DHCP Relay Agent

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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68

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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68

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 enable or disable snooping support for DHCP relay agent and, optionally, override the default snooping configuration.
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 77, and configures the forwarding action for snooped clients, which specifies whether 
DHCP relay agent forwards or drops snooped traffic.

You can enable or disable DHCP globally for DHCP relay, for a group of interfaces, or for 
a specific interface in a group.

By default, DHCP snooping is disabled for DHCP relay. 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:

```plaintext
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:
     ```plaintext
     [edit]
     user@host# edit forwarding-options dhcp-relay
     ```
   - For DHCPv6 relay agent:
     ```plaintext
     [edit]
     user@host# edit forwarding-options dhcp-relay dhcpv6
     ```

2. Specify the named group.
   - For DHCP relay agent:
     ```plaintext
     [edit forwarding-options dhcp-relay]
     user@host# edit group group-name
     ```
   - For DHCPv6 relay agent:
     ```plaintext
     [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:
     ```plaintext
     [edit forwarding-options dhcp-relay group group-name]
     user@host# edit overrides
     ```
   - For DHCPv6 relay agent:
     ```plaintext
     [edit forwarding-options dhcp-relay dhcpv6 group group-name]
     user@host# edit overrides
     ```

4. Enable or disable DHCP snooping support.
   - To enable DHCP snooping:
     ```plaintext
     [edit forwarding-options dhcp-relay group group-name overrides]
     user@host# set allow-snooped-clients
     ```
   - To disable DHCP snooping:
     ```plaintext
     [edit forwarding-options dhcp-relay dhcpv6 group group-name overrides]
     user@host# set allow-snooped-clients
     ```
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;

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 72, you enable or disable the DHCP relay snooping feature.

Table 11 on page 78 shows the action the router or switch takes on snooped packets when DHCP snooping is enabled by the allow-snooped-clients statement.

Table 12 on page 78 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 13 on page 78 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 11: Actions for DHCP Relay Agent Snooped Packets When DHCP Snooping Is Enabled

<table>
<thead>
<tr>
<th>forward-snooped-clients Configuration</th>
<th>Action on Configured Interfaces</th>
<th>Action on Non-Configured Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>forward-snooped-clients not configured</td>
<td>snooped packets result in subscriber (DHCP client) creation</td>
<td>dropped</td>
</tr>
<tr>
<td>all-interfaces</td>
<td>forwarded</td>
<td>forwarded</td>
</tr>
<tr>
<td>configured-interfaces</td>
<td>forwarded</td>
<td>dropped</td>
</tr>
<tr>
<td>non-configured-interfaces</td>
<td>snooped packets result in subscriber (DHCP client) creation</td>
<td>forwarded</td>
</tr>
</tbody>
</table>

Table 12: Actions for DHCP Relay Agent Snooped Packets When DHCP Snooping Is Disabled

<table>
<thead>
<tr>
<th>forward-snooped-clients Configuration</th>
<th>Action on Configured Interfaces</th>
<th>Action on Non-Configured Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>forward-snooped-clients not configured</td>
<td>dropped</td>
<td>dropped</td>
</tr>
<tr>
<td>all-interfaces</td>
<td>dropped</td>
<td>forwarded</td>
</tr>
<tr>
<td>configured-interfaces</td>
<td>dropped</td>
<td>dropped</td>
</tr>
<tr>
<td>non-configured-interfaces</td>
<td>dropped</td>
<td>forwarded</td>
</tr>
</tbody>
</table>

Table 13: Actions for Snooped BOOTREPLY Packets

<table>
<thead>
<tr>
<th>forward-snooped-clients Configuration</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>forward-snooped-clients not configured</td>
<td>snooped BOOTREPLY packets dropped if client is not found</td>
</tr>
<tr>
<td>forward-snooped-clients all configurations</td>
<td>snooped BOOTREPLY packets forwarded if client is not found</td>
</tr>
</tbody>
</table>

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]
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;
     }
   }
   ```

---

### Configuring Named 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**

- [DHCP Snooping Support](#)
- [Enabling and Disabling DHCP Snooped Packets Support for DHCP Relay Agent on page 72](#)
Configuring Active Server Groups to Apply a Common DHCP Relay Agent Configuration to Named 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.

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 46
- Grouping Interfaces with Common DHCP Configurations on page 89
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
Verifying and Managing DHCP Relay Configuration

**Purpose**
View or clear address bindings or statistics for extended DHCP relay agent clients:

**Action**

- To display the address bindings for extended DHCP relay agent clients:
  
  ```
  user@host> show dhcp relay binding routing-instance customer routing instance
  ```

- To display extended DHCP relay agent statistics:
  
  ```
  user@host> show dhcp relay statistics routing-instance customer routing instance
  ```

- To clear the binding state of DHCP relay agent clients:
  
  ```
  user@host> clear dhcp relay binding routing-instance customer routing instance
  ```

- To clear all extended DHCP relay agent statistics:
  
  ```
  user@host> clear dhcp relay statistics routing-instance customer routing instance
  ```

**Related Documentation**

- CLI Explorer

Suppressing DHCP Access, Access-Internal, and Destination Routes

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

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

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

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

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

NOTE: The no-arp statement is deprecated and the function is replaced by the route-suppression statement.

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

- For DHCP local server route suppression (for example, a global configuration):
  ```
  [edit system services dhcp-local-server]
  user@host# set route-suppression access-internal
  ```

- For DHCP relay (for example, a group-specific configuration):
  ```
  [edit forwarding-options dhcp-relay group southeast]
  user@host# set route-suppression destination
  ```

- For DHCPv6 local server (for example, a group-specific configuration):
  ```
  [edit system services dhcp-local-server group southern3]
  user@host# set dhcpv6 route-suppression access access-internal
  ```

- For DHCPv6 relay (for example, a global configuration):
  ```
  [edit forwarding-options dhcp-relay]
  user@host# set dhcpv6 route-suppression access
  ```
Related Documentation

- Suppressing DHCP Access, Access-Internal, and Destination Routes on page 81
- Extended DHCP Local Server Overview on page 22
- DHCPv6 Local Server Overview on page 40
- Extended DHCP Relay Agent Overview on page 46
- DHCPv6 Relay Agent Overview on page 85
CHAPTER 5

DHCPv6 Relay Agent

- DHCPv6 Relay Agent Overview on page 85
- Inserting DHCPv6 Interface-ID Option (Option 18) in DHCPv6 Packets on page 86
- Verifying and Managing DHCPv6 Relay Configuration on page 87

**DHCPv6 Relay Agent Overview**

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

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

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

The DHCPv6 relay agent is compatible with the DHCP local server and the DHCP relay agent, and can be enabled on the same interface as either the 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]`
Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets

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

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

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

---

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

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

1. Configure the DHCPv6 relay to include option 18.
   ```
   [edit forwarding-options dhcp-relay dhcpv6]
   user@host# edit relay-agent-interface-id
   ```

2. (Optional) Specify the prefix to include in option 18.
   ```
   [edit forwarding-options dhcp-relay dhcpv6 relay-agent-interface-id]
   user@host# set prefix prefix
   ```
3. (Optional) Specify that option 18 include the textual description of the interface. You can specify either the logical interface description or the device interface description.

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

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

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

## Related Documentation
- DHCPv6 Relay Agent Options
- Configuring DHCPv6 Relay Agent Options
- Including a Prefix in DHCP Options on page 63
- Including a Textual Description in DHCP Options on page 65

## 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:
  ```plaintext
  user@host> show dhcpv6 relay binding
  ```
- To display extended DHCPv6 relay agent statistics:
  ```plaintext
  user@host> show dhcpv6 relay statistics
  ```
- To clear the binding state of DHCPv6 relay agent clients:
  ```plaintext
  user@host> clear dhcpv6 relay binding
  ```
- To clear all extended DHCPv6 relay agent statistics:
  ```plaintext
  user@host> clear dhcpv6 relay statistics
  ```

## Related Documentation
- CLI Explorer
CHAPTER 6

Configuring Groups of DHCP Interfaces

- Grouping Interfaces with Common DHCP Configurations on page 89
- Guidelines for Configuring Interface Ranges for Groups of DHCP Interfaces on page 90
- Configuring Group-Specific DHCP Local Server Options on page 91
- Configuring Group-Specific DHCP Relay Options on page 92

Grouping Interfaces with Common DHCP Configurations

You use the group feature to group 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 \texttt{exclude} option to exclude a specific interface or a specified range of interfaces from the group. For example:

\begin{quote}
[\texttt{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
\end{quote}

\section*{Related Documentation}
- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46
- DHCPv6 Local Server Overview on page 40
- DHCPv6 Relay Agent Overview on page 85
- Configuring Group-Specific DHCP Local Server Options on page 91
- Configuring Group-Specific DHCP Relay Options on page 92
- Guidelines for Configuring Interface Ranges for Groups of DHCP Interfaces on page 90

\section*{Guidelines for Configuring Interface Ranges for Groups of DHCP Interfaces}

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:

\begin{quote}
user@host\# set interface \texttt{interface-name} upto \texttt{upto-interface-name}
\end{quote}

- The start subunit, \texttt{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, \texttt{interface ge-2/2/2} is treated as \texttt{interface ge-2/2/2.0}.

- Ranged entries contain the \texttt{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 \texttt{ge-1/0/0.10} is the start subunit for both.

\begin{quote}
interface ge-1/0/0.10 upto ge-1/0/0.30
interface ge-1/0/0.10
\end{quote}
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 uptoge-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 uptoge-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 uptoge-1/0/0.30
interface ge-1/0/0.20 uptoge-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 uptoge-1/0/0.30
interface ge-1/0/0.12 uptoge-1/0/0.15 exclude
interface ge-1/0/0.25 uptoge-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 uptoge-1/0/0.30
interface ge-1/0/0.15 uptoge-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 89

Configuring Group-Specific DHCP Local Server Options

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. 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 28.
Configuring Group-Specific DHCP Relay Options

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

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

- **active-server-group**—Configure an active server group to apply a common DHCP relay agent configuration to a named group of DHCP server addresses. For information, see “Configuring Active Server Groups to Apply a Common DHCP Relay Agent Configuration to Named Server Groups” on page 80.
- **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 95.
- **overrides**—Override the default configuration settings for the extended DHCP relay agent. For information, see “Overriding the Default DHCP Relay Configuration Settings” on page 68.
- **relay-agent-interface-id**—(DHCPv6 only) Insert the DHCPv6 Relay Agent Interface-ID option (option 18) in DHCPv6 packets destined for the DHCPv6 server.
- **relay-agent-remote-id**—(DHCPv6 only) Insert the DHCPv6 Relay Agent Remote-ID option (option 37) in DHCPv6 packets destined for the DHCPv6 server.
- **relay-option**—Configure selective processing, which uses DHCP options in client packets to identify and filter client traffic, and to specify the action DHCP relay agent takes with the traffic. For more information, see Using DHCP Option Information to Selectively Process DHCP Client Traffic.
- **relay-option-82**—(DHCPv4 only) Enable or disable the insertion of option 82 information in packets destined for a DHCP server. For information, see “Using DHCP Relay Agent Option 82 Information” on page 60.
- **service-profile**—Specify the default subscriber service, (or default profile) which is activated when the subscriber (or DHCP client) logs in and no other service is activated by a RADIUS server or a provisioning server. For more information, see Default Subscriber Service Overview.
Related Documentation

- Grouping Interfaces with Common DHCP Configurations on page 89
DHCP Liveness Detection

• DHCP Liveness Detection Overview on page 95
• Configuring Detection of DHCP Local Server Client Connectivity on page 96
• Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 98

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, and DHCP relay proxy are unable to quickly detect if any of them has lost connectivity with a subscriber or a DHCP client. Instead, they must rely on standard DHCP subscriber session or DHCP client session termination messages.

DHCP clients often do not send DHCP release messages before exiting the network. The discovery of their absence is dependent on existing DHCP lease time and release request mechanisms. These mechanisms are often 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:** Only BFD for DHCPv4 and DHCPv6 liveness detection is supported.

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 (after they are validated) even if BFD liveness detection is enabled on the router (or switch).

• When configured, DHCPv4 or DHCPv6 initiates liveness detection checks for 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. A configured failure action to clear the client binding is applied.

**Related Documentation**

• Configuring Detection of DHCP Local Server Client Connectivity on page 96

• Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 98

**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:** 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 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 95
- Extended DHCP Local Server Overview on page 22
- Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 98
- Example: Configuring Group Liveness Detection for DHCP Local Server Clients
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients

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.

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:** The only method supported for liveness detection is Bidirectional Forwarding Detection (BFD).
     ```
     [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 46
- DHCP Liveness Detection Overview on page 95
- Configuring Detection of DHCP Local Server Client Connectivity on page 96
- Example: Configuring Group Liveness Detection for DHCP Local Server Clients
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
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 102.

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

   See “Creating Unique Usernames for DHCP Clients” on page 103.

**Related Documentation**

- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46
- DHCPv6 Local Server Overview on page 40
- DHCPv6 Relay Agent Overview on page 85

**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:

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

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

```bash
[edit system services dhcp-local-server authentication]
user@host# set password $ABC123
```

### 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).

#### Related Documentation

- Extended DHCP Local Server Overview on page 22
- DHCPv6 Local Server Overview on page 40
- Extended DHCP Relay Agent Overview on page 46
- Using External AAA Authentication Services with DHCP on page 101
- *Special Requirements for Junos OS Plain-Text Passwords*

**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-description**—The description of the device (physical) interface or the logical interface.
• **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`.

For DHCPv6 clients, because the DHCPv6 packet format has no specific field for the client MAC address, the MAC address is derived from among several sources with the following priority:

- Client DUID Type 1 or Type 3.
- Option 79 (client link-layer address), if present.
- The packet source address if the client is directly connected.
- The link local address.

• **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 or DHCPv6 relay agent only)

• **relay-agent-remote-id**—The DHCPv6 Relay Agent Remote-ID option (option 37). (DHCPv6 local server or DHCPv6 relay agent only)

• **relay-agent-subscriber-id**—(On routers only) The DHCPv6 Relay Agent Subscriber-ID option (option 38). (DHCPv6 local server or DHCPv6 relay agent 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]mac-address[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
     ```
   - For DHCPv6 relay agent:
     ```
     [edit forwarding-options dhcp-relay dhcpv6]
     user@host# edit authentication
     ```

   **NOTE:** You can also configure authentication and usernames for groups at additional hierarchy levels. See `authentication (DHCP Local Server)` and `authentication (DHCP Relay Agent)`.

2. Specify that you want to include optional information in the username. (DHCP local server, DHCPv6 local server, DHCP relay agent, and DHCPv6 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, for example:
   ```
   [edit system services dhcp-local-server authentication username-include]
   user@host# set username-include circuit-type
   user@host# set username-include domain-name example.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:
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.)
NOTE: For DHCP local server and DHCP relay agent, you can use either the interface-client-limit statement or the client-discover-match incoming-interface statement to set a limit of one client per interface. The interface-client-limit statement with a value of 1 retains the existing client and rejects any new client connections. The client-discover-match incoming-interface statement deletes the existing client and allows a new client to connect.

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.

If you enable processing of information requests, 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.

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 do specify a local pool, then the local server requests that AAA selects and returns only the name of the relevant pool.
NOTE: PPP interfaces are not supported on EX Series switches.

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 28
- Enabling Processing of Client Information Requests on page 108

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 Applied When Clients Obtain an Address 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 28
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46
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 `cleardhcpv6serverbinding` command had been issued.

Manually Forcing the Local Server to Initiate the Reconfiguration Process

You can force the local server to initiate the reconfiguration process for clients by issuing the `request dhcpv4 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.

Action Taken for Events That Occur During a Reconfiguration

Events that take place while a reconfiguration is in process take precedence over the reconfiguration. Table 14 on page 113 lists the actions taken in response to several different events.

Table 14: Action Taken for Events That Occur During a Reconfiguration

<table>
<thead>
<tr>
<th>Event</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server receives a discover (DHCPv4) or solicit (DHCPv6) message from the client.</td>
<td>Server drops packet and deletes client.</td>
</tr>
<tr>
<td>Server receives a request, renew, rebind, or init-reboot message from the client.</td>
<td>DHCPv4—Server sends NAK message and deletes client.</td>
</tr>
<tr>
<td></td>
<td>DHCPv6—Server drops packet and deletes client. Server replies to renew message with lease time of zero (0).</td>
</tr>
<tr>
<td>Server receives a release or decline message from the client.</td>
<td>Server deletes client.</td>
</tr>
<tr>
<td>The client lease times out.</td>
<td>Server deletes client.</td>
</tr>
<tr>
<td>The <code>cleardhcp server binding</code> command is issued.</td>
<td>Server deletes client.</td>
</tr>
</tbody>
</table>
Table 14: Action Taken for Events That Occur During a Reconfiguration (continued)

<table>
<thead>
<tr>
<th>Event</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The request dhcp server reconfigure (DHCPv4) or request dhcpv6 server reconfigure (DHCPv6) command is issued.</td>
<td>Command is ignored.</td>
</tr>
<tr>
<td>GRES or DHCP restart occurs.</td>
<td>Reconfiguration process is halted.</td>
</tr>
</tbody>
</table>

Related Documentation

• Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114

Configuring Dynamic Client Reconfiguration of Extended Local Server Clients

The DHCP local server can initiate reconfiguration of its clients to avoid extended outages because of server configuration changes. 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.

Starting in Junos OS Release 14.1, you can modify the behavior of the process in which the DHCP local server initiates reconfiguration of its clients by including the appropriate configuration statements. You can provide the statements at the [editsystemservices dhcp-local-server reconfigure] hierarchy level for all DHCPv4 clients, and at the [editsystemservices 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 [editsystemservices dhcp-local-server group group-name reconfigure] hierarchy level for DHCPv4 clients, and at the [editsystemservices dhcp-local-server dhcpv6 group group-name reconfigure] hierarchy level for DHCPv6 clients.

To configure dynamic reconfiguration of DHCP clients:

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

   For DHCPv4:
   ```
   [editsystemservices dhcp-local-server]
   user@host# set reconfigure
   ```

   For DHCPv6:
   ```
   [editsystemservices dhcp-local-server dhcpv6]
   user@host# set reconfigure
   ```

2. (Optional) Enable dynamic reconfiguration for only the DHCP clients serviced by a group of interfaces.

   For DHCPv4:
   ```
   [editsystemservices 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 an authentication token. 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.

a. For all clients:
   For DHCPv4:
   
   [edit system services dhcp-local-server reconfigure]
   user@host# set token token-value

   For DHCPv6:

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

b. For only the DHCP clients serviced by a group of interfaces:
   For DHCPv4:

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

   For DHCPv6:

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

4. 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.

   For all DHCPv6 clients:

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

   For only the DHCPv6 clients serviced by a group of interfaces:

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

5. (Optional) Configure how the server attempts reconfiguration.

   See “Configuring Dynamic Reconfiguration Attempts for DHCP Clients” on page 117.

6. (Optional) Configure the response to a failed reconfiguration.
See “Configuring Deletion of the Client When Dynamic Reconfiguration Fails” on page 118.

7. **(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 119.

8. **(Optional)** Configure a token for rudimentary server authentication.

   See “Configuring a Token for DHCP Local Server Authentication” on page 31.

9. **(Optional)** Initiate reconfiguration of some or all client bindings.

   See “Requesting DHCP Local Server to Initiate Reconfiguration of Client Bindings” on page 116.

10. **(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 42.

### Release History Table

<table>
<thead>
<tr>
<th>Release</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1</td>
<td>Starting in Junos OS Release 14.1, you can modify the behavior of the process in which the DHCP local server initiates reconfiguration of its clients by including the appropriate configuration statements.</td>
</tr>
</tbody>
</table>

### 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:db8:1111:2222::

- 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 00:00:5E:00:53:67

- 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 Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
- request dhcp server reconfigure on page 362

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 or reconfigure 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:

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

For DHCPv6:

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

2. Specify the interval between reconfiguration attempts.

For DHCPv4:

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

For DHCPv6:

```bash
[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 Dynamic Client Reconfiguration of Extended Local Server Clients on page 114

**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:

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

For DHCPv6:

```bash
[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.
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 Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
- clear-on-abort on page 158
- radius-disconnect on page 266
- trigger on page 307
CHAPTER 10

Managing IP Address Assignment

- Address-Assignment Pools Overview on page 121
- Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 122
- Example: Extended DHCP Local Server Configuration with Optional Pool Matching on page 123
- DHCP Auto Logout Overview on page 124
- How DHCP Relay Agent Uses Option 82 for Auto Logout on page 126
- Automatically Logging Out DHCP Clients on page 127
- Assign a Specific IP Address to a Client Using DHCP Option 50 and DHCPv6 IA_NA Option on page 128
- Multiple Address Assignment for DHCPv6 Clients on page 129

Address-Assignment Pools Overview

The address-assignment pool feature supports subscriber management and DHCP management functionality by enabling you to create centralized IPv4 and IPv6 address pools independently of the client applications that use the pools. The authd process manages the pools and the address allocation, whether the addresses come from local pools or from a RADIUS server. For example, multiple client applications, such as DHCP, can use the same 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 no addresses are found to be available in the specified (primary) address pool, the router or switch automatically proceeds to the linked (secondary) address pool to search for an available address to allocate.

The address-assignment pool hold-down feature enables you to specify that no additional address are allocated from an existing active address-assignment pool. This configuration gracefully transforms the active pool to an inactive state as the previously allocated addresses are returned to the pool. When the pool is inactive, you can safely perform maintenance on the pool without affecting any active subscribers.

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

**Related Documentation**
- Configuring Address-Assignment Pools
- Address-Assignment Pools Licensing Requirements
- Example: Configuring an Address-Assignment Pool

### 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 121
• Configuring Address-Assignment Pools
• Extended DHCP Local Server Overview on page 22
• Example: Extended DHCP Local Server Configuration with Optional Pool Matching on page 123

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 22
- Address-Assignment Pools Overview on page 121

**DHCP Auto Logout Overview**

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

- Auto Logout Overview on page 124
- How DHCP Identifies and Releases Clients on page 125
- Option 60 and Option 82 Requirements on page 126

**Auto Logout Overview**

Auto logout is supported for DHCP local server and DHCP relay agent. It improves the efficiency of DHCP IP address assignment by allowing IP addresses to be immediately released and returned to the address pool when DHCP clients are no longer using the addresses. DHCP can then assign the addresses to other clients. Without auto logout, an IP address is blocked for the entire lease period, and DHCP must wait until the address lease time expires before reusing the address.

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

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

How DHCP Identifies and Releases Clients

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

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

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

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

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

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

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

If the DHCP relay receives a Discover message from an existing client, the DHCP relay forwards the Discover message to the DHCP server. The DHCP relay preserves the binding if the client’s existing IP address is returned by the DHCP server. This behavior is not applicable if the proxy-mode override or client-discover-match functionality are enabled.
NOTE: If the DHCP relay agent is in snoop mode, DHCP relay releases the client but does not send a release packet to the DHCP server if the discover packet is for a passive client (a client added as a result of snooped packets) or if the discover packet is a snooped packet.

Option 60 and Option 82 Requirements

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

DHCP relay agent requires that the received discover packet contain DHCP option 60. DHCP relay determines the option 82 value based on the guidelines provided in “How DHCP Relay Agent Uses Option 82 for Auto Logout” on page 126.

Related Documentation

- Automatically Logging Out DHCP Clients on page 127
- How DHCP Relay Agent Uses Option 82 for Auto Logout on page 126
- Allowing Only One DHCP Client Per Interface
- Clearing DHCP Bindings for Subscriber Access

How DHCP Relay Agent Uses Option 82 for Auto Logout

Table 15 on page 126 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 15: DHCP Relay Agent Option 82 Value for Auto Logout

<table>
<thead>
<tr>
<th>DHCP Relay Configuration Settings</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP Relay Configured with Option 82</td>
<td>Discover Packet Contains Option 82</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Table 15: DHCP Relay Agent Option 82 Value for Auto Logout (continued)

<table>
<thead>
<tr>
<th>DHCP Relay Agent Configuration Settings</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP Relay Configured with Option 82</td>
<td>Use configured option 82</td>
</tr>
<tr>
<td>Discover Packet Contains Option 82</td>
<td></td>
</tr>
<tr>
<td>Override &quot;trust-option-82&quot;</td>
<td></td>
</tr>
<tr>
<td>Override &quot;always-write-option-82&quot;</td>
<td></td>
</tr>
<tr>
<td>giaddr in non-snooped packet</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Use configured option 82</td>
<td></td>
</tr>
<tr>
<td>Drop packet</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Non-zero</td>
</tr>
<tr>
<td>Use option 82 from packet</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Non-zero</td>
</tr>
<tr>
<td>Overwrite the configured option 82</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>–</td>
</tr>
<tr>
<td>Use option 82 from packet</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>–</td>
</tr>
<tr>
<td>Overwrite the configured option 82</td>
<td></td>
</tr>
</tbody>
</table>

### Related Documentation
- DHCP Auto Logout Overview on page 124
- Automatically Logging Out DHCP Clients on page 127

### Automatically Logging Out DHCP Clients

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

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

To configure DHCP client auto logout:

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

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

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

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

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

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

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

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

---

### Related Documentation

- DHCP Auto Logout Overview on page 124
- How DHCP Relay Agent Uses Option 82 for Auto Logout on page 126
- *Allowing Only One DHCP Client Per Interface*
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
- Extended DHCP Local Server Overview on page 22
- Extended DHCP Relay Agent Overview on page 46

---

### Assign a Specific IP Address to a Client Using DHCP Option 50 and DHCPv6 IA_NA Option

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

For a DHCPv6 local server, you can 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 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 when a customer premises equipment (CPE) device requires a host address and a delegated prefix.

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 switch creates a DHCP client entry and binds the entry to the assigned address. If both addresses are successfully allocated, the switch creates a single 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 DHCP management uses to assign IPv6 prefixes for DHCP clients.

Related Documentation
- Extended DHCP Local Server Overview on page 22
- DHCPv6 Local Server Overview on page 40
- Specifying the Delegated Address-Assignment Pool to Be Used for DHCPv6 Prefix Delegation
PART 2

Other System Services

- Configuring Packet Forwarding Options on page 133
CHAPTER 11

Configuring Packet Forwarding Options

- Configuring Port-based LAN Broadcast Packet Forwarding on page 133

Configuring Port-based LAN Broadcast Packet Forwarding

You can enable a router or switch to forward LAN broadcast traffic on custom UDP ports to specified servers by configuring port helpers with the \[edit forwarding-options helpers\] port configuration statement. Port helpers are also referred to as port forwarding or UDP broadcast packet forwarding services. When you configure a port helper, the router or switch listens for incoming UDP traffic for the configured port with destination Layer 2 MAC and Layer 3 IP broadcast addresses, and forwards the packets as unicast traffic to a configured server.

Port helpers forward the traffic for configured ports transparently, without considering the application layer protocols in the packets being forwarded. However, you cannot configure a port helper to forward traffic for standard ports used by services such as BOOTP, DNS and TFTP. These services have their own explicit packet forwarding helper configuration options (see \texttt{helpers} and \textit{Configuring DNS and TFTP Packet Forwarding}).

You can configure port helpers to listen for and forward broadcast traffic for a configured port using any of the following scopes:

- **Global scope**—Forward incoming broadcast traffic on the port to a configured destination server IP address.

  Configure a global port helper using only the \texttt{server} configuration option, without specifying a particular interface. The port helper listens for incoming traffic on any interfaces to forward to the configured server. For example:

  \begin{verbatim}
  set forwarding-options helpers port 1300 server 10.20.30.40
  \end{verbatim}

- **VLAN-specific scope**—Forward incoming broadcast traffic on the port from a configured VLAN to a configured destination server IP address.

  Configure a VLAN-specific port helper using the \texttt{interface} statement with an IRB interface name for a VLAN, and the \texttt{server} statement. The port helper listens for incoming traffic from interfaces in the VLAN to forward to the configured server. For example:

  \begin{verbatim}
  set forwarding-options helpers port 1064 interface irb.100 server 192.0.2.50
  \end{verbatim}
- Interface-specific scope—Forward incoming broadcast traffic on the port from a configured Layer 3 interface to a configured destination server IP address.

  Configure an interface-specific port helper using the `interface` statement with a Layer 3 interface name, and the `server` statement. The port helper listens for incoming traffic only from the configured interface to forward to the configured server. For example:

  ```
  set forwarding-options helpers port 1064 interface ge-0/0/3 server 192.0.2.50
  ```

  For any scope, optionally use the `description` statement to label or describe the configured forwarding service.

  In releases prior to Junos OS Release 17.2, you can configure only one destination server for a given port number. Starting in Junos OS Release 17.2R1, you can configure forwarding traffic to multiple servers for a given port in any port helper scope. To configure forwarding the traffic on a specified port to multiple destination servers, include multiple configuration items for the port and each server (or interface and server). For example, in the global scope:

  ```
  set forwarding-options helpers port 1300 server 10.20.30.4
  set forwarding-options helpers port 1300 server 10.20.30.5
  set forwarding-options helpers port 1300 server 10.20.30.6
  ```

  To temporarily disable listening on a configured port from a configured interface, include the `no-listen` option with the configured item, as follows:

  ```
  set forwarding-options helpers port <port-number> interface <interface-name> server <address>
  no-listen
  ```

  To remove a configured port helper service from a router or switch, delete the configured port number item, as follows:

  ```
  delete forwarding-options helpers port <port-number>
  ```

  If multiple servers are configured for a particular port, to remove any or all such forwarding services, you must delete each configured port and server item individually. For example:

  ```
  delete forwarding-options helpers port 1300 server 10.20.30.4
  delete forwarding-options helpers port 1300 server 10.20.30.5
  delete forwarding-options helpers port 1300 server 10.20.30.6
  ```

**Release History Table**

<table>
<thead>
<tr>
<th>Release</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.2R1</td>
<td>Starting in Junos OS Release 17.2R1, you can configure forwarding traffic to multiple servers for a given port in any port helper scope.</td>
</tr>
</tbody>
</table>

**Related Documentation**

- [port (Packet Forwarding) on page 332](#)
- [server (DNS, Port, and TFTP Service) on page 285](#)
- [interface (DNS, Port, and TFTP Packet Forwarding or Relay Agent) on page 330](#)
PART 3

Configuration Statements and Operational Commands

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- Configuration Statements (Forwarding Options) on page 325
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Configuration Statements (DHCP and DHCP Relay)

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- allow-snooped-clients on page 146
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- always-write-option-82 on page 148
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**access (Dynamic Access Routes)**

**Syntax**

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

**Hierarchy Level**

- `[edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options]`
- `[edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options rib routing-table-name]`
- `[edit dynamic-profiles profile-name routing-options]`

**Release Information**

Statement introduced in Junos OS Release 9.5.

**Description**

Dynamically configure access routes.

---

**NOTE:** Starting in Junos OS Release 15.1, we recommend that you use only access routes for framed route support. We recommend that you do not use access-internal routes. If you configure the access-internal statement in the dynamic profile, it is ignored. The subscriber’s address is stored in the session database entry before the dynamic profile installs the framed route, enabling the next-hop address to be resolved when it is not explicitly specified in the Framed-Route RADIUS attribute (22) or Framed-IPv6-Route attribute [99].

**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.

**Release History Table**

<table>
<thead>
<tr>
<th>Release</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1</td>
<td>Starting in Junos OS Release 15.1, we recommend that you use only access routes for framed route support.</td>
</tr>
</tbody>
</table>

**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 profile-name routing-instances $junos-routing-instance routing-options],
[edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options routing-options]
[edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options rib routing-table-name],
[edit dynamic-profiles routing-options]

Release Information

Statement introduced in Junos OS Release 9.5.

Description

(Releases earlier than Junos OS Release 15.1) 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.

NOTE: Starting in Junos OS Release 15.1, we recommend that you use only access routes for framed route support. We recommend that you do not use access-internal routes. If you configure the access-internal statement in the dynamic profile, it is ignored. The subscriber’s address is stored in the session database entry before the dynamic profile installs the framed route, enabling the next-hop address to be resolved when it is not explicitly specified in the Framed-Route RADIUS attribute (22) or Framed-IPv6-Route attribute [99].

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

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

Release History Table

<table>
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<tr>
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<tr>
<td>15.1</td>
<td>Starting in Junos OS Release 15.1, we recommend that you use only access routes for framed route support.</td>
</tr>
</tbody>
</table>
Related Documentation

- Configuring Dynamic Access-Internal Routes for DHCP Subscriber Management
- Configuring Dynamic Access-Internal Routes for PPP Subscriber Management
active-server-group

Syntax  
active-server-group server-group-name;

Hierarchy Level  
[edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit forwarding-options dhcp-relay group group-name],
[edit forwarding-options dhcp-relay group group-name dhcpv6],
[edit logical-systems logical-system-name forwarding-options dhcp-relay],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6],
[edit logical-systems logical-system-name forwarding-options group group-name],
[edit logical-systems logical-system-name forwarding-options group group-name dhcpv6],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name dhcpv6],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name dhcpv6],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name]

Release Information  
Statement introduced in Junos OS Release 8.3.
Support at the [edit... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description  
Apply a DHCP relay agent configuration to the named group of DHCP server addresses.
Use the statement at the [edit... dhcpv6] hierarchy levels to configure DHCPv6 support.
A group-specific configuration overrides a global option.

Options  
server-group-name—Name of the group of DHCP or DHCPv6 server addresses to which
the DHCP or DHCPv6 relay agent configuration applies.

Required Privilege Level  
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 46
• Configuring Active Server Groups to Apply a Common DHCP Relay Agent Configuration to Named Server Groups on page 80
• Configuring Group-Specific DHCP Relay Options on page 92
• dhcp-relay on page 174
allow-no-end-option (DHCP Relay Agent)

Syntax allow-no-end-option;

Hierarchy Level [edit forwarding-options dhcp-relay overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit forwarding-options dhcp-relay group group-name interface interface-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]


Description Enable a DHCP relay agent to process packets sent from clients without DHCP Option-255 (end-of-options).

The default behavior in Junos OS is to drop packets that do not include Option 255. To override this default behavior, configure the allow-no-end-option CLI statement at the [edit forwarding-options dhcp-relay overrides] hierarchy level.

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 46
• Overriding the Default DHCP Relay Configuration Settings on page 68
• DHCP Snooping Support
allow-snooped-clients

**Syntax**
```
allow-snooped-clients;
```

**Hierarchy Level**
- [edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name overrides],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name overrides],
- [edit forwarding-options dhcp-relay group group-name interface interface-name overrides],
- [edit forwarding-options dhcp-relay group group-name overrides],
- [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 10.2.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 12.1.

**Description**
Explicitly enable DHCP snooping support on the DHCP relay agent.

Use the statement at the [edit ... dhcpv6] hierarchy levels to explicitly enable snooping support on the router for DHCPv6 relay agent.

**Default**
DHCP snooping is disabled by default.

---

**NOTE:** On EX4300 and EX9200 switches, the allow-snooped-clients statement is enabled by default at the [edit forwarding-options dhcp-relay overrides] hierarchy level.

**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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68
- DHCP Snooping Support
- Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 77
always-write-giaddr

Syntax  always-write-giaddr;

Hierarchy Level  [edit forwarding-options dhcp-relay overrides],
                [edit forwarding-options dhcp-relay group group-name overrides],
                [edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
                [edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
                [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
                [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
                [edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
                [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
                [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

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

Description  Overwrite the gateway IP address (giaddr) of every DHCP packet with the giaddr of the DHCP relay agent before forwarding the packet to the DHCP server.

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

Related Documentation  •  Extended DHCP Relay Agent Overview on page 46
                      •  dhcp-relay on page 174
always-write-option-82

Syntax  always-write-option-82;

Hierarchy Level  [edit forwarding-options dhcp-relay overrides],
                 [edit forwarding-options dhcp-relay group group-name overrides],
                 [edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
                 [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
                 [edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
                 [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
                 [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

Release Information  Statement introduced in Junos OS Release 8.3.
                       Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  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:

- 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.

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 46
attempts (DHCP Local Server)

Syntax  attempts attempt-count;

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

Release Information  Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.

Description  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.

Options  attempt-count—Maximum number of attempts.

Range: 1 through 10
Default: 8

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

Related Documentation  • Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
authentication (DHCP Local Server)

Syntax

```plaintext
authentication {
    password password-string;
    username-include {
        circuit-type;
        client-id;
        delimiter delimiter-character;
        domain-name domain-name-string;
        interface-description (device-interface | logical-interface);
        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

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

Release Information

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

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.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

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

Related Documentation

• Using External AAA Authentication Services with DHCP on page 101
authentication (DHCP Relay Agent)

Syntax

```
authentication {
  password password-string;
  username-include {
    circuit-type;
    client-id;
    delimiter delimiter-character;
    domain-name domain-name-string;
    interface-description (device-interface | logical-interface);
    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],
[edit forwarding-options dhcp-relay dhcpv6],
[edit forwarding-options dhcp-relay dhcpv6 group group-name],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-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 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.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

Description

Configure the parameters the router sends to the external AAA server. A group configuration takes precedence over a global DHCP relay configuration. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

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

Related Documentation

- dhcp-relay on page 174
- Using External AAA Authentication Services with DHCP on page 101
**bfd**

**Syntax**
```
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;  
]
```

**Hierarchy Level**
- [edit system services dhcp-local-server liveness-detection method],
- [edit system services dhcp-local-server dhcpv6 liveness-detection method],
- [edit forwarding-options dhcp-relay liveness-detection method],
- [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method],
- [edit system services dhcp-local-server group group-name liveness-detection method],
- [edit system services dhcp-local-server dhcpv6 group group-name liveness-detection method],
- [edit forwarding-options dhcp-relay group group-name liveness-detection method],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection method]

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

**Description**
Configure Bidirectional Forwarding Detection (BFD) as the liveness detection method.

The remaining statements are explained separately. See CLI Explorer.

**Required Privilege**
- 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
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
### circuit-id (DHCP Relay Agent)

**Syntax**
```
circuit-id {
    include-irb-and-l2;
    include-l2-interface-for-irb;
    keep-incoming-circuit-id;
    no-vlan-interface-name;
    prefix prefix;
    use-interface-description (logical | device);
    use-vlan-id;
}
```

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

**Release Information**
Statement introduced in Junos OS Release 8.3.
Statement introduced in Junos OS Release 12.3 for EX Series switches.

**Description**
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, textual description, or VLAN tag.

**NOTE:** For Layer 3 interfaces, when you configure relay-option-82 only, the Agent Circuit ID is the default. If no VLAN tags are configured, then the default is the logical interface device (IFL) name. For integrated routing and bridging (IRB) interfaces, the default is the Layer 2 IFL name and bridge domain name.

The interface to bridge domain relationship may be implicit (the interface is mapped to the bridge domain by the system based on VLAN tag) or explicit (the interface is mapped to the bridge domain by configuring it in the bridge domain definition). For the explicit case, tagging might not be relevant for the mapping.
The format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces that do not use virtual LANs (VLANs), stacked VLANs (S-VLANs), or bridge domains is as follows:

(fe | ge)-fpc/pic/port.subunit

**NOTE:** For remote systems, the subunit is required and is used to differentiate an interface for remote systems.

The format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces that use VLANs is as follows:

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

The format of the Agent Circuit ID information for Fast Ethernet or Gigabit Ethernet interfaces that use S-VLANs is as follows:

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

In the case of an IRB interface, the format displays the Layer 2 interface instead of the IRB interface along with the bridge domain name. For IRB interfaces (or other pseudo devices) the default format is as follows:

- IRB interfaces that use bridge domains but do not use VLANs or S-VLANs:
  
  (fe | ge)-fpc/pic/port.subunit:bridge-domain-name

- IRB interfaces that use VLANs:

  (fe | ge)-fpc/pic/port.subunit:vlan-name

To include the IRB interface name with the Layer 2 interface name, configure the include-irb-and-l2 statement. The format is as follows:

- IRB interfaces that use bridge domains but do not use VLANs or S-VLANs:

  (fe | ge)-fpc/pic/port:bridge-domain-name+irb.subunit

- IRB interfaces that use VLANs:

  (fe | ge)-fpc/pic/port:vlan-name+irb.subunit

To include only the IRB interface name without the Layer 2 interface and bridge domain or VLAN, configure the no-vlan-interface-name statement. The format is as follows:

irb.subunit

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

- Using DHCP Relay Agent Option 82 Information on page 60
- Configuring Option 82 Information on page 61
circuit-type (DHCP Local Server)

Syntax  
circuit-type;

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

Release Information  
Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  
Specify that the circuit type is concatenated with the username during the subscriber authentication or client authentication process.

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 101

**circuit-type (DHCP Relay Agent)**

**Syntax**
circuit-type;

**Hierarchy Level**
[edit forwarding-options dhcp-relay authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],

[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include],
[edit forwarding-options dhcp-relay group group-name authentication username-include],
[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.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

**Description**
Specify that the circuit type 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.

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

**Related Documentation**
• Using External AAA Authentication Services with DHCP on page 101
• Creating Unique Usernames for DHCP Clients on page 103
clear-on-abort (DHCP Local Server)

**Syntax**
clear-on-abort;

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

**Release Information**
Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.

**Description**
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.

**Default**
Restores the original client configuration when reconfiguration fails.

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

**Related Documentation**
- Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
- Configuring Deletion of the Client When Dynamic Reconfiguration Fails on page 118
**client-discover-match (DHCP Local Server)**

**Syntax**
client-discover-match <option60-and-option82 | incoming-interface>;

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

**Release Information**
Statement introduced in Junos OS Release 9.4.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
incoming-interface option added in Junos OS Release 13.3.

**Description**
Configure the match criteria DHCP local server uses to uniquely identify DHCP subscribers or clients when primary identification fails. The options are mutually exclusive.

**Default**
By default, DHCP uses the option60-and-option82 option.

**Options**
- incoming-interface—(Optional) Allow only one client device to connect on the interface.
  If the client device changes, the router deletes the existing client binding and creates a binding for the newly connected device.

**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 22](#)
- [Overriding Default DHCP Local Server Configuration Settings on page 28](#)
- [DHCP Auto Logout Overview on page 124](#)
- [Allowing Only One DHCP Client Per Interface](#)
**client-id (DHCP Local Server)**

**Syntax**

```
client-id;
```

**Hierarchy Level**

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

**Release Information**

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

**Description**

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.

**Required Privilege Level**

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

**Related Documentation**

- [Creating Unique Usernames for DHCP Clients on page 103](#)
**client-id (DHCP Relay Agent)**

**Syntax**

```
client-id;
```

**Hierarchy Level**

- [edit forwarding-options dhcp-relay dhcpv6 authentication username-include],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 ...],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 ...],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 ...]

**Release Information**

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

**Description**

Specify that the client ID is concatenated with the username during the subscriber authentication or client authentication process.

**Required Privilege Level**

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

**Related Documentation**

- Using External AAA Authentication Services with DHCP on page 101
- Creating Unique Usernames for DHCP Clients on page 103
delegated-pool (DHCP Local Server)

Syntax  
delegated-pool pool-name;

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

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

Description  
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 delegated-pool statement.

Options  
pool-name—Name of the address-assignment pool.

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

Related Documentation  
- Specifying the Delegated Address-Assignment Pool to Be Used for DHCPv6 Prefix Delegation  
- Overriding Default DHCP Local Server Configuration Settings on page 28
**delimiter (DHCP Local Server)**

**Syntax**
```
delimiter delimiter-character;
```

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

**Release Information**
- Statement introduced in Junos OS Release 9.1.
- Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description**
Specify the character used as the delimiter between the concatenated components of the username.

**Options**
- `delimiter-character`—Character that separates components that make up the concatenated username. You cannot use the semicolon (:) as a delimiter.

**Default:** . (period)
NOTE: When you include the interface-description in the username, the delimiter must not be a character that is part of the interface description. For example, if the text description is configured as “Backbone connection/PHL01”, you cannot use the forward slash (/) as the 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 101
delimiter (DHCP Relay Agent)

**Syntax**

```plaintext
delimiter delimiter-character;
```

**Hierarchy Level**

- `[edit forwarding-options dhcp-relay authentication username-include]`
- `[edit forwarding-options dhcp-relay dhcpv6 authentication username-include]`
- `[edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include]`
- `[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include]`
- `[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 authentication username-include]`
- `[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include]`
- `[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 authentication username-include]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay dual-stack-group dual-stack-group-name group-group-name authentication username-include]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include]`

**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.
Support at the `[edit ... dual-stack-group dual-stack-group-name]` hierarchy level introduced in Junos OS Release 15.1.

**Description**

Specify the character used as the delimiter between the concatenated components of the username. Use the statement at the `[edit ... dhcpv6]` hierarchy levels to configure DHCPv6 support.

**Options**

`delimiter-character`—Character that separates components that make up the concatenated username. You cannot use the semicolon (`;`) as a delimiter.

**Default**

`.` (period)
**NOTE:** When you include the `interface-description` in the username, the delimiter must not be a character that is part of the interface description. For example, if the text description is configured as “Backbone connection/PHL01”, you cannot use the forward slash (/) as the delimiter.

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

**Related Documentation**
- Using External AAA Authentication Services with DHCP on page 101
- Creating Unique Usernames for DHCP Clients on page 103

---

**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. See CLI Explorer.

**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
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
dhcap (DHCP Client)

**Syntax**

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

**Hierarchy Level**

[edit interfaces interface-name unit logical-unit-number family inet]

**Release Information**

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

**Description**

Configure a DHCP client for an IPv4 interface.

The remaining statements are described separately.

**Required Privilege Level**

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

**Related Documentation**

- Configuring a DHCP Client (CLI Procedure) on page 17
dhcp-local-server

Syntax

dhcp-local-server {
  access-profile profile-name;
  authentication {
    password password-string;
    username-include {
      circuit-type;
      delimiter delimiter-character;
      domain-name domain-name-string;
      interface-description (device-interface | logical-interface);
      interface-name;
      logical-system-name;
      mac-address;
      option-60;
      option-82 <circuit-id> <remote-id>;
      routing-instance-name;
      user-prefix user-prefix-string;
    }
  }
}
dhcpv6 {
  access-profile profile-name;
  authentication {
  ...
  }
}
duplicate-clients incoming-interface;
group group-name {
  access-profile profile-name;
  authentication {
    ...
  }
}
interface interface-name {
  access-profile profile-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;
    }
  }
}


```plaintext
overrides {
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    interface-client-limit number;
    multi-address-embedded-option-response;
    process-inform {
        pool pool-name;
    }
    protocol-attributes attribute-set-name;
    rapid-commit;
}

service-profile dynamic-profile-name;
trace;
upto upto-interface-name;
}

overrides {
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    delegated-pool;
    interface-client-limit number;
    multi-address-embedded-option-response;
    process-inform {
        pool pool-name;
    }
    protocol-attributes attribute-set-name;
    rapid-commit;
}

route-suppression;
server-duid-type type;
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 {
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
```
delegated-pool;
include-option-82 {
  forcerenew;
  nak;
}
interface-client-limit number;
multi-address-embedded-option-response;
process-inform {
  pool pool-name;
}
protocol-attributes attribute-set-name;
rapid-commit;
}
reconfigure {
  attempts attempt-count;
  clear-on-abort;
  strict;
  support-option-pd-exclude;
  timeout timeout-value;
  token token-value;
  trigger {
    radius-disconnect;
  }
}
route-suppression;
service-profile dynamic-profile-name;
}
duplicate-clients-in-subnet (incoming-interface | option-82);
dynamic-profile profile-name <aggregate-clients (merge | replace) | use-primary primary-profile-name>;
forward-snoopedit-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 {
    asymmetric-lease-time seconds;
    client-discover-match (option60-and-option82 | incoming-interface);
    include-option-82 {
        forcerenew;
        nak;
    }
    interface-client-limit number;
    process-inform {
        pool pool-name;
    }
    protocol-attributes attribute-set-name;
}
service-profile dynamic-profile-name;
trace;
upto upto-interface-name;
}
overrides {
    asymmetric-lease-time seconds;
    client-discover-match (option60-and-option82 | incoming-interface);
    include-option-82 {
        forcerenew;
        nak;
    }
    interface-client-limit number;
    process-inform {
        pool pool-name;
    }
    protocol-attributes attribute-set-name;
}
requested-ip-network-match subnet-mask
route-suppression;
service-profile dynamic-profile-name;
}
liveness-detection {
    failure-action (clear-binding | clear-binding-if-interface-up | log-only);
    method {
        bfd {
            version (0 | 1 | automatic);
            minimum-interval milliseconds;
            minimum-receive-interval milliseconds;
            multiplier number;
            no-adaptation;
            transmit-interval {
                minimum-interval milliseconds;
                threshold milliseconds;
            }
            detection-time {
                threshold milliseconds;
            }
        }
        session-mode (automatic | multihop | singlehop);
holddown-interval milliseconds;
}
}
} overrides {
  asymmetric-lease-time seconds;
  client-discover-match <option60-and-option82 | incoming-interface>;
  interface-client-limit number;
  process-inform {
    pool pool-name;
  }
  protocol-attributes attribute-set-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;
  }
} requested-ip-network-match subnet-mask;
route-suppression;
on-demand-address-allocation;
protocol-master;
service-profile dynamic-profile-name;
}
Configure Dynamic Host Configuration Protocol (DHCP) local server options on the router or switch to 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.

The extended DHCP local server is incompatible with the DHCP server on J Series routers and, therefore, is not supported on J Series routers. Also, the DHCP local server and the DHCP/BOOTP relay server, which are configured under the [edit forwarding-options helpers] hierarchy level, cannot both be enabled on the router or switch at the same time. The extended DHCP local server is fully compatible with the extended DHCP relay feature.

The dhcpv6 stanza configures the router or switch to support Dynamic Host Configuration Protocol for IPv6 (DHCPv6). The DHCPv6 local server is fully compatible with the extended DHCP local server and the extended DHCP relay feature.

NOTE: When you configure the dhcp-local-server statement at the routing instance hierarchy level, you must use a routing instance type of virtual-router.

The remaining statements are explained separately. See CLI Explorer.

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

**Related Documentation**
- Extended DHCP Local Server Overview on page 22
- DHCPv6 Local Server Overview on page 40
dhcp-relay

Syntax

```
dhcp-relay {
    access-profile profile-name;
    active-server-group server-group-name;
    authentication {
        password password-string;
        username-include {
            circuit-type;
            delimiter delimiter-character;
            domain-name domain-name-string;
            interface-description (device-interface | logical-interface);
            interface-name;
            logical-system-name;
            mac-address;
            option-60;
            option-82 <circuit-id> <remote-id>;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    };
    bulk-leasequery {
        attempts number-of-attempts;
        timeout seconds;
        trigger automatic;
    }
}
```

dhcpv6 {

```
    access-profile profile-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;
        interface-description (device-interface | logical-interface);
        logical-system-name;
        relay-agent-interface-id;
        relay-agent-remote-id;
        relay-agent-subscriber-id;
        routing-instance-name;
        user-prefix user-prefix-string;
    }
}
```

bulk-leasequery {

```
    attempts number-of-attempts;
    timeout seconds;
    trigger automatic;
}
```

duplicate-clients incoming-interface;

```
dynamic-profile profile-name {
    aggregate-clients (merge | replace);
}
```
use-primary primary-profile-name;
}
forward-only {
  logical-system <current | default | logical-system-name>;
  routing-instance <current | default | routing-instance-name>;
}
forward-only-replies;
}
forward-snooped-clients (all-interfaces | configured-interfaces | non-configured-interfaces);
group group-name {
  access-profile profile-name;
  active-server-group server-group-name;
  authentication {
    ...
  }
  dual-stack-group dual-stack-group-name {
    access-profile profile-name;
    authentication {
      ...
      authentication-configuration
    }
    dynamic-profile profile-name {
      ...
      dynamic-profile-configuration
    }
    relay-agent-interface-id {
      ...
      relay-agent-interface-id-configuration
    }
    relay-agent-remote-id {
      ...
      relay-agent-remote-id-configuration
    }
    service-profile dynamic-profile-name;
  }
  dynamic-profile profile-name {
    ...
  }
}
forward-only {
  logical-system <current | default | logical-system-name>;
  routing-instance <current | default | routing-instance-name>;
}
interface interface-name {
  access-profile profile-name;
  dynamic-profile profile-name {
    ...
  }
}
exclude;
overrides {
  allow-snooped-clients;
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-negotiation-match incoming-interface;
  delay-authentication;
  delete-binding-on-renegotiation;
  dual-stack dual-stack-group-name;
  interface-client-limit number;
  no-allow-snooped-clients;
  no-bind-on-request;
relay-source interface-name;
send-release-on-delete;
}
service-profile dynamic-profile-name;
trace;
upto upto-interface-name;
}

lease-time-validation {
lease-time-threshold seconds;
violation-action action;
}
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;
    }
    route-suppression;
    service-profile dynamic-profile-name;
}
}

overrides {
    allow-snooped-clients;
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    client-negotiation-match incoming-interface;
    delay-authentication;
    delete-binding-on-renegotiation;
    dual-stack dual-stack-group-name;
    interface-client-limit number;
    no-allow-snooped-clients;
    no-bind-on-request;
    relay-source interface-name;
    send-release-on-delete;
}
relay-agent-interface-id {
    ...
}
relay-agent-remote-id {
    prefix prefix;
    use-interface-description (logical | device);
    use-option-82 <strict>:
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;
  } 
  equals (ascii ascii-string | hexadecimal hexadecimal-string) {
    drop;
    forward-only;
    relay-server-group relay-server-group;
  }
  remote-id-mismatch action;
  route-suppression;
  service-profile dynamic-profile-name;
}
leasequery {
  attempts number-of-attempts;
  timeout seconds;
}
lease-time-validation {
  lease-time-threshold seconds;
  violation-action action;
}
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;
    }
    route-suppression;
    service-profile dynamic-profile-name;
  }
  no-snoop;
  overrides {

allow-snooped-clients;
asymmetric-lease-time seconds;
asymmetric-prefix-lease-time seconds;
client-negotiation-match incoming-interface;
delay-authentication;
delete-binding-on-renegotiation;
dual-stack dual-stack-group-name;
interface-client-limit number;
no-allow-snooped-clients;
no-bind-on-request;
relay-source interface-name;
send-release-on-delete;
}
relay-agent-interface-id {
    prefix prefix;
    use-interface-description (logical | device);
    use-option-82;
}
relay-agent-remote-id {
    prefix prefix;
    use-interface-description (logical | device);
    use-option-82 <strict>;
}
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;
}
relay-option-vendor-specific {
    host-name;
    location;
    remote-id-mismatch action;
    route-suppression;
    server-group {
        server-group-name {
            server-ip-address;
        }
    }
    server-response-time seconds;
    service-profile dynamic-profile-name;
}
dual-stack-group dual-stack-group-name {
    access-profile profile-name;
authentication {
    ...authentication-configuration
}

dynamic-profile profile-name {
    ...dynamic-profile-configuration
}

relay-agent-interface-id {
    ...relay-agent-interface-id-configuration
}

relay-agent-remote-id {
    ...relay-agent-remote-id-configuration
}

service-profile dynamic-profile-name;

duplicate-clients-in-subnet (incoming-interface | option-82):

dynamic-profile profile-name {
    aggregate-clients (merge | replace);
    use-primary primary-profile-name;
}

forward-only {
    logical-system <current | default | logical-system-name>;
    routing-instance <current | default | routing-instance-name>;
}

forward-only-replies;
forward-snooped-clients (all-interfaces | configured-interfaces |
    non-configured-interfaces);

group group-name {
    access-profile profile-name;
    active-server-group server-group-name;
    authentication {
        ... }
}

dynamic-profile profile-name {
    ... }

forward-only {
    logical-system <current | default | logical-system-name>;
    routing-instance <current | default | routing-instance-name>;
}

forward-only {
    logical-system <current | default | logical-system-name>;
    routing-instance <current | default | routing-instance-name>;
}

interface interface-name {
    access-profile profile-name;
    exclude;
    liveness-detection {
        failure-action (clear-binding | clear-binding-if-interface-up | log-only);
        method {
            bfd {
                version (0 | 1 | automatic);
                minimum-interval milliseconds;
                minimum-receive-interval milliseconds;
                multiplier number;
                no-adaptation;
                transmit-interval {
minimum-interval milliseconds;
threshold milliseconds;
}
detection-time {
    threshold milliseconds;
}
session-mode (automatic | multihop | singlehop);
holddown-interval milliseconds;
}
overrides {
    ...
}
service-profile dynamic-profile-name;
trace;
upto upto-interface-name;
}
overrides {
    ...
}
relay-option {
    ...
}
relay-option-82 {
    ...
}
route-suppression:
    service-profile dynamic-profile-name;
}
leasequery {
    attempts number-of-attempts;
    timeout seconds;
}
lease-time-validation {
    lease-time-threshold seconds;
    violation-action action;
}
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;
        }
        ...
    }
}
no-snoop;
overrides {
    allow-no-end-option
    allow-snooped-clients;
    always-write-giaddr;
    always-write-option-82;
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    client-discover-match (option60-and-option82 | incoming-interface);
    delay-authentication;
    delete-binding-on-renegotiation;
    disable-relay;
    dual-stack dual-stack-group-name;
    interface-client-limit number;
    layer2-unicast-replies;
    no-allow-snooped-clients;
    no-bind-on-request;
    proxy-mode;
    relay-source
    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 asci-string | hexadecimal hexadecimal-string) {
    drop;
    forward-only;
    relay-server-group relay-server-group;
}
starts-with (ascii asci-string | hexadecimal hexadecimal-string) {
    drop;
    forward-only;
    local-server-group local-server-group;
    relay-server-group relay-server-group;
}
relay-option-82 {
    circuit-id {
        prefix prefix;
        use-interface-description (logical | device);
    }
    remote-id {
        prefix prefix;
        use-interface-description (logical | device);
    }
    server-id-override
}
remote-id-mismatch action;
route-suppression:
server-group {
    server-group-name {
        server-ip-address;
    }
}
server-response-time seconds;
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.
Statement introduced in Junos OS Release 13.2X51 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description
Configure extended Dynamic Host Configuration Protocol (DHCP) relay and DHCPv6 relay options on the router or switch to 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 46
- DHCPv6 Relay Agent Overview on page 85
- DHCP Relay Proxy Overview on page 51
- Using External AAA Authentication Services with DHCP on page 101
dhcpv6 (DHCP Local Server)

Syntax
dhcpv6 {
    access-profile profile-name;
    authentication {
        password password-string;
        username-include {
            circuit-type;
            client-id;
            delimiter delimiter-character;
            domain-name domain-name-string;
            interface-description (device-interface | logical-interface);
            logical-system-name;
            mac-address;
            relay-agent-interface-id;
            relay-agent-remote-id;
            relay-agent-subscriber-id;
            routing-instance-name;
            user-prefix user-prefix-string;
        }
    }
}
duplicate-clients incoming-interface;
group group-name {
    access-profile profile-name;
    authentication {
    }
}
}
duplicate-clients incoming-interface;
group group-name {
    access-profile profile-name;
    authentication {
    }
}
}
}
interface interface-name {
    access-profile profile-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 {
        asymmetric-lease-time seconds;
        asymmetric-prefix-lease-time seconds;
        client-negotiation-match incoming-interface;
delete-binding-on-renegotiation;
interface-client-limit number;
multi-address-embedded-option-response;
process-inform {
  pool pool-name;
}
protocol-attributes attribute-set-name;
rapid-commit;
}
service-profile dynamic-profile-name;
trace;
upto upto-interface-name;
}
overrides {
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-negotiation-match incoming-interface;
delegated-pool;
delete-binding-on-renegotiation;
interface-client-limit number;
multi-address-embedded-option-response;
process-inform {
  pool pool-name;
}
protocol-attributes attribute-set-name;
rapid-commit;
}
route-suppression;
service-profile dynamic-profile-name;
}
liveness-detection {
  failure-action (clear-binding | clear-binding-if-interface-up | log-only);
  method {
    bfd {
      version (0 | 1 | automatic);
      minimum-interval milliseconds;
      minimum-receive-interval milliseconds;
      multiplier number;
      no-adaptation;
      transmit-interval {
        minimum-interval milliseconds;
        threshold milliseconds;
      }
      detection-time {
        threshold milliseconds;
      }
      session-mode (automatic | multihop | singlehop);
      holddown-interval milliseconds;
    }
  }
}
overrides {
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-negotiation-match incoming-interface;
delegated-pool;
delete-binding-on-renegotiation;
interface-client-limit number;
multi-address-embedded-option-response;
process-inform {
    pool pool-name;
}
protocol-attributes attribute-set-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;
    support-option-pd-exclude;
    timeout timeout-value;
    token token-value;
    trigger {
        radius-disconnect;
    }
}
requested-ip-network-match subnet-mask;
route-suppression;
server-duid-type type;
service-profile dynamic-profile-name;

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

Statement introduced in Junos OS Release 12.3 for EX Series switches.
**Description** Configure DHCPv6 local server options on the router or switch to enable the router or switch to function as a server for the DHCP protocol for 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.

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

The remaining statements are explained separately. See CLI Explorer.

**Required Privilege**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>system</td>
<td>To view this statement in the configuration.</td>
</tr>
<tr>
<td>system-control</td>
<td>To add this statement to the configuration.</td>
</tr>
</tbody>
</table>

**Related Documentation**

- DHCPv6 Local Server Overview on page 40
**dhcpv6 (DHCP Relay Agent)**

**Syntax**

```cpp
dhcpv6 {
  access-profile profile-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;
    interface-description (device-interface | logical-interface);
    logical-system-name;
    mac-address;
    relay-agent-interface-id;
    relay-agent-remote-id;
    relay-agent-subscriber-id;
    routing-instance-name;
    user-prefix user-prefix-string;
  }
}
bulk-leasequery {
  attempts number-of-attempts;
  timeout seconds;
  trigger automatic;
}
duplicate-clients incoming-interface;
dynamic-profile profile-name {
  aggregate-clients (merge | replace);
  use-primary primary-profile-name;
}
forward-only {
  logical-system <current | default | logical-system-name>;
  routing-instance <current | default | routing-instance-name>;
}
forward-only-replies;
forward-snooped-clients (all-interfaces | configured-interfaces | non-configured-interfaces);
group group-name {
  access-profile profile-name;
  active-server-group server-group-name;
  authentication {
  }
}
dual-stack-group dual-stack-group-name {
  access-profile profile-name;
  authentication {
  }
}
dynamic-profile profile-name {
  ... dynamic-profile-configuration
}
```
} relay-agent-interface-id {
  ... relay-agent-interface-id-configuration
}
relay-agent-remote-id {
  ... relay-agent-remote-id-configuration
}
service-profile dynamic-profile-name;
}
dynamic-profile profile-name {
  ...
}
forward-only {
  logical-system <current | default | logical-system-name>;
  routing-instance <current | default | routing-instance-name>;
}
interface interface-name {
  access-profile profile-name;
  dynamic-profile profile-name {
    ...
  }
  exclude;
  overrides {
    allow-snooped-clients;
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    client-negotiation-match incoming-interface;
    delay-authentication;
    delete-binding-on-renegotiation;
    dual-stack dual-stack-group-name;
    interface-client-limit number;
    no-allow-snooped-clients;
    no-bind-on-request;
    relay-source interface-name;
    send-release-on-delete;
  }
  service-profile dynamic-profile-name;
  trace;
  upto upto-interface-name;
}
}
lease-time-validation {
  lease-time-threshold seconds;
  violation-action action;
}
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;
}
route-suppression;
service-profile dynamic-profile-name;
}
overrides {
  allow-snooped-clients;
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-negotiation-match incoming-interface;
delay-authentication;
delete-binding-on-renegotiation;
dual-stack dual-stack-group-name;
interface-client-limit number;
no-allow-snooped-clients;
no-bind-on-request;
relay-source interface-name;
send-release-on-delete;
}
relay-agent-interface-id {
  ...
}
relay-agent-remote-id {
  prefix prefix;
  use-interface-description (logical | device);
  use-option-82 <strict>;
}
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;
  }
}
remote-id-mismatch action;
route-suppression;
service-profile dynamic-profile-name;
}
leasequery {
  attempts number-of-attempts;
  timeout seconds;
}
lease-time-validation {
  lease-time-threshold seconds;
  violation-action action;
}
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;
    }
    route-suppression;
    service-profile dynamic-profile-name;
  }
}
no-snoop;
overrides {
  allow-snooped-clients;
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-negotiation-match incoming-interface;
  delay-authentication;
  delete-binding-on-renegotiation;
  dual-stack dual-stack-group-name;
  interface-client-limit number;
  no-allow-snooped-clients;
  no-bind-on-request;
  relay-source interface-name;
  send-release-on-delete;
}
relay-agent-interface-id {
  prefix prefix;
  use-interface-description (logical | device);
  use-option-82;
}
relay-agent-remote-id {
  prefix prefix;
  use-interface-description (logical | device);
  use-option-82 <strict>;
}
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;
  }
}
relay-option-vendor-specific{
  host-name;
  location;
  remote-id-mismatch action;
  route-suppression;
  server-group {
    server-group-name {
      server-ip-address;
    }
  }
  server-response-time seconds;
  service-profile dynamic-profile-name;
}

Hierarchy Level
[edit forwarding-options dhcp-relay],
[edit logical-systems logical-system-name forwarding-options dhcp-relay],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay]

Release Information
Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.3 for EX Series switches.
Support for forward-snooped-clients introduced in Junos OS Release 15.1X53-D56 for EX Series switches and Junos OS Release 17.1R1.
**Description**  Configure DHCPv6 relay options on the router or switch and enable the router or switch to function as a DHCPv6 relay agent. A DHCPv6 relay agent forwards DHCPv6 request and reply packets between a DHCPv6 client and a DHCPv6 server.

The DHCPv6 relay agent server is fully compatible with the extended DHCP local server and DHCP relay agent. However, the options configured with the `dhcpv6` statement are incompatible with the DHCP/BOOTP relay agent options configured with the `bootp` statement. As a result, the DHCPv6 relay agent and the DHCP/BOOTP relay agent cannot be enabled on the router or switch at the same time.

The remaining statements are explained separately. See CLI Explorer.

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

**Related Documentation**
- `dhcp-relay` on page 174
- DHCPv6 Relay Agent Overview on page 85
- Using External AAA Authentication Services with DHCP on page 101
disable-relay

Syntax disable-relay;

Hierarchy Level [edit forwarding-options dhcp-relay overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

Release Information Statement introduced in Junos OS Release 8.3.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description Disable DHCP relay on specific interfaces in a group.

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 46
domain-name (DHCP Local Server)

Syntax  

```
domain-name domain-name-string;
```

Hierarchy Level  

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

Release Information  

Statement introduced in Junos OS Release 9.1.  
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  

Specify the domain name that is concatenated with the username during the subscriber authentication or DHCP client authentication process.

Options  

```
domain-name-string—Domain name formatted string.
```
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 101
domain-name (DHCP Relay Agent)

Syntax  domain-name domain-name-string;

Hierarchy Level  [edit forwarding-options dhcp-relay authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],

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.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

Description  Specify the domain name that 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.

Options  domain-name-string—Domain name formatted string.
domain-search

Syntax  

domain-search [ domain-list ];

Hierarchy Level  

[edit system],  
[edit system services dhcp],  
[edit system services dhcp pool],  
[edit system services dhcp static-binding]

Release Information  

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

Description  

Configure a list of domains to be searched.

Options  

domain-list—A list of domain names to search. The list can contain up to six domain names, with a total of up to 256 characters.

Required Privilege  

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

Related Documentation  

• Reaching a Domain Name System Server
drop (DHCP Relay Agent Option)

Syntax

```
drop;
```

Hierarchy Level

- [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 group-name relay-option (default-action | equals | starts-with)],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name relay-option (default-action | equals | starts-with)],
- [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 12.3.

Description

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.

Required Privilege Level

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

Related Documentation

- Using DHCP Option Information to Selectively Process DHCP Client Traffic
**dynamic-profile (DHCP Local Server)**

**Syntax**

```c
dynamic-profile profile-name {
    aggregate-clients (merge | replace);
    use-primary primary-profile-name;
}
```

**Hierarchy Level**

- `[edit system services dhcp-local-server]`
- `[edit system services dhcp-local-server dual-stack-group dual-stack-group-name]`
- `[edit system services dhcp-local-server dhcpv6]`
- `[edit system services dhcp-local-server dhcpv6 group group-name]`
- `[edit system services dhcp-local-server dhcpv6 group group-name interface interface-name]`
- `[edit system services dhcp-local-server group group-name]`
- `[edit system services dhcp-local-server group group-name interface interface-name]`
- `[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 ...]`

**Release Information**

- Statement introduced in Junos OS Release 9.2.
- Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
- Options `aggregate-clients` and `use-primary` introduced in Junos OS Release 9.3.
- Support at the `[edit ... interface]` hierarchy levels introduced in Junos OS Release 11.2.

**Description**

Specify the dynamic profile that is attached to all interfaces, a named group of interfaces, or a specific interface.

**Options**

- `profile-name`—Name of the dynamic profile.

  The remaining statements are explained separately. See CLI Explorer.

**Required Privilege**

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

**Related Documentation**

- *Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces*
- *Configuring a Default Subscriber Service*
dynamic-profile (DHCP Relay Agent)

Syntax

```
dynamic-profile profile-name {
  aggregate-clients (merge | replace);
  use-primary primary-profile-name;
}
```

Hierarchy Level

```
[edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit forwarding-options dhcp-relay dhcpv6 group group-name],
[edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name interface interface-name],
[edit logical-systems logical-system-name forwarding-options dhcp-relay ...],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay ...],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]
```

Release Information

Statement introduced in Junos OS Release 9.2.
Support at the [edit ... dhcp-relay] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

Description

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.

Options

- **profile-name**—Name of the dynamic profile.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

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

Related Documentation

- dhcp-relay on page 174
- Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces
- Grouping Interfaces with Common DHCP Configurations on page 89
- Configuring a Default Subscriber Service
external-authority

Syntax  external-authority;

Hierarchy Level  [edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server pool-match-order],
[edit logical-systems logical-system-name system services dhcp-local-server pool-match-order],
[edit routing-instances routing-instance-name system services dhcp-local-server pool-match-order],
[edit system services dhcp-local-server pool-match-order]

Release Information  Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  Specify that an external authority (for example, RADIUS or Diameter) provides the address assignment.

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.

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

Related Documentation  • Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 122
• Extended DHCP Local Server Overview on page 22
• Address-Assignment Pools Overview on page 121
failure-action

Syntax failure-action (clear-binding | clear-binding-if-interface-up | log-only);

Hierarchy Level
[edit system services dhcp-local-server liveness-detection],
[edit system services dhcp-local-server dhcpv6 liveness-detection],
[edit forwarding-options dhcp-relay liveness-detection],
[edit forwarding-options dhcp-relay dhcpv6 liveness-detection],
[edit system services dhcp-local-server group group-name liveness-detection],
[edit system services dhcp-local-server dhcpv6 group group-name liveness-detection],
[edit forwarding-options dhcp-relay group group-name liveness-detection],
[edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection]

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

Description Configure the action the router (or switch) takes when a liveness detection failure occurs.

Options Default: clear-binding

clear-binding—The DHCP client session is cleared when a liveness detection failure occurs, except when maintain-subscribers interface-delete setting is configured and active.

clear-binding-if-interface-up—The DHCP client session is cleared only when a liveness detection failure occurs and the local interface is detected as being up. Use this setting to distinguish failures from between a liveness detection failure due to a local network error, and a host disconnecting from the network. If the client binding is in the maintain-binding Finite State Machine (FSM) state when the liveness detection failure detection occurs, then the binding is not deleted.

log-only—A message is logged to indicate the event; no action is taken and DHCP is left to manage the failure and maintain the client binding.

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

Related Documentation
• DHCP Liveness Detection Overview on page 95
• Configuring Detection of DHCP Local Server Client Connectivity on page 96
• Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 98
• Example: Configuring Group Liveness Detection for DHCP Local Server Clients
• Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
forward-snooped-clients (DHCP Local Server)

Syntax
forward-snooped-clients (all-interfaces | configured-interfaces | non-configured-interfaces);

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

Release Information
Statement introduced in Junos OS Release 10.4.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description
Configure how the DHCP local server filters and handles DHCP snooped packets on the specified interfaces.

Options
all-interfaces—Perform the action on all interfaces.
configured-interfaces—Perform the action only on interfaces that are configured as part of an interface group.
non-configured-interfaces—Perform the action only on interfaces that are not configured as part of a group.

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

Related Documentation
• DHCP Snooping Support
• Configuring DHCP Snooped Packets Forwarding Support for DHCP Local Server
forward-snooped-clients (DHCP Relay Agent)

Syntax
forward-snooped-clients (all-interfaces | configured-interfaces | non-configured-interfaces);

Hierarchy Level
[edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit logical-systems logical-system-name forwarding-options dhcp-relay],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay]

Release Information
Statement introduced in Junos OS Release 10.4.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description
Configure how DHCP relay agent filters and handles DHCP snooped packets on the specified interfaces. The router or switch determines the DHCP snooping action to perform based on a combination of the forward-snooped-clients configuration and the configuration of either the allow-snooped-clients statement or the no-allow-snooped-clients statement.

The router (or switch) also uses this statement to determine how to handle snooped BOOTREPLY packets received on non-configured interfaces.

Options
all-interfaces—Perform the action on all interfaces.
Default: On EX Series switches, the action is performed on all interfaces by default.

configured-interfaces—Perform the action only on interfaces that are configured as part of an interface group.

non-configured-interfaces—Perform the action only on interfaces that are not part of a group.

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

Related Documentation
• DHCP Snooping Support
• Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 77
group (DHCP Local Server)

Syntax  group group-name {
  access-profile profile-name;
  authentication {
    password password-string;
    username-include {
      circuit-type;
      client-id;
      delimiter delimiter-character;
      domain-name domain-name-string;
      interface-description (device-interface | logical-interface);
      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 {
    access-profile profile-name;
    exclude;
    overrides {
      asymmetric-lease-time seconds;
      asymmetric-prefix-lease-time seconds;
      client-discover-match <option60-and-option82>;
      client-negotiation-match incoming-interface;
      interface-client-limit number;
      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 {
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    client-discover-match <option60-and-option82>;
    client-negotiation-match incoming-interface;
    delegated-pool;
    delete-binding-on-renegotiation;
    interface-client-limit number;
    process-inform {
        pool pool-name;
    }
    protocol-attributes attribute-set-name;
    rapid-commit;
}
reconfigure {
    attempts attempt-count;
    clear-on-abort;
    strict;
    timeout timeout-value;
    token token-value;
    trigger {
        radius-disconnect;
    }
}
route-suppression;
service-profile dynamic-profile-name;
}

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

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  \texttt{group-name}—Name of the group.

The remaining statements are explained separately. See CLI Explorer.

\textbf{Required Privilege} \textbf{Level}

- \texttt{system}—To view this statement in the configuration.
- \texttt{system-control}—To add this statement to the configuration.

\textbf{Related Documentation}

- Extended DHCP Local Server Overview on page 22
- Grouping Interfaces with Common DHCP Configurations on page 89
- Using External AAA Authentication Services with DHCP on page 101
- Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces
group (DHCP Relay Agent)

Syntax

```
group group-name {
    access-profile profile-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;
            interface-description (device-interface | logical-interface);
            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;
}
forward-only {
    logical-system <current | default | logical-system-name>;
    routing-instance <current | default | routing-instance-name>;
}
interface interface-name {
    access-profile profile-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;
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    client-discover-match <option60-and-option82>;
    client-negotiation-match incoming-interface;
    disable-relay;
    dual-stack dual-stack-group-name;
    interface-client-limit number;
    layer2-unicast-replies;
    no-allow-snooped-clients;
    no-bind-on-request;
    proxy-mode;
    relay-source
    replace-ip-source-with;
    send-release-on-delete;
    trust-option-82;
}

relay-agent-interface-id {
    prefix prefix;
    use-interface-description (logical | device);
    use-option-82;
}

relay-agent-remote-id {
    prefix prefix;
    use-interface-description (logical | device);
    use-option-82 <strict>;
}

relay-option {
    option-number option-number;
    default-action {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }

    equals (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
        local-server-group local-server-group;
        relay-server-group relay-server-group;
    }

    starts-with (ascii ascii-string | hexadecimal hexadecimal-string) {
        drop;
        forward-only;
    }
}
local-server-group local-server-group;
relay-server-group relay-server-group;
}
}
relay-option-82 {
circuit-id {
  prefix prefix;
  use-interface-description (logical | device);
  use-option-82;
}
remote-id {
  prefix prefix;
  use-interface-description (logical | device);
}
server-id-override
}
route-suppression;
service-profile dynamic-profile-name;
}

Hierarchy Level  [edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit logical-systems logical-system-name forwarding-options dhcp-relay ...],
[edit logical-systems logical-system-name routing-instances routing-instance-name
  forwarding-options dhcp-relay ...],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]

Release Information  Statement introduced in Junos OS Release 8.3.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description  Specify the name of a group of interfaces that have a common DHCP or DHCPv6 relay
agent configuration. A group must contain at least one interface. Use the statement at
the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

Options  **group-name**—Name of a group of interfaces that have a common DHCP or DHCPv6 relay
agent configuration.

The remaining statements are explained separately. See CLI Explorer.

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

Syntax

holddown-interval 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

Configure the time (in milliseconds) for which Bidirectional Forwarding Detection (BFD) holds a session up notification.

Options

milliseconds—Interval specifying how long a BFD session must remain up before a state change notification is sent.

Range: 0 through 255,000
Default: 0

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
• Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
include-irb-and-l2

Syntax

```include-irb-and-l2;```  

Hierarchy Level

- [edit forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name (relay-agent-interface-id | relay-agent-remote-id)],
- [edit forwarding-options dhcp-relay relay-option-82 (circuit-id | remote-id)],
- [edit forwarding-options dhcp-relay group group-name relay-option-82 (circuit-id | remote-id)],
- [edit logical-systems logical-system-name ... forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
- [edit logical-systems logical-system-name ... forwarding-options dhcp-relay ... relay-option-82 (circuit-id | remote-id)],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay ... relay-option-82 (circuit-id | remote-id)],
- [edit vlans vlan-name forwarding-options dhcp-security dhcpv6-options option-18],
- [edit vlans vlan-name forwarding-options dhcp-security dhcpv6-options option-37]

Release Information


---

**NOTE:** The EX Series switches that support the include-irb-and-l2 statement are the EX4300, EX4600, and EX9200 switches.

---

Description

Include both the integrated routing and bridging (IRB) interface name and Layer 2 interface name in the `circuit-id` or `remote-id` value in the DHCP option 82 information. VLAN tags are global.

When you configure the `include-irb-and-l2` statement without including the `no-vlan-interface` statement, the format is as follows:

- **Bridge domain:**
  ```(fe | ge)-fpc/pic/port.subunit:bridge-domain-name+irb.subunit```
- **VLAN:**
  ```(fe | ge)-fpc/pic/port.subunit:vlan-name+irb.subunit```

---

**NOTE:** For remote systems, the `subunit` is required and is used to differentiate an interface.
When you configure both the include-irb-and-l2 statement and the use-vlan-id statement, the format is as follows:

```
(fe | ge)-fpc/pic/port.subunit:svlan-id-vlan-id+irb.subunit
```

**NOTE:** The svlan-id-vlan-id represents the VLANs associated with the bridge domain.

When you configure both the include-irb-and-l2 and no-vlan-interface-name statements, the format is as follows:

```
(fe | ge)-fpc/pic/port.subunit+irb.subunit
```

When you configure both the include-irb-and-l2 and use-interface-description statements, the format displays the description for the Layer 2 interface:

```
l2_descr:vlan-name+irb.subunit
```

If you configure both the include-irb-and-l2 and use-interface-description statements, and no description for the Layer 2 interface is found, the format displays the Layer 2 logical interface name:

```
(fe | ge)-fpc/pic/port.subunit:vlan-name+irb.subunit
```

When you configure the include-irb-and-l2 statement with both the no-vlan-interface-name and use-interface-description statements, the format displays as follows:

```
l2_descr+irb.subunit
```

If you configure the include-irb-and-l2 statement with both the no-vlan-interface-name and use-interface-description statements, and no description is found for the Layer 2 interface, the format displays as follows:

```
(fe | ge)-fpc/pic/port.subunit+irb.subunit
```

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

**Related Documentation**
- Including a Textual Description in DHCP Options on page 65
- Using DHCP Relay Agent Option 82 Information on page 60
- Configuring DHCPv6 Relay Agent Options
interface (DHCP Local Server)

Syntax

```
interface interface-name {
  access-profile profile-name;
  exclude;
  overrides {
    asymmetric-lease-time seconds;
    asymmetric-prefix-lease-time seconds;
    client-discover-match <option60-and-option82 | incoming-interface>;
    client-negotiation-match incoming-interface;
    interface-client-limit number;
    rapid-commit;
  }
  service-profile dynamic-profile-name;
  trace;
  upto upto-interface-name;
}
```

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Options `upto` and `exclude` introduced in Junos OS Release 9.1.

Description

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 `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 relay agent.

**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 supports only static DHCP configurations.

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.
**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. See **CLI Explorer**.

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

**Related Documentation**
- Extended DHCP Local Server Overview on page 22
- Grouping Interfaces with Common DHCP Configurations on page 89
- Using External AAA Authentication Services with DHCP on page 101
interface (DHCP Relay Agent)

Syntax

```plaintext
interface dhcp-interface-name {
    access-profile profile-name;
    exclude;
    overrides {
        allow-no-end-option
        allow-snooped-clients;
        always-write-giaddr;
        always-write-option-82;
        asymmetric-lease-time seconds;
        asymmetric-prefix-lease-time seconds;
        client-discover-match <option60-and-option82 | incoming-interface>;
        client-negotiation-match incoming-interface;
        disable-relay;
        dual-stack dual-stack-group-name;
        interface-client-limit number;
        layer2-unicast-replies;
        no-allow-snooped-clients;
        proxy-mode;
        relay-source
        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 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.

EX Series switches do not support DHCPv6.
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.

**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. See CLI Explorer.

**Required Privilege**

- **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 46](#)
- [Grouping Interfaces with Common DHCP Configurations on page 89](#)
- [Using External AAA Authentication Services with DHCP on page 101](#)
interface-client-limit (DHCP Local Server)

Syntax

interface-client-limit number;

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 9.2.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

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.

Default

No limit
Options  

- **number**—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 106
- Overriding Default DHCP Local Server Configuration Settings on page 28
interface-client-limit (DHCP Relay Agent)

Syntax

interface-client-limit number;

Hierarchy Level

[edit forwarding-options dhcp-relay dhcpv6 overrides],
[edit forwarding-options dhcp-relay overrides],
[edit forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

Release Information

Statement introduced in Junos OS Release 9.2.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description

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 [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

M120 and M320 routers do not support DHCPv6.

Default

No limit

Options

**number**—Maximum number of clients allowed.

**Range:** 1 through 500,000
interface-delete (Subscriber Management or DHCP Client Management)

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)

Syntax

interface-name;

Hierarchy Level

[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server ...],
[edit logical-systems logical-system-name system services dhcp-local-server ...],
[edit routing-instances routing-instance-name system services dhcp-local-server ...],
[edit system services dhcp-local-server authentication username-include],
[edit system services dhcp-local-server dhcpv6 authentication username-include],
[edit system services dhcp-local-server dhcpv6 group group-name authentication username-include],
[edit system services dhcp-local-server group group-name authentication username-include]

Release Information

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

Description

Specify that the interface name is concatenated with the username during the subscriber authentication or DHCP client authentication process. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

Required Privilege

Level

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

Related Documentation

• Creating Unique Usernames for DHCP Clients on page 103
interface-name (DHCP Relay Agent)

Syntax

interface-name;

Hierarchy Level

[edit forwarding-options dhcp-relay authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include],
[edit forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay ...],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay ...],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]

Release Information

Statement introduced in Junos OS Release 11.4
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

Description

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.

Required Privilege Level

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

Related Documentation

• Creating Unique Usernames for DHCP Clients on page 103
ip-address-first

Syntax  
ip-address-first;

Hierarchy Level  
[edit logical-systems logical-system-name system services dhcp-local-server pool-match-order],  
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server pool-match-order],  
[edit routing-instances routing-instance-name system services dhcp-local-server pool-match-order],  
[edit system services dhcp-local-server pool-match-order]

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

Description  
Configure the extended DHCP local server to use the IP address method to determine which address-assignment pool to use. The local server uses the IP address in the gateway IP address if one is present in the DHCP client PDU. If no gateway IP address is present, the local server uses the IP address of the receiving interface to find the address-assignment pool. The DHCP local server uses this method by default when no method is explicitly specified.

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

Related Documentation  
- Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 122  
- Extended DHCP Local Server Overview on page 22  
- Address-Assignment Pools Overview on page 121
**layer2-unicast-replies**

**Syntax**

layer2-unicast-replies;

**Hierarchy Level**

- [edit forwarding-options dhcp-relay overrides],
- [edit forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

**Release Information**

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

**Description**

Override the setting of the broadcast bit in DHCP request packets and instead use the Layer 2 unicast transmission method to transmit DHCP Offer reply packets and DHCP ACK reply packets from the DHCP server to DHCP clients during the discovery process.

**Required Privilege Level**

- 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 46
- dhcp-relay on page 174
lease-time

**Syntax**  
`lease-time (length | infinite);`

**Hierarchy Level**  
`[edit interfaces interface-name unit logical-unit-number family inet dhcp]`

**Release Information**  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 9.2 for SRX Series devices.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description**  
Request a specific lease time for the IP address. The lease time is the length of time in seconds that a client holds the lease for an IP address assigned by a DHCP server.

**Default**  
If no lease time is requested by client, then the server sends the lease time. The default lease time on a Junos OS DHCP server is one day.

**Options**  
- `seconds` — Request a lease time of a specific duration.  
  **Range:** 60 through 2147483647 seconds  
- `infinite` — Request that the lease never expire.

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

**Related Documentation**  
- Configuring a DHCP Client (CLI Procedure) on page 17  
- `interfaces`  
- `unit`  
- `family`
### liveness-detection

**Syntax**

```plaintext
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;
    }
  }
}
```

**Hierarchy Level**

```plaintext
[edit system services dhcp-local-server],
[edit system services dhcp-local-server dhcpv6],
[edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit system services dhcp-local-server group group-name],
[edit system services dhcp-local-server dhcpv6 group group-name],
[edit forwarding-options dhcp-relay group group-name],
[edit forwarding-options dhcp-relay dhcpv6 group group-name]
```

**Release Information**

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

**Description**

Configure bidirectional failure detection timers and authentication criteria for static routes.

The remaining statements are explained separately. See [CLI Explorer](#).

**Required Privilege Level**

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

**Related Documentation**

- DHCP Liveness Detection Overview on page 95
- Configuring Detection of DHCP Local Server Client Connectivity on page 96
- Configuring Detection of DHCP Relay or DHCP Relay Proxy Client Connectivity on page 98
- Example: Configuring Group Liveness Detection for DHCP Local Server Clients
• Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients

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

**Syntax**

```text
local-server-group local-server-group;
```

**Hierarchy Level**

- [edit forwarding-options dhcp-relay relay-option (default-action | equals | starts-with)],
- [edit forwarding-options dhcp-relay group group-name relay-option (default-action | equals | starts-with)],
- [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 12.3.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description**

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 *local-server-group* option is not supported for DHCPv6 relay agent.

**Options**

- `local-server-group`—Name of DHCP local server group.

**Required Privilege Level**

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

**Related Documentation**

- *Using DHCP Option Information to Selectively Process DHCP Client Traffic*
mac-address (DHCP Local Server)

Syntax  
mac-address;

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

Release Information  

Description  
Specify that the MAC address from the client PDU be concatenated with the username during the subscriber authentication or DHCP client authentication process.

For DHCPv6 clients, because the DHCPv6 packet format has no specific field for the client MAC address, the MAC address is derived from among several sources with the following priority:

- Client DUID Type 1 or Type 3.
- Option 79 (client link-layer address), if present.
- The packet source address if the client is directly connected.
- The link local address.

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 101
**mac-address (DHCP Relay Agent)**

**Syntax**
```
mac-address;
```

**Hierarchy Level**
- [edit forwarding-options dhcp-relay authentication username-include],
- [edit forwarding-options dhcp-relay dhcpv6 authentication username-include],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
- [edit forwarding-options dhcp-relay group group-name authentication username-include],
- [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 for DHCPv6 added in Junos OS Release 17.2 for MX Series Routers.

**Description**
Specify that the MAC address from the client PDU be concatenated with the username during the subscriber authentication or client authentication process.

For DHCPv6 clients, because the DHCPv6 packet format has no specific field for the client MAC address, the MAC address is derived from among several sources with the following priority:

- Client DUID Type 1 or Type 3.
- Option 79 (client link-layer address), if present.
- The packet source address if the client is directly connected.
- The link local address.

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

**Related Documentation**
- Using External AAA Authentication Services with DHCP on page 101
**maximum-hop-count**

**Syntax**

maximum-hop-count number;

**Hierarchy Level**

[edit forwarding-options helpers bootp],
[edit forwarding-options helpers bootp interface (interface-name | interface-group)]

**Release Information**

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.3 for QFX Series switches.

**Description**

Set the maximum allowed number of hops. This value is compared against the hops field in the BOOTP request message. BOOTP request messages that have a number in the hops field that exceeds **maximum-hop-count** are not forwarded. If you omit the **maximum-hop-count** statement, the default value is four hops.

**Options**

**number**—Maximum number of hops for BOOTP request messages.

Range: 1 through 16

Default: 4

**Required Privilege**

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

**Related Documentation**

• Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents
maximum-lease-time (DHCP)

Syntax
maximum-lease-time seconds;

Hierarchy Level
[edit system services dhcp],

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

Description
For J Series Services Routers and EX Series switches only. Specify the maximum length of time in seconds for which a client can request and hold a lease on a DHCP server.

An exception is that the dynamic BOOTP lease length can exceed the maximum lease length specified.

Options
seconds—The maximum number of seconds the lease can be held.

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

Related Documentation
• default-lease-time
method

Syntax

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;
  }
}

Hierarchy Level

[edit system services dhcp-local-server liveness-detection],
[edit system services dhcp-local-server dhcpv6 liveness-detection],
[edit forwarding-options dhcp-relay liveness-detection],
[edit forwarding-options dhcp-relay dhcpv6 liveness-detection],
[edit system services dhcp-local-server group group-name liveness-detection],
[edit system services dhcp-local-server dhcpv6 group group-name liveness-detection],
[edit forwarding-options dhcp-relay group group-name liveness-detection],
[edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection]

Release Information

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

Description

Configure the liveness detection method.

The remaining statements are explained separately. See CLI Explorer.

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

Syntax  
minimum-interval milliseconds;

Hierarchy Level  
[edit system services dhcp-local-server liveness-detection method bfd],  
[edit system services dhcp-local-server liveness-detection method bfd transmit-interval],  
[edit system services dhcp-local-server dhcpv6 liveness-detection method bfd],  
[edit system services dhcp-local-server dhcpv6 liveness-detection method bfd transmit-interval],  
[edit forwarding-options dhcp-relay liveness-detection method bfd],  
[edit forwarding-options dhcp-relay liveness-detection method bfd transmit-interval],  
[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd],  
[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd transmit-interval],  
[edit system services dhcp-local-server group group-name liveness-detection method bfd],  
[edit system services dhcp-local-server group group-name liveness-detection method bfd transmit-interval],  
[edit system services dhcp-local-server dhcpv6 group group-name liveness-detection method bfd],  
[edit system services dhcp-local-server dhcpv6 group group-name liveness-detection method bfd transmit-interval],  
[edit forwarding-options dhcp-relay group group-name liveness-detection method bfd],  
[edit forwarding-options dhcp-relay group group-name liveness-detection method bfd transmit-interval],  
[edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection method bfd],  
[edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection method bfd transmit-interval]

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

Description  
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 transmit-interval minimal-interval and  
minimum-receive-interval statements.

Options  
milliseconds — Specify the minimum interval value for BFD liveness detection.  
Range: 1 through 255,000

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

Related Documentation  
• Example: Configuring Group Liveness Detection for DHCP Local Server Clients  
• Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
minimum-receive-interval

Syntax
minimum-receive-interval 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
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.

Options
milliseconds — Specify the minimum receive interval value.
Range: 1 through 255,000

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
• Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
minimum-wait-time

Syntax  
minimum-wait-time seconds;

Hierarchy Level  
[edit forwarding-options helpers bootp],  
[edit forwarding-options helpers bootp interface (interface-name | interface-group)]

Release Information  
Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for QFX Series switches.

Description  
Set the minimum allowed number of seconds that the BOOTP client has waited before packets are forwarded, based on the secs field in the BOOTP request message. If the value of minimum-wait-time is less than the value of the secs field in the BOOTP request message, the packet is not forwarded to the BOOTP servers and relay agents that are configured at the hierarchy level of this statement. You can use the minimum-wait-time statement to determine which servers the device should forward packets to based on how long the BOOTP client has been waiting to receive a BOOTP reply from a server. The BOOTP client sets the secs field in the BOOTP request to reflect the number of seconds elapsed since the client began address acquisition or a renewal process.

The default value for the minimum wait time is zero (0) seconds. If the minimum wait time is 0 and the secs field in the BOOTP request message is 0, the device forwards the packet.

Options  
seconds—Minimum wait time the BOOTP client has waited before packets are forwarded.  
Range: 0 to 30,000  
Default: 0

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

Related Documentation  
• Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents
multiplier

Syntax
multiplier number;

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
Configure the number of hello packets not received by the neighbor before Bidirectional Forwarding Detection (BFD) declares the neighbor down.

Options
number—Maximum allowable number of hello packets missed by the neighbor.
Range: 1 through 255
Default: 3

Required Privilege
Level
routing—To view this statement in the configuration.
routecontrol—To add this statement to the configuration.

Related Documentation
• Example: Configuring Group Liveness Detection for DHCP Local Server Clients
• Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
name-server

Syntax  
name-server {
  address;
}

Hierarchy Level  
[edit system],
[edit system services dhcp],
[edit system services dhcp],
[edit system services dhcp pool],
[edit system services dhcp static-binding]

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

Description  
Configure one or more Domain Name System (DNS) name servers.

Options  
address—Address of the name server. To configure multiple name servers, include a maximum of three address options.

Required Privilege Level  
system—To view this statement in the configuration.

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

Related Documentation  
• Reaching a Domain Name System Server
next-hop (Dynamic Access-Internal Routes)

**Syntax**

next-hop

**Hierarchy Level**

- [edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options access route prefix]
- [edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options rib routing-table-name access route prefix]
- [edit dynamic-profiles profile-name routing-options access route prefix]

**Release Information**


**Description**

Dynamically configure the next-hop address for an access route. Access routes are typically unnumbered interfaces.

**Options**

- `next-hop`—Either the specific next-hop address you want to assign to the access route or one of the following next-hop address predefined variables.
  - For IPv4 access routes, use the variable, `$junos-framed-route-nexthop`. The route prefix variable is dynamically replaced with the value in Framed-Route RADIUS attribute [22].
  - For IPv6 access routes, use the variable, `$junos-framed-route-ipv6-nexthop`. The variable is dynamically replaced with the value in Framed-IPv6-Route RADIUS attribute [99].

**Required Privilege**

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

**Related Documentation**

- Configuring Dynamic Access Routes for Subscriber Management
no-adaptation

Syntax  no-adaptation;

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]

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

Description  Configure Bidirectional Forwarding Detection (BFD) sessions to not adapt to changing network conditions.

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
                        • Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
**no-allow-snooped-clients**

**Syntax**

no-allow-snooped-clients;

**Hierarchy Level**

[edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit forwarding-options dhcp-relay group group-name interface interface-name overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[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 10.2.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 12.1.
Statement introduced in Junos OS Release 12.3 for EX Series switches.

**Description**

Explicitly disable DHCP snooping support on DHCP relay agent.

Use the statement at the [edit ... dhcpv6] hierarchy levels to explicitly disable snooping support for DHCPv6 relay agent.

---

**NOTE:** In Junos OS Release 10.0 and earlier, DHCP snooping is enabled by default. In Release 10.1 and later, DHCP snooping is disabled by default.

**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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68
- DHCP Snooping Support
- Configuring DHCP Snooped Packets Forwarding Support for DHCP Relay Agent on page 77
### no-bind-on-request (DHCP Relay Agent)

**Syntax**

```shell
no-bind-on-request;
```

**Hierarchy Level**

```shell
[edit forwarding-options dhcp-relay dhcpv6 overrides],
[edit forwarding-options dhcp-relay overrides],
[edit forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name interface interface-name overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]
```

**Release Information**

- Statement introduced in Junos OS Release 10.4.
- 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**

Explicitly disable automatic binding of received DHCP request messages that have no entry in the database (stray requests). Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

M120 and M320 routers do not support DHCPv6.

**NOTE:** 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.

**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 46
• Overriding the Default DHCP Relay Configuration Settings on page 68
• Disabling Automatic Binding of Stray DHCP Requests on page 59

no-listen

Syntax

no-listen;

Hierarchy Level

[edit forwarding-options helpers bootp interface (interface-name | interface-group)],
[edit forwarding-options helpers domain interface interface-name],
[edit forwarding-options helpers port port-number interface interface-name],
[edit forwarding-options helpers tftp interface interface-name]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.3 for QFX Series switches.

Description

Disable recognition of DNS requests or stop packets from being forwarded on a logical interface, a group of logical interfaces, a router, or a switch.

Required Privilege Level

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

Related Documentation

• Configuring DNS and TFTP Packet Forwarding
• Configuring Port-based LAN Broadcast Packet Forwarding on page 133
• Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents
no-vlan-interface-name

Syntax
no-vlan-interface-name;

Hierarchy Level
[edit forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit forwarding-options dhcp-relay dhcpv6 group group-name (relay-agent-interface-id | relay-agent-remote-id)],
[edit forwarding-options dhcp-relay relay-option-82 (circuit-id | remote-id)],
[edit forwarding-options dhcp-relay group group-name relay-option-82 (circuit-id | remote-id)],
[edit logical-systems logical-system-name ... forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit logical-systems logical-system-name ... forwarding-options dhcp-relay ... relay-option-82 (circuit-id | remote-id)],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay ... relay-option-82 (circuit-id | remote-id)],
[edit vlans vlan-name forwarding-options dhcp-security dhcpv6-options option-18],
[edit vlans vlan-name forwarding-options dhcp-security dhcpv6-options option-37]

Release Information

NOTE: The EX Series switches that support the no-vlan-interface-name statement are the EX4300, EX4600, and EX9200 switches.

Description
When you do not want bridge domain or VLAN tag information, do not include the VLAN ID nor the VLAN interface name (the default) in the circuit or remote ID value in the DHCP option 82 information.

NOTE: The no-vlan-interface-name statement is mutually exclusive with the use-interface-description and use-vlan-id statements.

When you configure the no-vlan-interface-name statement only, the format displays only the Layer 3 interface:

irb.subunit

NOTE: The subunit is required and used to differentiate the interface for remote systems.
When you configure the `no-vlan-interface-name` and `use-interface-description` statements, the format displays the IRB interface description:

```
  irb_descr
```

If you configure the `no-vlan-interface-name` and `use-interface-description` statements, and no description for the IRB interface is found, the format displays the IRB interface name:

```
  irb.subunit
```

When you configure the `no-vlan-interface-name` and `include-irb-and-l2` statements, the format displays the Layer 2 logical interface name and the IRB interface name:

```
  (fe | ge)-fpc/pic/port.subunit+irb.subunit
```

When you configure the `no-vlan-interface-name`, `include-irb-and-l2` and `use-interface-name` statements, the format displays the Layer 2 interface description and the IRB interface name:

```
  l2_descr+irb.subunit
```

If you configure the `no-vlan-interface-name`, `include-irb-and-l2` and `use-interface-name` statements, and no description for the Layer 2 interface is found, the format displays the Layer 2 logical interface name and the IRB interface name:

```
  (fe | ge)-fpc/pic/port.subunit+irb.subunit
```

**Required Privilege**

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

**Related Documentation**

- Including a Textual Description in DHCP Options on page 65
- Using DHCP Relay Agent Option 82 Information on page 60
- Configuring DHCPv6 Relay Agent Options
option-60 (DHCP Local Server)

Syntax  
option-60;

Hierarchy Level  
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication username-include],
[edit logical-systems logical-system-name system services dhcp-local-server authentication username-include],
[edit logical-systems logical-system-name system services dhcp-local-server group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication username-include],
[edit system services dhcp-local-server authentication username-include],
[edit system services dhcp-local-server group group-name authentication username-include]

Release Information  

Description  
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.

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 101
option-60 (DHCP Relay Agent)

Syntax

option-60;

Hierarchy Level

[edit forwarding-options dhcp-relay authentication username-include],
[edit forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],

Release Information

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

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.

Required Privilege

Level

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

Related Documentation

• Using External AAA Authentication Services with DHCP on page 101
option-82 (DHCP Local Server Authentication)

Syntax

```
option-82 <circuit-id> <remote-id>;
```

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

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.

Options

- **circuit-id**—(Optional) Agent Circuit ID suboption (suboption 1).
- **remote-id**—(Optional) Agent Remote ID suboption (suboption 2).

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 101
option-82 (DHCP Local Server Pool Matching)

Syntax

```conf
option-82;
```

Hierarchy Level

- `[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server pool-match-order]`
- `[edit logical-systems logical-system-name system services dhcp-local-server pool-match-order]`
- `[edit routing-instances routing-instance-name system services dhcp-local-server pool-match-order]`
- `[edit system services dhcp-local-server pool-match-order]`

Release Information


Description

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 `ip-address-first` statement before configuring the `option-82` 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.

Required Privilege

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

Related Documentation

- Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 122
- Extended DHCP Local Server Overview on page 22
- Address-Assignment Pools Overview on page 121
option-82 (DHCP Relay Agent)

Syntax  
option-82 <circuit-id> <remote-id>;

Hierarchy Level  
[edit forwarding-options dhcp-relay authentication username-include],  
[edit forwarding-options dhcp-relay group group-name authentication username-include],  
[edit logical-systems logical-system-name forwarding-options dhcp-relay authentication username-include],  
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],  
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay authentication username-include],  
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],  
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name authentication username-include],

Release Information  
Statement introduced in Junos OS Release 9.1.  
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  
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.

NOTE: The option 82 value used in creating the username is based on the option 82 value that is encoded in the outgoing (relayed) PDU.

Options  
circuit-id—(Optional) The string for the Agent Circuit ID suboption (suboption 1).  
remote-id—(Optional) The string for the Agent Remote ID suboption (suboption 2).

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

Related Documentation  
• Using External AAA Authentication Services with DHCP on page 101
**option-number (DHCP Relay Agent Option)**

**Syntax**

```
option-number option-number;
```

**Hierarchy Level**

- [edit forwarding-options dhcp-relay relay-option],
- [edit forwarding-options dhcp-relay dhcpv6 relay-option],
- [edit forwarding-options dhcp-relay group group-name relay-option],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name relay-option],
- [edit logical-systems 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**


**Description**

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.

Use the [edit forwarding-options dhcp-relay dhcpv6] hierarchy level to configure the DHCPv6 relay agent support.

**Options**

- **option-number**—The DHCP or DHCPv6 option in the incoming traffic.

---

**NOTE:** EX Series switches do not support the User Class Options.

- 15 (DHCPv6 only)—Use DHCPv6 option 15 (User Class Option) in packets
- 16 (DHCPv6 only)—(MX Series routers and EX Series switches only) Use DHCPv6 option 16 (Vendor Class Option) in packets
- 60 (DHCPv4 only)—(MX Series routers and EX Series switches only) Use DHCP option 60 (Vendor Class Identifier) in DHCP packets
- 77 (DHCPv4 only)—Use DHCP option 77 (User Class Identifier) in packets

**Required Privilege Level**

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

**Related Documentation**

- *Using DHCP Option Information to Selectively Process DHCP Client Traffic*
overrides (DHCP Local Server)

Syntax
overrides {
  allow-no-end-option;
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-discover-match <option60-and-option82 | incoming-interface>;
  client-negotiation-match incoming-interface;
  delegated-pool;
  delete-binding-on-renegotiation;
  include-option-82 { forcerenew;
                   nak;
               };
  interface-client-limit number;
  multi-address-embedded-option-response;
  process-inform { pool pool-name; }
  protocol-attributes attribute-set-name;
  rapid-commit;
}

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

Release Information
Statement introduced in Junos OS Release 9.2.
Statement introduced in Junos OS Release 12.1 for EX Series switches.
Support for the allow-no-end option introduced in Junos OS Release 14.1X53-D15 for EX Series switches.
Statement introduced in Junos OS Release 12.3X48-D10 for SRX Series devices.

Description
Override the default configuration settings for the extended DHCP local server. Specifying the overrides statement with no subordinate statements removes all DHCP local server overrides at that hierarchy level.

- To override global DHCP local server configuration options, include the overrides statement and its subordinate statements at the [edit system services dhcp-local-server] hierarchy level.
- To override configuration options for a named group of interfaces, include the statements at the [edit system services dhcp-local-server group group-name] hierarchy level.
To override configuration options for a specific interface within a named group of interfaces, include the statements at the `edit system services dhcp-local-server group group-name interface interface-name` hierarchy level.

Use the `edit system services dhcp-local-server dhcpv6` hierarchy level to override DHCPv6 configuration options.

**NOTE:** By default, `jdhcp` does not process DHCPINFORM message. Only after you enable the overrides command using the `set system services dhcp-local-server overrides process-inform` statement, `jdhcp` starts processing the DHCPINFORM message.

The remaining statements are explained separately. See CLI Explorer.

The `interface-client-limit` statement is not supported in the `edit system services dhcp-local-server dhcpv6` hierarchy level.

The `asymmetric-prefix-lease-time`, `delegated-pool`, `multi-address-embedded-option-response`, and `rapid-commit` statements are supported in the `edit system services dhcp-local-server dhcpv6 ...` hierarchy level only.

---

**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 22
- Overriding Default DHCP Local Server Configuration Settings on page 28
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
- Configuring a DHCP Server on Switches (CLI Procedure)
overrides (DHCP Relay Agent)

**Syntax**

```plaintext
overrides {
  allow-no-end-option;
  allow-snooped-clients;
  always-write-giaddr;
  always-write-option-82;
  asymmetric-lease-time seconds;
  asymmetric-prefix-lease-time seconds;
  client-discover-match <option60-and-option82 | incoming-interface>;
  client-negotiation-match incoming-interface;
  delay-authentication;
  delete-binding-on-renegotiation;
  disable-relay;
  dual-stack dual-stack-group-name;
  interface-client-limit number;
  layer2-unicast-replies;
  no-allow-snooped-clients;
  no-bind-on-request;
  proxy-mode;
  relay-source
  replace-ip-source-with;
  send-release-on-delete;
  trust-option-82;
}
```

**Hierarchy Level**

- [edit forwarding-options dhcp-relay],
- [edit forwarding-options dhcp-relay dhcpv6],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name],
- [edit forwarding-options dhcp-relay group group-name],
- [edit forwarding-options dhcp-relay group group-name interface interface-name],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay ...],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay ...],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]

**Release Information**

Statement introduced in Junos OS Release 8.3.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

**Description**

Override the default configuration settings for the extended DHCP relay agent. Specifying the `overrides` statement with no subordinate statements removes all DHCP relay agent overrides at that hierarchy level. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

M120 and M320 routers do not support DHCPv6.

The following statements are supported at both the [edit ... dhcp-relay] and [edit ... dhcpv6] hierarchy levels.

- `allow-snooped-clients`
• asymmetric-lease-time
• delete-binding-on-renegotiation
• dual-stack
• interface-client-limit
• no-allow-snooped-clients
• no-bind-on-request
• relay-source
• send-release-on-delete

The following statements are supported at the [edit ... dhcpv6] hierarchy levels only.
• asymmetric-prefix-lease-time

All other statements are supported at the [edit ... dhcp-relay] hierarchy levels only.
The remaining statements are explained separately.

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

**Related Documentation**
- Extended DHCP Relay Agent Overview on page 46
- Overriding the Default DHCP Relay Configuration Settings on page 68
- Deleting DHCP Local Server and DHCP Relay Override Settings on page 30
password (DHCP Local Server)

Syntax

password password-string;

Hierarchy Level

[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcv6 authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcv6 group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name system services dhcp-local-server dhcv6 authentication],
[edit logical-systems logical-system-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcv6 authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcv6 group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name system services dhcp-local-server dhcv6 authentication],
[edit logical-systems logical-system-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcv6 authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcv6 group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication],
[edit logical-systems logical-system-name system services dhcp-local-server dhcv6 authentication],
[edit logical-systems logical-system-name system services dhcp-local-server group group-name authentication],
[edit routing-instances routing-instance-name system services dhcp-local-server dhcv6 authentication],
[edit routing-instances routing-instance-name system services dhcp-local-server dhcv6 group group-name authentication],
[edit routing-instances routing-instance-name system services dhcp-local-server group group-name authentication],
[edit system services dhcv6],
[edit system services dhcp-local-server dhcv6 group group-name authentication],
[edit system services dhcp-local-server group group-name authentication].

Release Information

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

Configure the password that is sent to the external AAA authentication server for subscriber authentication or DHCP client authentication.

Options

password-string—Authentication password.

Required Privilege

system—To view this statement in the configuration.

Level

system-control—To add this statement to the configuration.
Chapter 12: Configuration Statements (DHCP and DHCP Relay)

Related Documentation

• Using External AAA Authentication Services with DHCP on page 101
**password (DHCP Relay Agent)**

**Syntax**

password password-string;

**Hierarchy Level**

- [edit forwarding-options dhcp relay authentication],
- [edit forwarding-options dhcp relay dhcpv6 authentication],
- [edit forwarding-options dhcp relay dual-stack-group dual-stack-group-name authentication],
- [edit forwarding-options dhcp relay group group-name authentication],
- [edit forwarding-options dhcp relay dhcpv6 group group-name authentication],
- [edit logical-systems logical-system-name forwarding-options dhcp relay authentication],
- [edit logical-systems logical-system-name forwarding-options dhcp relay dhcpv6 authentication],
- [edit logical-systems logical-system-name forwarding-options dhcp relay dual-stack-group dual-stack-group-name authentication],
- [edit logical-systems logical-system-name forwarding-options dhcp relay group group-name authentication],
- [edit logical-systems logical-system-name forwarding-options dhcp relay dhcpv6 group group-name authentication],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay authentication],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 authentication],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay dual-stack-group dual-stack-group-name authentication],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay group group-name authentication],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 group group-name authentication],
- [edit routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 group group-name authentication],
- [edit routing-instances routing-instance-name forwarding-options dhcp relay group group-name authentication],
- [edit routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 group group-name authentication]

**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.
Support at the [edit ... dual-stack-group dual-stack-group-name authentication] hierarchy level introduced in Junos OS Release 15.1.

**Description**

Configure the password that is sent to the external AAA authentication server for subscriber authentication or client authentication. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

**Options**

password-string—Authentication password.

**Required Privilege Level**

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

**Related Documentation**

- Using External AAA Authentication Services with DHCP on page 101
- Configuring Passwords for Usernames on page 102
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 group group-name overrides process-inform]`
- `[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-serverdhcpv6 group group-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 logical-systems logical-system-name system services dhcp-local-server 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 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 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.
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.

**Options**

- **pool-name**—Name of the address pool, which must be configured within `family inet` for DHCP local server and within `family inet6` for DHCPv6 local server.

**Required Privilege Level**

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

**Related Documentation**

- [Enabling Processing of Client Information Requests on page 108](#)
- [Overriding Default DHCP Local Server Configuration Settings on page 28](#)

---

**pool-match-order**

**Syntax**

```plaintext
pool-match-order {
    external-authority;
    ip-address-first;
    option-82;
}
```

**Hierarchy Level**

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

**Release Information**

Statement introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 12.1.

**Description**

Configure the order in which the DHCP local server uses information in the DHCP client PDU to determine how to obtain an address for the client.

The remaining statements are explained separately. See [CLI Explorer](#).

**Default**

DHCP local server uses the `ip-address-first` method to determine which address pool to use.

**Required Privilege Level**

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

**Related Documentation**

- Configuring How the Extended DHCP Local Server Determines Which Address-Assignment Pool to Use on page 122
- [Extended DHCP Local Server Overview on page 22](#)
preference (Subscriber Management)

Syntax

preference route-distance

Hierarchy Level

[edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options access route prefix],
[edit dynamic-profiles profile-name routing-instances $junos-routing-instance routing-options rib routing-table-name access route prefix],
[edit dynamic-profiles profile-name routing-options access route prefix]

Release Information

Statement introduced in Junos OS Release 9.5.

Description

Dynamically configure the distance for an access route.

Options

route-distance—Either the specific distance you want to assign to the access route or either of the following distance variables:

• $junos-framed-route-distance—Distance of an IPv4 access route; the variable is dynamically replaced with the preference value (Subattribute 5) from the RADIUS Framed-Route attribute [22].

• $junos-framed-route-ipv6-distance—Distance of an IPv6 access route; the variable is dynamically replaced with the preference value (Subattribute 5) from the RADIUS Framed-IPv6-Route attribute [99].

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
prefix (DHCP Relay Agent)

Syntax

prefix prefix;

Hierarchy Level

[edit forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit forwarding-options dhcp-relay dhcpv6 group group-name (relay-agent-interface-id | relay-agent-remote-id)],
[edit forwarding-options dhcp-relay relay-option-82 (circuit-id | remote-id)],
[edit forwarding-options dhcp-relay group group-name relay-option-82 (circuit-id | remote-id)],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit logical-systems logical-system-name ... forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
[edit logical-systems logical-system-name ... forwarding-options dhcp-relay ... relay-option-82 (circuit-id | remote-id)],
[edit logical-systems logical-system-name ... forwarding-options dhcp-relay dhcp-relay ... relay-option-82 (circuit-id | remote-id)]

Release Information

Statement introduced in Junos OS Release 8.3.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.3 for EX Series switches.
Support at the [edit ... relay-agent-remote-id] and [edit ... remote-id] hierarchy levels introduced in Junos OS Release 14.1.

Description

Add a prefix to the DHCP base option 82 Agent Circuit ID (suboption 1) or Agent Remote ID (suboption 2) information, or to the DHCPv6 option 18 (Relay Agent Interface-ID) or option 37 (Relay Agent Remote-ID) information in DHCP packets that DHCP relay agent sends to a DHCP server. The prefix can consist of any combination of the hostname, logical system name, and routing instance name.

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 DHCP option information.
- logical-system-name—Prepend the name of the logical system to the option information.
- routing-instance-name—Prepend the name of the routing instance to the option information.

Required Privilege Level

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

Related Documentation

- Including a Prefix in DHCP Options on page 63
- Using DHCP Relay Agent Option 82 Information on page 60
- Configuring DHCPv6 Relay Agent Options
**process-inform**

Syntax

```plaintext
Syntax
process-inform {
  pool pool-name;
}
```

Hierarchy Level

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

**Release Information**

Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.
**Description**  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. The remaining statement is explained separately. See CLI Explorer.

**Default**  Information request messages are not processed.

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

**Related Documentation**
- Enabling Processing of Client Information Requests on page 108
- Overriding Default DHCP Local Server Configuration Settings on page 28
proxy-mode

Syntax
proxy-mode;

Hierarchy Level
[edit forwarding-options dhcp-relay overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

Release Information
Statement introduced in Junos OS Release 9.5.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description
Enable DHCP relay proxy mode on the extended DHCP relay. Proxy mode supports all extended DHCP relay functionality.

You cannot configure both the DHCP relay proxy and the extended DHCP local server on the same interface.

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

Related Documentation
• DHCP Relay Proxy Overview on page 51
• Extended DHCP Relay Agent Overview on page 46
• Enabling DHCP Relay Proxy Mode on page 52
radius-disconnect (DHCP Local Server)

Syntax

radius-disconnect;

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.

Description

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.

Default

The client is deleted when a RADIUS-initiated disconnect is received.

Required Privilege Level

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

Related Documentation

• Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
• Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect on page 119

**rapid-commit (DHCPv6 Local Server)**

**Syntax**
`rapid-commit;`

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

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

**Description**
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.

**Default**
Rapid commit support is not enabled.

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

**Related Documentation**
- [Enabling DHCPv6 Rapid Commit Support on page 41](#)
- [Overriding Default DHCP Local Server Configuration Settings on page 28](#)
reconfigure (DHCP Local Server)

Syntax

```
reconfigure {
  attempts attempt-count;
  clear-on-abort;
  strict;
  support-option-pd-exclude;
  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 dhcpv6 group group-name],
[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 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 dhcpv6 group group-name],
[edit routing-instances routing-instance-name system services dhcp-local-server 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.
`support-option-pd-exclude` statement introduced in Junos OS Release 17.3 for the MX Series.

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. See CLI Explorer.
Options  support-option-pd-exclude—Request to exclude prefix option in the reconfigure message.

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

Related Documentation  • Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114

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

Syntax  relay-agent-interface-id;

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

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

Description  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.

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

Related Documentation  • Creating Unique Usernames for DHCP Clients on page 103
relay-agent-interface-id (DHCPv6 Relay Agent)

**Syntax**
```
relay-agent-interface-id {
  include-l2-interface-for-irb;
  keep-incoming-interface-id;
  prefix prefix;
  use-interface-description (logical | device);
  use-option-82;
}
```

**Hierarchy Level**
- [edit forwarding-options dhcp-relay dhcpv6],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name],
- [edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 ...],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 ...],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 ...]

**Release Information**
Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.3 for EX Series switches.
Support at the [edit... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

**Description**
Insert the DHCPv6 Relay Agent Interface-ID option (option 18) in DHCPv6 packets destined for the DHCPv6 server.

The remaining statements are explained separately. See CLI Explorer.

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

**Related Documentation**
- dhcp-relay on page 174
- Extended DHCP Relay Agent Overview on page 46
- DHCPv6 Relay Agent Overview on page 85
- Inserting DHCPv6 Interface-ID Option (Option 18) In DHCPv6 Packets on page 86
relay-agent-remote-id (DHCP Local Server)

Syntax

```
relay-agent-remote-id;
```

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
For MX Series routers only, enterprise-id and remote-id options introduced in Junos OS Release 12.3R3.
For MX Series routers only, the enterprise-id and remote-id options are obsoleted starting in Junos OS Releases 12.3R7, 13.2R4, 13.3R2, and 14.1R1.

Description

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. In order to generate an ASCII version of the username, the router concatenates only the remote-id portion of option 37 to the username, and ignores the enterprise number.

Required Privilege Level

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

Related Documentation

- Creating Unique Usernames for DHCP Clients on page 103
relay-agent-remote-id (DHCPv6 Relay Agent Username)

**Syntax**

```
relay-agent-remote-id;
```

**Hierarchy Level**

- [edit forwarding-options dhcp relay dhcpv6 authentication username-include],
- [edit forwarding-options dhcp relay dhcpv6 group group-name authentication username-include],
- [edit forwarding-options dhcp relay dual-stack-group dual-stack-group-name],
- [edit logical-systems logical-system-name forwarding-options dhcp relay dhcpv6 authentication username-include],
- [edit logical-systems logical-system-name forwarding-options dhcp relay dhcpv6 group group-name authentication username-include],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 authentication username-include],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 group group-name authentication username-include],
- [edit routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 authentication username-include],
- [edit routing-instances routing-instance-name forwarding-options dhcp relay dhcpv6 group group-name authentication username-include]

**Release Information**

Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
For MX Series routers only, enterprise-id and remote-id options introduced in Junos OS Release 12.3R3.
For MX Series routers only, the enterprise-id and remote-id options are obsoleted starting in Junos OS Releases 12.3R7, 13.2R4, 13.3R2, and 14.1R1.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

**Description**

Specify that the DHCPv6 Relay Agent Remote-ID option (option 37) in the client PDU name is concatenated with the username during the subscriber authentication or client authentication process. In order to generate an ASCII version of the username, the router concatenates only the remote-id portion of option 37 to the username, and ignores the enterprise number.

**Required Privilege Level**

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

**Related Documentation**

- DHCPv6 Relay Agent Overview on page 85
- Creating Unique Usernames for DHCP Clients on page 103
relay-option (DHCP Relay Agent)

**Syntax**

```plaintext
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;
  }
}
```

**Hierarchy Level**

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

**Release Information**

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

**Description**

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.

The remaining statements are explained separately. See CLI Explorer.

**Required Privilege Level**

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

**Related Documentation**

- Using DHCP Option Information to Selectively Process DHCP Client Traffic
relay-option-82

Syntax

```
relay-option-82 {
  circuit-id {
    include-irb-and-l2;
    keep-incoming-circuit-id;
    no-vlan-interface-name;
    prefix prefix;
    use-interface-description (logical | device);
    use-vlan-id;
  }
  remote-id {
    include-irb-and-l2;
    keep-incoming-remote-id;
    no-vlan-interface-name;
    prefix prefix;
    use-interface-description (logical | device);
    use-vlan-id;
  }
  server-id-override
  vendor-specific{
    host-name;
    location;
  }
}
```

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 8.3.
Statement introduced in Junos OS Release 12.3 for EX Series switches.

Description

Enable or disable the insertion of the DHCP relay agent information option (option 82) in DHCP packets destined for a DHCP server.

To enable insertion of option 82 information in DHCP packets, you must specify at least one of the circuit-id or remote-id statements.

You can use the relay-option-82 statement and its subordinate statements at the [edit forwarding-options dhcp-relay] hierarchy level to control insertion of option 82 information globally, or at the [edit forwarding-options dhcp-relay group group-name] hierarchy level to control insertion of option 82 information for a named group of interfaces.
To restore the default behavior (option 82 information is not inserted into DHCP packets), use the `delete relay-option-82` statement.

The remaining statements are explained separately.

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

**Related Documentation**
- Using DHCP Relay Agent Option 82 Information on page 60
- `dhcp-relay` on page 174

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

**Syntax**
```
relay-server-group relay-server-group;
```

**Hierarchy Level**
```
[edit forwarding-options dhcp-relay]
[edit forwarding-options dhcp-relay dhcpv6]
[edit forwarding-options dhcp-relay group group-name]
[edit forwarding-options dhcp-relay dhcpv6 group group-name]
[edit logical-systems logical-system-name]
[edit logical-systems logical-system-name routing-instances]
[edit routing-instances routing-instance-name]
```

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

**Description**
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.

**Options**
- `relay-server-group`—Name of DHCP server group.

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

**Related Documentation**
- Using DHCP Option Information to Selectively Process DHCP Client Traffic
## replace-ip-source-with

### Syntax

```
replace-ip-source-with giaddr;
```

### Hierarchy Level

- [edit forwarding-options dhcp-relay overrides],
- [edit forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

### Release Information

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

### Description

Replace the IP source address in DHCP relay request and release packets with the gateway IP address (giaddr).

### 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 46](#)
- [Replacing the DHCP Relay Request and Release Packet Source Address on page 72](#)
retransmission-attempt

**Syntax**

retransmission-attempt number;

**Hierarchy Level**

[edit interfaces interface-name unit logical-unit-number family inet dhcp]

**Release Information**

Statement introduced in Junos OS Release 8.5 for J Series devices.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 9.2 for SRX Series devices.
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description**

Specify the number of times the device retransmits a Dynamic Host Control Protocol (DHCP) packet if a DHCP server fails to respond. After the specified number of attempts, no further attempts at reaching a server are made.

**Options**

*number*—Number of retransmit attempts.

- **Range**: 0 through 6
- **Default**: 4

**Required Privilege Level**

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

**Related Documentation**

- Configuring a DHCP Client (CLI Procedure) on page 17
- interfaces
- unit
- family
retransmission-interval

Syntax  retransmission-interval seconds;

Hierarchy Level  [edit interfaces interface-name unit logical-unit-number family inet dhcp]

Release Information  Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description  Specify the time between successive retransmissions of the client DHCP request if a 
DHCP server fails to respond.

Options  seconds—Number of seconds between successive retransmissions. 
Range:  4 through 64 seconds 
Default:  4 seconds

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

Related Documentation  • Configuring a DHCP Client (CLI Procedure) on page 17
route-suppression (DHCP Local Server and Relay Agent)

Syntax
route-suppression (access | access-internal | destination);

Hierarchy Level
[edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit forwarding-options dhcp-relay group group-name],
[edit forwarding-options dhcp-relay dhcpv6 group group-name],
[edit logical-systems logical-system-name ...],
[edit logical-systems logical-system-name routing-instances routing-instance-name ...],
[edit routing-instances routing-instance-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 13.2.

Description
Configure the jdhcpd process to suppress the installation of access, access-internal, or destination routes during client binding.

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

Options
access—(DHCPv6 only) Suppress installation of access routes. You can use the access and access-internal options in the same statement for DHCPv6.

access-internal—In a DHCPv4 hierarchy, suppress installation of both access-internal and destination routes. In a DHCPv6 hierarchy, suppress access-internal routes only. Can be configured in the same statement with the access option.

destination—(DHCPv4 only) Suppress installation of destination routes. This option and the access-internal option are mutually exclusive; however, the access-internal option also suppresses destination routes.

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

Related Documentation
• Preventing DHCP from Installing Access, Access-Internal, and Destination Routes by Default on page 82
**routing-instance-name (DHCP Local Server)**

**Syntax**

```
routing-instance-name;
```

**Hierarchy Level**

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

**Release Information**

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description**

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.

**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 101
## routing-instance-name (DHCP Relay Agent)

**Syntax**

```
routing-instance-name;
```

**Hierarchy Level**

```
[edit forwarding-options dhcp-relay authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include],
[edit forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dual-stack-group dual-stack-group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name authentication username-include],
```

**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.
Support at the `[edit ... dual-stack-group dual-stack-group-name]` hierarchy level introduced in Junos OS Release 15.1.

**Description**

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 `[edit ... dhcpv6]` hierarchy levels to configure DHCPv6 support.

**Required Privilege Level**

- interface—To view this statement in the configuration.
- interface-control—To add this statement to the configuration.
Related Documentation

- Using External AAA Authentication Services with DHCP on page 101
- Creating Unique Usernames for DHCP Clients on page 103
send-release-on-delete (DHCP Relay Agent)

**Syntax**

send-release-on-delete;

**Hierarchy Level**

- [edit forwarding-options dhcp-relay dhcpv6 overrides],
- [edit forwarding-options dhcp-relay overrides],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
- [edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

**Release Information**


**Description**

Send a release message to the DHCP (or DHCPv6) server whenever DHCP relay or relay proxy deletes a client. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

M120 and M320 routers do not support DHCPv6.

**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 46
- Overriding the Default DHCP Relay Configuration Settings on page 68
- Sending Release Messages When Clients Are Deleted on page 58
server (DNS, Port, and TFTP Service)

Syntax

server address <logical-system logical-system-name> <routing-instance routing-instance-name>;

Hierarchy Level

[edit forwarding-options helpers domain],
[edit forwarding-options helpers domain interface interface-name],
[edit forwarding-options helpers port port-number],
[edit forwarding-options helpers port port-number interface interface-name],
[edit forwarding-options helpers tftp],
[edit forwarding-options helpers tftp interface interface-name]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Support for multiple server instances for a given port introduced in Junos OS Release 17.2 for MX Series routers.
Support for multiple server instances for a given port introduced in Junos OS Release 17.3R1 for EX9200 switches.

Description

Specify the DNS or TFTP server for forwarding DNS or TFTP requests, or specify a destination server address for forwarding LAN broadcast packets as unicast traffic for a custom-configured UDP port.

When configuring port helpers, in releases prior to Junos OS Release 17.2, only one server can be specified for a given port. For Junos OS Release 17.2 and later, multiple servers can be specified for a given port at the global or interface-specific level. When multiple servers are specified, the same packet, with the originator IP address and port requests, is forwarded to the different configured servers; the payload of the UDP packet is not modified.

Options

address—IP address of the server.

logical-system logical-system-name—(Optional) Logical system name of the server.

routing-instance [ routing-instance-names ]—(Optional) Set the routing instance name or names that belong to the DNS server or TFTP server.

Required Privilege Level

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

Related Documentation

• Configuring DNS and TFTP Packet Forwarding
• Configuring Port-based LAN Broadcast Packet Forwarding on page 133
server-address

Syntax server-address ip-address;

Hierarchy Level [edit interfaces interface-name unit logical-unit-number family inet dhcp]


Description Specify the address of the DHCP server that the client should accept DHCP offers from. If this option is included in the DHCP configuration, the client accepts offers only from this server and ignores all other offers.

Default The client accepts the first offer it receives from any DHCP server.

Options ip-address—DHCP server address.

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

Related Documentation • Configuring a DHCP Client (CLI Procedure) on page 17
  • interfaces
  • unit
  • family
server-group

Syntax  server-group {
    server-group-name {
        server-ip-address;
    }
}

Hierarchy Level  [edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit logical-systems logical-system-name forwarding-options dhcp-relay],
[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6]

Release Information  Statement introduced in Junos OS Release 8.3.
Support at the [edit ... dhcpv6] hierarchy levels introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description  Specify the name of a group of DHCP server addresses for use by the extended DHCP relay agent. Use the statement at the [edit ... dhcpv6] hierarchy levels to configure DHCPv6 support.

Options  server-group-name—Name of the group of DHCP or DHCPv6 server addresses.

server-ip-address—IP address of the DHCP server belonging to this named server group.
Use IPv6 addresses when configuring DHCPv6 support. You can configure a maximum of five IP addresses in each named server group.

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

Related Documentation  • dhcp-relay on page 174
• Extended DHCP Relay Agent Overview on page 46
• Configuring Named Server Groups on page 79
server-identifier

Syntax server-identifier address;

Hierarchy Level [edit system services dhcp],
[edit system services dhcp pool],
[edit system services dhcp static-binding]

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

Description Configure a server identifier. The identifier can be used to identify a DHCP server in a DHCP message. It can also be used as a destination address from clients to servers (for example, when the boot file is set, but not the boot server).

Servers include the server identifier in DHCP OFFER messages so that clients can distinguish between multiple lease offers. Clients include the server identifier in DHCP REQUEST messages to select a lease and indicate which offer is accepted from multiple lease offers. Also, clients can use the server identifier to send unicast request messages to specific DHCP servers to renew a current lease.

This address must be a manually assigned, static IP address. The server cannot send a request and receive an IP address from itself or another DHCP server.

Default If no server identifier is set, the DHCP server sets the server identifier based on the primary interface address used by the server to receive a client request. For example, if the client sends a DHCP request and the server receives it on fe-0/0/0 and the primary interface address is 1.1.1.1, then the server identifier is set to 1.1.1.1.

Options address—IPv4 address of the server. This address must be accessible by all clients served within a specified range of addresses (based on an address pool or static binding).

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

Related Documentation
**service-profile (DHCP Local Server)**

**Syntax**  
```
service-profile dynamic-profile-name;
```

**Hierarchy Level**  
- [edit system services dhcp-local-server],
- [edit system services dhcp-local-server dual-stack-group dual-stack-group-name],
- [edit system services dhcp-local-server dhcpv6],
- [edit system services dhcp-local-server dhcpv6 group group-name],
- [edit system services dhcp-local-server dhcpv6 group group-name interface interface-name],
- [edit system services dhcp-local-server group group-name],
- [edit system services dhcp-local-server group group-name interface interface-name],
- [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 ...]

**Release Information**  
Statement introduced in Junos OS Release 11.2.  
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description**  
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.

- To specify the default service for all DHCP local server clients, include the `service-profile` statement at the [edit system services dhcp-local-server] hierarchy level.
- To specify the default service for a named group of interfaces, include the `service-profile` statement at the [edit system services dhcp-local-server group group-name] hierarchy level.
- To specify the default service for a particular interface within a named group of interfaces, include the `service-profile` statement at the [edit system services dhcp-local-server group group-name interface interface-name] hierarchy level.
- For DHCPv6 clients, use the `service-profile` statement at the [edit system services dhcp-local-server dhcpv6] hierarchy level.

**Options**  
- `dynamic-profile-name`—Name of the dynamic profile that defines the service.

**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 22
- Default Subscriber Service Overview
- Configuring a Default Subscriber Service
## service-profile (DHCP Relay Agent)

**Syntax**

```
[edit forwarding-options dhcp-relay],
[edit forwarding-options dhcp-relay dhcpv6],
[edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name],
[edit forwarding-options dhcp-relay group group-name],
[edit forwarding-options dhcp-relay group group-name interface interface-name],
[edit forwarding-options dhcp-relay dhcpv6 group group-name],
[edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name],
[edit logical-systems logical-system-name forwarding-options dhcp-relay ...],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay ...],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]
```

**Hierarchy Level**

- [edit forwarding-options dhcp-relay]
- [edit forwarding-options dhcp-relay dhcpv6]
- [edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name]
- [edit forwarding-options dhcp-relay group group-name]
- [edit forwarding-options dhcp-relay group group-name interface interface-name]
- [edit forwarding-options dhcp-relay dhcpv6 group group-name]
- [edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name]
- [edit logical-systems logical-system-name forwarding-options dhcp-relay ...]
- [edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay ...]
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay ...]

**Release Information**

Statement introduced in Junos OS Release 11.2.
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.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

**Description**

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.

- To specify the default service for all DHCP relay agent clients, include the `service-profile` statement at the [edit forwarding-options dhcp relay] hierarchy level.
- To specify the default service for a named group of interfaces, include the `service-profile` statement at the [edit forwarding-options dhcp relay group group-name] hierarchy level.
- To specify the default service for a particular interface within a named group of interfaces, include the `service-profile` statement at the [edit forwarding-options dhcp relay group group-name interface interface-name] hierarchy level.

**Options**

- `dynamic-profile-name`—Name of the dynamic profile.

**Required Privilege Level**

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

**Related Documentation**

- dhcp-relay on page 174
- Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces
- Grouping Interfaces with Common DHCP Configurations on page 89
- Default Subscriber Service Overview
- Configuring a Default Subscriber Service
**session-mode**

**Syntax**

```
session-mode (automatic | multihop | singlehop);
```

**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],
[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**

Configure the session mode.

**Options**

Default: automatic

- **automatic**—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.

- **multihop**—Configure multihop BFD sessions and passive DHCP clients.

- **single-hop**—Configure single hop BFD sessions and non-passive DHCP clients.

**Required Privilege**

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

**Related Documentation**

- Example: Configuring Group Liveness Detection for DHCP Local Server Clients
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
**sip-server**

**Syntax**  
sip-server [address | name];

**Hierarchy Level**  
[edit system services dhcp],  
[edit system services dhcp],  
[edit system services dhcp pool],  
[edit system services dhcp static-binding]

**Release Information**  
Statement introduced in Junos OS Release 10.1 for EX Series switches.

**Description**  
Configure Session Initiation Protocol (SIP) server addresses or names for DHCP servers.

**Options**  
address—IPv4 address of the SIP server. To configure multiple SIP servers, include multiple address options. This address must be accessible by all clients served within a specified range of addresses (based on an address pool or static binding).

name—Fully qualified domain name of the SIP server. To configure multiple SIP servers, include multiple name options. This domain name must be accessible by all clients served within a specified range of addresses (based on an address pool or static binding).

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

**Related Documentation**  
- Configuring a DHCP SIP Server (CLI Procedure) on page 18  
- Configuring a DHCP Server on Switches (CLI Procedure)
source-address-giaddr

**Syntax**

source-address-giaddr;

**Hierarchy Level**

[edit forwarding-options helpers bootp],
[edit forwarding-options helpers bootp interface interface-name]

**Release Information**

Statement introduced in Junos OS Release 10.1 for EX Series switches.

**Description**

Configure the gateway IP address (giaddr) as the source IP address of the switch for relayed DHCP packets when the switch is used as the DHCP relay agent.

When this statement is entered in the [edit forwarding-options helpers bootp] hierarchy, the gateway IP address is configured as the source IP address of the switch for relayed DHCP packets exiting all interfaces on the switch.

When this statement is entered in the [edit forwarding-options helpers bootp interface interface-name] hierarchy, the gateway IP address is configured as the source IP address of the switch for relayed DHCP packets exiting the specified interface of the switch.

In Junos OS Release 10.1 for EX Series switches and later releases, the IP address of the interface that the DHCP packet exits on the switch acting as a DHCP relay agent is used as the source IP address for relayed DHCP packets by default.

In Junos OS Releases 9.6 and 10.0 for EX Series switches, the gateway IP address of the switch is always used as the source IP address for relayed DHCP packets when the switch is used as the DHCP relay agent.

In Junos OS Releases 9.3 through 9.5 for EX Series switches, the IP address of the interface that the DHCP packet exits on the switch acting as a DHCP relay agent is always used as the source IP address for relayed DHCP packets.

**Required Privilege Level**

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

**Related Documentation**

- DHCP/BOOTP Relay for Switches Overview
**static-binding**

**Syntax**

```yaml
static-binding mac-address {
    client-identifier (ascii client-id | hexadecimal client-id);
    fixed-address {
        address;
    }
    host-name client-hostname;
}
```

**Hierarchy Level**

[edit system services dhcp],
[edit system services dhcp]

**Release Information**

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

**Description**

For J Series Services routers and EX Series switches only. Set static bindings for DHCP clients. A static binding is a mapping between a fixed IP address and the client’s MAC address or client identifier.

**Options**

mac-address—The MAC address of the client. This is a hardware address that uniquely identifies a client on the network.

fixed-address address—Fixed IP address assigned to the client. Typically a client has one address assigned, but you can assign more.

host-name client-hostname—Hostname of the client requesting the DHCP server. The name can include the local domain name. Otherwise, the name is resolved based on the domain-name statement.

client-identifier (ascii client-id | hexadecimal client-id)—Used by the DHCP server to index the database of address bindings. The client identifier is an ASCII string or hexadecimal number and can include a type-value pair as specified in RFC 1700, Assigned Numbers. Either a client identifier or the client’s MAC address must be configured to uniquely identify the client on the network.

**Required Privilege Level**

system—To view this statement in the configuration.

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

**Related Documentation**
strict (DHCP Local Server)

Syntax

strict;

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 10.4.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

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.

Default

Accept solicit messages from clients that do not support reconfiguration and permit them to bind.

Required Privilege

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

Related Documentation

- Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
- Preventing Binding of Clients That Do Not Support Reconfigure Messages on page 42
threshold (detection-time)

Syntax

```plaintext
threshold milliseconds;
```

Hierarchy Level

- [edit system services dhcp-local-server liveness-detection method bfd detection-time]
- [edit system services dhcp-local-server dhcpv6 liveness-detection method bfd detection-time]
- [edit forwarding-options dhcp-relay liveness-detection method bfd detection-time]
- [edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd detection-time]
- [edit system services dhcp-local-server group group-name liveness-detection method bfd detection-time]
- [edit system services dhcp-local-server dhcpv6 group group-name liveness-detection method bfd detection-time]
- [edit forwarding-options dhcp-relay group group-name liveness-detection method bfd detection-time]
- [edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection method bfd detection-time]

Release Information

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

Description

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.

NOTE: The threshold time must be greater than or equal to the minimum-interval or the minimum-receive-interval.

Options

- `milliseconds`— Value for the detection time adaptation threshold.
  - Range: 1 through 255,000

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
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
threshold (transmit-interval)

Syntax  
threshold milliseconds;

Hierarchy Level  
[edit system services dhcp-local-server liveness-detection method bfd transmit-interval],
[edit system services dhcp-local-server dhcpv6 liveness-detection method bfd transmit-interval],
[edit forwarding-options dhcp-relay liveness-detection method bfd transmit-interval],
[edit forwarding-options dhcp-relay dhcpv6 liveness-detection method bfd transmit-interval],
[edit system services dhcp-local-server group group-name liveness-detection method bfd transmit-interval],
[edit system services dhcp-local-server dhcpv6 group group-name liveness-detection method bfd transmit-interval],
[edit forwarding-options dhcp-relay group group-name liveness-detection method bfd transmit-interval],
[edit forwarding-options dhcp-relay dhcpv6 group group-name liveness-detection method bfd transmit-interval]

Release Information  
Statement introduced in Junos OS Release 12.1.

Description  
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.

Options  
milliseconds — Threshold value.
Range: 0 through 4,294,967,295 (2^{32} – 1)

NOTE: The threshold value specified in the threshold statement must be greater than the value specified in the minimum-interval statement for the transmit-interval statement.

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
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
timeout (DHCP Local Server)

Syntax

```
timeout timeout-value;
```

Hierarchy Level

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

Release Information

Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.

Description

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.

Options

- `timeout-value`—Initial retry timeout value.
  - Range: 1 through 10 seconds
  - Default: 2 seconds

Required Privilege Level

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

Related Documentation

- Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114
- Configuring Dynamic Reconfiguration Attempts for DHCP Clients on page 117
token (DHCP Local Server)

**Syntax**

token token-value;

**Hierarchy Level**

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

**Release Information**

Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.

**Description**

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, *Authentication for DHCP Messages*, section 4.

**Options**

*token-value*—Plain-text alphanumeric string.

**Default:** null (empty string)

**Required Privilege**

*system*—To view this statement in the configuration.

*system-control*—To add this statement to the configuration.
**trace (DHCP Relay Agent)**

**Syntax**
```
trace;
```

**Hierarchy Level**
- `[edit forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name]`
- `[edit forwarding-options dhcp-relay group group-name interface interface-name]`
- `[edit logical-systems logical-system-name forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name]`
- `[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name interface interface-name]`
- `[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name]`
- `[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 group group-name interface interface-name]`
- `[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name]`

**Release Information**
- Statement introduced in Junos OS Release 10.4.
- 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**
Enable trace operations for a group of interfaces or for a specific interface within a group. Use the statement at the `[edit ... dhcpv6]` hierarchy levels to configure DHCPv6 support.

EX Series switches do not support DHCPv6.

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

**Related Documentation**
- [Configuring an Extended DHCP Relay Server on EX Series Switches (CLI Procedure) on page 49](#)
- [Tracing Extended DHCP Operations](#)
- [Tracing Extended DHCP Operations for Specific Interfaces](#)
traceoptions (DHCP Server)

Syntax

```plaintext
traceoptions {
  file filename <files number> <match regex> <size size> <world-readable |
          no-world-readable>;
  flag flag;
}
```

Hierarchy Level

[edit system services dhcp]

Release Information

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

Description

Define tracing operations for DHCP processes.

Options

- **file filename**—Name of the file that receives the output of the tracing operation. Enclose the name in quotation marks. All files are placed in the directory `/var/log`.
- **files number**—(Optional) Maximum number of trace files. When a trace file named `trace-file` reaches its maximum size, it is renamed `trace-file.0`, then `trace-file.1`, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum number of files, you also must specify a maximum file size with the `size` option and a filename.

**Range:** 2 through 1000

**Default:** 3 files

- **flag flag**—Tracing operation to perform. To specify more than one tracing operation, include multiple `flag` statements. You can include the following flags:
  - **all**—All tracing operations
  - **binding**—Trace binding operations
  - **config**—Log reading of configuration
  - **conflict**—Trace user-detected conflicts for IP addresses
  - **event**—Trace important events
  - **ifdb**—Trace interface database operations
  - **io**—Trace I/O operations
  - **lease**—Trace lease operations
  - **main**—Trace main loop operations
  - **misc**—Trace miscellaneous operations
  - **packet**—Trace DHCP packets
  - **options**—Trace DHCP options

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

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

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

**no-world-readable**—(Optional) Disable unrestricted file access.
size size—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named trace-file reaches this size, it is renamed trace-file.0. When the trace-file again reaches its maximum size, trace-file.0 is renamed trace-file.1 and trace-file is renamed trace-file.0. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the files option and filename.

Syntax:  \texttt{xk} to specify KB, \texttt{xm} to specify MB, or \texttt{xg} to specify GB

Range:  10 KB through 1 GB

Default:  128 KB

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

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

Related Documentation  
- Configuring Tracing Operations for DHCP Processes
- System Management Configuration Statements
traceoptions (DNS, Port, and TFTP Packet Forwarding)

Syntax

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

Hierarchy Level

[edit forwarding-options helpers]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement standardized and `match` option introduced in Junos OS Release 8.0.
Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description

Configure tracing operations for BOOTP, DNS, TFTP, or custom UDP port packet forwarding.

Default

If you do not include this statement, no tracing operations are performed.

Options

- **file filename**—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks (" "). All files are placed in a file named `fud` in the directory `/var/log`. If you include the `file` statement, you must specify a filename.

- **files number**—(Optional) Maximum number of trace files. When a trace file named `trace-file` reaches its maximum size, it is renamed `trace-file.0`, then `trace-file.1`, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten. If you specify a maximum number of files, you also must specify a maximum file size with the `size` option and a filename.

  Range: 2 through 1000

  Default: 3 files

- **flag flag**—Tracing operation to perform. To specify more than one tracing operation, include multiple `flag` statements. You can include the following flags:

  - `address`—Trace address management events
  - `all`—Trace all events
  - `bootp`—Trace BOOTP or DHCP services events
  - `config`—Trace configuration events
  - `domain`—Trace DNS service events
  - `ifdb`—Trace interface database operations
  - `io`—Trace I/O operations
- **main**—Trace main loop events
- **port**—Trace arbitrary protocol events
- **rtsock**—Trace routing socket operations
- **tftp**—Trace TFTP service events
- **trace**—Trace tracing operations
- **ui**—Trace user interface operations
- **util**—Trace miscellaneous utility operations

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

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

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

**size size**—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named `trace-file` reaches this size, it is renamed `trace-file.0`. When the `trace-file` file again reaches its maximum size, `trace-file.0` is renamed `trace-file.1` and `trace-file` is renamed `trace-file.0`. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the `files` option and filename.

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

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

**Default:** 128 KB

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

### Required Privilege

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

### Related Documentation

- [Tracing BOOTP, DNS, and TFTP Forwarding Operations](#)
transmit-interval

Syntax

```plaintext
transmit-interval {
  threshold milliseconds;
  minimum-interval 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

Configure the Bidirectional Forwarding Detection (BFD) transmit interval.

The remaining statements are explained separately. See CLI Explorer.

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
- Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
### trigger (DHCP Local Server)

<table>
<thead>
<tr>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>trigger {</td>
</tr>
<tr>
<td>radius-disconnect;</td>
</tr>
<tr>
<td>}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hierarchy Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server reconfigure],</td>
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<td>[edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcpv6 reconfigure],</td>
</tr>
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<tr>
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<td>[edit system services dhcp-local-server dhcpv6 reconfigure],</td>
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<tr>
<td>[edit system services dhcp-local-server group group-name reconfigure],</td>
</tr>
<tr>
<td>[edit system services dhcp-local-server dhcpv6 group group-name reconfigure]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Release Information</th>
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<tbody>
<tr>
<td>Statement introduced in Junos OS Release 10.0.</td>
</tr>
<tr>
<td>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</td>
</tr>
<tr>
<td>Support at the [edit ... dhcpv6 ...] hierarchy levels introduced in Junos OS Release 10.4.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure behavior in response to a trigger for all DHCP clients or only the DHCP clients serviced by the specified group of interfaces.</td>
</tr>
<tr>
<td>The remaining statement is explained separately. See CLI Explorer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Required Privilege Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>system—To view this statement in the configuration.</td>
</tr>
<tr>
<td>system-control—To add this statement to the configuration.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Documentation</th>
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<tbody>
<tr>
<td>• Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114</td>
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<tr>
<td>• Configuring Reconfiguration of the Client on Receipt of RADIUS-Initiated Disconnect on page 119</td>
</tr>
<tr>
<td>• radius-disconnect on page 266</td>
</tr>
</tbody>
</table>
trust-option-82

Syntax  trust-option-82;

Hierarchy Level  [edit forwarding-options dhcp-relay overrides],
[edit forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit logical-systems logical-system-name routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name overrides],
[edit routing-instances routing-instance-name forwarding-options dhcp-relay group group-name interface interface-name overrides]

Release Information  Statement introduced in Junos OS Release 8.3.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  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.

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

Related Documentation  • Trusting Option 82 Information on page 67
• Overriding the Default DHCP Relay Configuration Settings on page 68
**use-interface-description**

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

**Hierarchy Level**
- [edit forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
- [edit forwarding-options dhcp-relay dhcpv6 group group-name (relay-agent-interface-id | relay-agent-remote-id)],
- [edit forwarding-options dhcp-relay relay-option-82 (circuit-id | remote-id)],
- [edit forwarding-options dhcp-relay group group-name relay-option-82 (circuit-id | remote-id)],
- [edit logical-systems logical-system-name ... forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
- [edit logical-systems logical-system-name ... forwarding-options dhcp-relay relay-option-82 (circuit-id | remote-id)],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcpv6 (relay-agent-interface-id | relay-agent-remote-id)],
- [edit routing-instances routing-instance-name forwarding-options dhcp-relay relay-option-82 (circuit-id | remote-id)],
- [edit vlans vlan-name forwarding-options dhcp-security dhcpv6-options option-18],
- [edit vlans vlan-name forwarding-options dhcp-security dhcpv6-options option-37]

**Release Information**
- 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.
- Support at the [edit ... relay-agent-remote-id] and [edit ... remote-id] hierarchy levels introduced in Junos OS Release 14.1.
- Support at the [edit vlans vlan-name dhcp-security dhcpv6-options option-18] and [edit vlans vlan-name dhcp-security dhcpv6-options option-37] hierarchy levels introduced in Junos OS Release 14.1X53-D10 for EX Series switches.

**Description**
Use the textual interface description instead of the interface identifier in the DHCP base option 82 Agent Circuit ID (suboption 1) or Agent Remote ID (suboption 2) information, or in the DHCPv6 option 18 (Relay Agent Interface ID) or option 37 (Relay Agent Remote ID) information in DHCP packets that the DHCP relay agent sends to a DHCP server.

**NOTE:** For integrated routing and bridging (IRB) interfaces, the option 82 field must be able to uniquely identify the incoming interface based on either the Agent Circuit ID or Agent Remote ID. You can modify the information in the textual interface description to match the raw IFD (physical interface without a subunit) name and configure the option 82 field to use the interface description.

The textual description is configured using the `description` statement at the [edit interfaces interface-name] hierarchy level. If you specify that the textual description be used and no description is configured for the interface, DHCP relay defaults to using the Layer 2 interface name. When you use the interface description rather than the interface name,
the interface description has to be specified under interface unit ("set interfaces ge-0/0/0 unit 0 description "client"). If you do not do this, then the interface name is used.

In the case of integrated routing and bridging (IRB) interfaces, the textual description of the Layer 2 interface is used instead of the IRB interface. If there is no description configured, the Layer 2 logical interface name is used. To include the IRB interface description instead of the Layer 2 interface description, configure the **use-interface-description** and the **no-vlan-interface-name** statements. If no description is configured for the IRB interface, DHCP relay defaults to using the IRB interface name.

---

**NOTE:** The **use-interface-description** statement is mutually exclusive with the **use-vlan-id** statement.

---

If you specify the textual interface description, rather than accepting the default syntax, the identification is for packets returned from the server, and only for instances where that identification would be required by the DHCP relay, such as a stateless pass-through.

---

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

---

**Options**  
- **logical**—Use the textual description that is configured for the logical interface.  
- **device**—Use the textual description that is configured for the device interface.

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

**Related Documentation**  
- Including a Textual Description in DHCP Options on page 65  
- Using DHCP Relay Agent Option 82 Information on page 60  
- Configuring DHCPv6 Relay Agent Options
use-primary (DHCP Local Server)

Syntax  use-primary primary-profile-name;

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

Release Information  Statement introduced in Junos OS Release 9.3.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description  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.

Options  primary-profile-name—Name of the dynamic profile to configure as the primary dynamic profile

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

Related Documentation  •  Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces
use-primary (DHCP Relay Agent)

Syntax

```plaintext
use-primary primary-profile-name;
```

Hierarchy Level

- `edit forwarding-options dhcp-relay dhcv6 dynamic-profile profile-name`
- `edit forwarding-options dhcp-relay dhcv6 group group-name dynamic-profile profile-name`
- `edit forwarding-options dhcp-relay dual-stack-group dual-stack-group-name dynamic-profile profile-name`
- `edit forwarding-options dhcp-relay group group-name dynamic-profile profile-name`
- `edit logical-systems logical-system-name forwarding-options dhcp-relay dhcv6 dynamic-profile profile-name`
- `edit logical-systems logical-system-name forwarding-options dhcp-relay dhcv6 group group-name dynamic-profile profile-name`
- `edit logical-systems logical-system-name forwarding-options dhcp-relay group dual-stack-group-name dynamic-profile profile-name`
- `edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcv6 dynamic-profile profile-name`
- `edit routing-instances routing-instance-name forwarding-options dhcp-relay dhcv6 group group-name dynamic-profile profile-name`
- `edit routing-instances routing-instance-name forwarding-options dhcp-relay group dual-stack-group-name dynamic-profile profile-name`

Release Information

- Statement introduced in Junos OS Release 9.3.
- Support at the `edit ... dhcv6` hierarchy levels introduced in Junos OS Release 11.4.
- Statement introduced in Junos OS Release 12.1 for EX Series switches.
- Support at the `edit ... dual-stack-group dual-stack-group-name` hierarchy level introduced in Junos OS Release 15.1.

Description

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.

Use the statement at the `edit ... dhcv6` hierarchy levels to configure DHCPv6 support.

EX Series switches do not support DHCPv6.
Options  

**primary-profile-name**—Name of the dynamic profile to configure as the primary dynamic profile

Required Privilege

*Level*

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

Related Documentation

- [Attaching Dynamic Profiles to DHCP Subscriber Interfaces or DHCP Client Interfaces](#)
**use-vlan-id**

**Syntax**

```
use-vlan-id;
```

**For Platforms with Enhanced Layer 2 Software (ELS)**

- [edit forwarding-options helpers bootp dhcp-option82-circuit-id]
- [edit forwarding-options helpers bootp interface interface-name dhcp-option82-circuit-id]

**For MX Series Platforms**

- [edit bridge-domains bridge-domain-name forwarding-options dhcp-security option-82 circuit-id]

**Release Information**

Statement introduced in Junos OS Release 9.3 for EX Series switches.
Statement introduced in Junos OS Release 11.3 for the QFX Series.

---

**NOTE:** The EX Series switches that support the use-vlan-id statement are the EX4300, EX4600, and EX9200 switches.

---

**Description**

Use the VLAN ID rather than the VLAN name (the default) in the circuit ID or remote ID value in the DHCP option 82 information.

---

**NOTE:** The use-vlan-id statement is mutually exclusive with the use-interface-description and no-vlan-interface-name statements.

---

The use-vlan-id statement only applies to interfaces in a bridge domain. The format of the Agent Circuit ID or Agent Remote ID information for Fast Ethernet or Gigabit Ethernet interfaces is as follows:

```
(fe|ge)-fpc/pic/subunit:svlan_id-vlan_id
```

**NOTE:** The subunit is required and used to differentiate the interface for remote systems, and svlan_id-vlan_id represents the VLANs associated with the bridge domain.

---

**Required Privilege Level**

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

- Example: Setting Up DHCP Option 82 with a Switch with No Relay Agent Between Clients and a DHCP Server
- Example: Setting Up DHCP Option 82 with a Switch as a Relay Agent Between Clients and a DHCP Server
- Setting Up DHCP Option 82 on the Switch with No Relay Agent Between Clients and DHCP Server (CLI Procedure)
- Setting Up DHCP Option 82 with the Switch as a Relay Agent Between Clients and DHCP Server (CLI Procedure)
user-prefix (DHCP Local Server)

Syntax

```
user-prefix user-prefix-string;
```

Hierarchy Level

- `edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server authentication username-include`
- `edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcpv6 authentication username-include`
- `edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server dhcpv6 group group-name authentication username-include`
- `edit logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server group group-name authentication username-include`
- `edit logical-systems logical-system-name system services dhcp-local-server authentication username-include`
- `edit logical-systems logical-system-name system services dhcp-local-server dhcpv6 authentication username-include`
- `edit logical-systems logical-system-name system services dhcp-local-server dhcpv6 group group-name authentication username-include`
- `edit logical-systems logical-system-name system services dhcp-local-server group group-name authentication username-include`
- `edit logical-systems routing-instance-name system services dhcp-local-server authentication username-include`
- `edit logical-systems routing-instance-name system services dhcp-local-server dhcpv6 authentication username-include`
- `edit logical-systems routing-instance-name system services dhcp-local-server dhcpv6 group group-name authentication username-include`
- `edit logical-systems routing-instance-name system services dhcp-local-server group group-name authentication username-include`
- `edit routing-instances routing-instance-name system services dhcp-local-server authentication username-include`
- `edit routing-instances routing-instance-name system services dhcp-local-server dhcpv6 authentication username-include`
- `edit routing-instances routing-instance-name system services dhcp-local-server dhcpv6 group group-name authentication username-include`
- `edit routing-instances routing-instance-name system services dhcp-local-server group group-name authentication username-include`
- `edit system services dhcp-local-server authentication username-include`
- `edit system services dhcp-local-server dhcpv6 authentication username-include`
- `edit system services dhcp-local-server dhcpv6 group group-name authentication username-include`
- `edit system services dhcp-local-server group group-name authentication username-include`

Release Information

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

Specify the user prefix that is concatenated with the username during the subscriber authentication or DHCP client authentication process.

Options

- `user-prefix-string`—User prefix string.
Required Privilege

- 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 101
username-include (DHCP Local Server)

Syntax

```
circuit-type;
client-id;
delimiter delimiter-character;
domain-name domain-name-string;
domain-name-string;
interface-description (device-interface | logical-interface);
interface-name;
logical-system-name;
inteface-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 logical-systems logical-system-name routing-instances routing-instance-name system services dhcp-local-server ...],
[edit logical-systems logical-system-name system services dhcp-local-server ...],
[edit routing-instances routing-instance-name system services dhcp-local-server ...],
[edit system services dhcp-local-server authentication],
[edit system services dhcp-local-server dhcpv6 authentication],
[edit system services dhcp-local-server dhcpv6 group group-name authentication],
[edit system services dhcp-local-server group group-name authentication]
```

Release Information

Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

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.

The following statements are not supported in the DHCPv6 hierarchy levels:

- option-60
- option-82

The following statements are supported in the DHCPv6 hierarchy levels only:

- client-id
- relay-agent-interface-id
- relay-agent-remote-id
- relay-agent-subscriber-id

The remaining statements are explained separately. See CLI Explorer.
Required Privilege Level

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

Related Documentation

- Using External AAA Authentication Services with DHCP on page 101
- Creating Unique Usernames for DHCP Clients on page 103
**username-include (DHCP Relay Agent)**

**Syntax**
```
username-include {
  circuit-type;
  client-id;
  delimiter delimiter-character;
  domain-name domain-name-string;
  interface-description (device-interface | logical-interface);
  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 dual-stack-group dual-stack-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.
Support at the [edit ... dual-stack-group dual-stack-group-name] hierarchy level introduced in Junos OS Release 15.1.

**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:
- option-60
- option-82

The following statements are supported in the DHCPv6 hierarchy levels only:
- client-id
• relay-agent-interface-id
• relay-agent-remote-id
• relay-agent-subscriber-id

The remaining statements are explained separately. See CLI Explorer.

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

**Related Documentation**  
- Creating Unique Usernames for DHCP Clients on page 103
- Using External AAA Authentication Services with DHCP on page 101
version (BFD)

Syntax  version (0 | 1 | automatic);

Hierarchy Level  [edit logical-systems logical-system-name protocols ldp oam bfd-liveness-detection],
                   [edit logical-systems logical-system-name protocols ldp oam fec address
                    bfd-liveness-detection],
                   [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],
                   [edit protocols ldp oam bfd-liveness-detection],
                   [edit protocols ldp oam fec address bfd-liveness-detection]

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

Description  Configure the BFD protocol version to detect.

Options  0—Use BFD protocol version 0.
         1—Use BFD protocol version 1.
         automatic—Autodetect the BFD protocol version.
         Default: automatic

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
                       • Example: Configuring Global Liveness Detection for DHCP Relay Agent Clients
                       • Configuring BFD for LDP LSPs
# wins-server (System)

**Syntax**

```plaintext
wins-server {
    address;
}
```

**Hierarchy Level**

- [edit system services dhcp],
- [edit system services dhcp],
- [edit system services dhcp pool],
- [edit system services dhcp static-binding]

**Release Information**

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

**Description**

For J Series Services Routers and EX Series switches only. Specify one or more NetBIOS Name Servers. When a DHCP client is added to the network and assigned an IP address, the NetBIOS Name Server manages the Windows Internet Name Service (WINS) database that matches IP addresses (such as `192.168.1.3`) to Windows NetBIOS names (such as `\Marketing`). List servers in order of preference.

**Options**

- `address`—IPv4 address of the NetBIOS Name Server running WINS. To configure multiple servers, include multiple `address` options.

**Required Privilege Level**

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

**Related Documentation**
CHAPTER 13

Configuration Statements (Forwarding Options)

- description (Forwarding Options) on page 326
- helpers on page 327
- interface (DNS, Port, and TFTP Packet Forwarding or Relay Agent) on page 330
- no-listen on page 331
- port (Packet Forwarding) on page 332
- server (DNS, Port, and TFTP Service) on page 334
- traceoptions (DNS, Port, and TFTP Packet Forwarding) on page 335
### description (Forwarding Options)

**Syntax**

```
description text-description;
```

**Hierarchy Level**

- `[edit forwarding-options helpers bootp]`
- `[edit forwarding-options helpers bootp interface (interface-name | interface-group)]`
- `[edit forwarding-options helpers domain]`
- `[edit forwarding-options helpers domain interface interface-name]`
- `[edit forwarding-options helpers port port-number]`
- `[edit forwarding-options helpers port port-number interface interface-name]`
- `[edit forwarding-options helpers tftp]`
- `[edit forwarding-options helpers tftp interface interface-name]`

**Release Information**

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.3 for QFX Series switches.

**Description**

Describe a BOOTP, DHCP, Domain Name System (DNS), Trivial File Transfer Protocol (TFTP), or port-based LAN broadcast packet forwarding service, or an interface that is configured for the service.

**Required Privilege**

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

**Related Documentation**

- [Configuring DNS and TFTP Packet Forwarding]
- [Configuring Port-based LAN Broadcast Packet Forwarding on page 133]
- [Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents]
helpers

Syntax

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

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

Hierarchy Level  [edit forwarding-options]

Release Information  Statement introduced before Junos OS Release 7.4.
                      Statement introduced in Junos OS Release 9.0 for EX Series switches.
Enable TFTP or DNS request packet forwarding, or configure the router, switch, or interface
to act as a DHCP/BOOTP relay agent. Use only one server address per interface or global
configuration.

You can also use the helpers port statement to enable forwarding LAN broadcast traffic
on custom UDP ports to particular servers as unicast traffic. Configure the UDP port
number and optionally an interface on which to listen for broadcast traffic, and the
destination server address to receive that traffic, as shown in either of the following
sample configurations:

```
user@host# show forwarding-options
helpers {
  port 1200 {
    server 10.20.30.40;
  }
}
user@host# show forwarding-options
helpers {
  port 3000 {
    interface {
      fe-0/0/1.0 {
        server 192.0.2.2;
      }
    }
  }
  port 3001 {
    interface {
      fe-0/0/0.0 {
        server 192.0.2.2;
      }
    }
  }
}
```

The remaining statements are explained separately. See CLI Explorer.

**Required Privilege**

**Level**

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

**Related Documentation**

- Configuring DNS and TFTP Packet Forwarding
- Configuring Port-based LAN Broadcast Packet Forwarding on page 133
- Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents
interface (DNS, Port, and TFTP Packet Forwarding or Relay Agent)

Syntax

```
interface interface-name {
    broadcast;
    description text-description;
    no-listen;
    server address <logical-system logical-system-name> <routing-instance routing-instance-name>;
}
```

Hierarchy Level

[edit forwarding-options helpers domain], [edit forwarding-options helpers port port-number], [edit forwarding-options helpers tftp]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced for port helpers in Junos OS Release 17.2R1 for EX4300 switches.
Support for multiple server instances for a given port introduced in Junos OS Release 17.2 for MX Series routers.
Support for multiple server instances for a given port introduced in Junos OS Release 17.3R1 for EX9200 switches.

Description

Specify the interface for monitoring and forwarding DNS or TFTP requests, or for forwarding LAN broadcast traffic on a custom UDP port to a particular server as unicast traffic.

When configuring port helpers, in releases prior to Junos OS Release 17.2, only one server can be specified for a given port. For Junos OS Release 17.2 and later, multiple servers can be specified for a given port at the global or interface-specific level. In this case, the same packet, with the originator IP address and port requests, is forwarded to the different configured servers; the payload of the UDP packet is not modified.

Options

- `interface-name`—Name of the interface.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

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

Related Documentation

- Configuring DNS and TFTP Packet Forwarding
- Configuring Port-based LAN Broadcast Packet Forwarding on page 133
no-listen

Syntax

no-listen;

Hierarchy Level

[edit forwarding-options helpers bootp interface (interface-name | interface-group)],
[edit forwarding-options helpers domain interface interface-name],
[edit forwarding-options helpers port port-number interface interface-name],
[edit forwarding-options helpers tftp interface interface-name]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.3 for QFX Series switches.

Description

Disable recognition of DNS requests or stop packets from being forwarded on a logical
interface, a group of logical interfaces, a router, or a switch.

Required Privilege

Level

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

Related Documentation

• Configuring DNS and TFTP Packet Forwarding
• Configuring Port-based LAN Broadcast Packet Forwarding on page 133
• Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents
port (Packet Forwarding)

Syntax

```
port port-number [ description text-description; ]
interface interface-name [ broadcast; ]
server address <logical-system logical-system-name> <routing-instance routing-instance-name>;
server address <logical-system logical-system-name> <routing-instance routing-instance-name>;
```  

Hierarchy Level  
[edit forwarding-options helpers]

Release Information  
Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 17.2R1 for EX4300 switches.  
Support for multiple server instances for a given port introduced in Junos OS Release 17.2 for MX Series routers.  
Support for multiple servers on a given port introduced in Junos OS Release 17.3R1 for EX9200 switches.

Description  
Configure a port helper on the router or switch, which listens for LAN broadcast traffic on a custom UDP port number and forwards traffic to particular destination servers as unicast traffic.

To set up a port helper, configure the UDP port number and optionally an interface on which to listen for broadcast traffic, and the destination server address to receive that traffic, as shown in either of the following sample configurations:

```
user@host# show forwarding-options helpers {
port 1200 {
  server 10.20.30.40;
}
}

user@host# show forwarding-options helpers {
port 3000 {
  interface {
    fe-0/0/1.0 {
      server 192.0.2.2;
    }
  }
}
port 3001 {
  interface {
    fe-0/0/0.0 {
```

```
Starting in Junos OS Release 17.2R1, you can configure forwarding traffic to multiple
destination servers for a given port number by specifying multiple port configuration
statements with the same port number and different server addresses.

You cannot configure port helpers for standard ports used by services such as BOOTP,
DNS and TFTP; instead, use the `helpers` configuration statements specifically for
forwarding packets for those protocols.

The remaining statements are explained separately. See CLI Explorer.

**Options**

- `port-number`—UDP port number for listening.
  
  **Range:** 1 through 65535

**Required Privilege**

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

**Related Documentation**

- [Configuring DNS and TFTP Packet Forwarding](#)
- [Configuring Port-based LAN Broadcast Packet Forwarding on page 133](#)
- [Configuring Routers, Switches, and Interfaces as DHCP and BOOTP Relay Agents](#)
server (DNS, Port, and TFTP Service)

Syntax

```plaintext
server address <logical-system logical-system-name> <routing-instance routing-instance-name>;
```

Hierarchy Level

[edit forwarding-options helpers domain],
[edit forwarding-options helpers domain interface interface-name],
[edit forwarding-options helpers port port-number],
[edit forwarding-options helpers port port-number interface interface-name],
[edit forwarding-options helpers tftp],
[edit forwarding-options helpers tftp interface interface-name]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced for port helpers in Junos OS Release 17.2R1 for EX4300 switches.
Support for multiple server instances for a given port introduced in Junos OS Release 17.2 for MX Series routers.
Support for multiple server instances for a given port introduced in Junos OS Release 17.3R1 for EX9200 switches.

Description

Specify the DNS or TFTP server for forwarding DNS or TFTP requests, or specify a
destination server address for forwarding LAN broadcast packets as unicast traffic for a
custom-configured UDP port.

When configuring port helpers, in releases prior to Junos OS Release 17.2, only one server
can be specified for a given port. For Junos OS Release 17.2 and later, multiple servers
can be specified for a given port at the global or interface-specific level. When multiple
servers are specified, the same packet, with the originator IP address and port requests,
is forwarded to the different configured servers; the payload of the UDP packet is not
modified.

Options

- `address`—IP address of the server.
- `logical-system logical-system-name`—(Optional) Logical system name of the server.
- `routing-instance [ routing-instance-names ]`—(Optional) Set the routing instance name
  or names that belong to the DNS server or TFTP server.

Required Privilege

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

Related Documentation

- Configuring DNS and TFTP Packet Forwarding
- Configuring Port-based LAN Broadcast Packet Forwarding on page 133
traceoptions (DNS, Port, and TFTP Packet Forwarding)

Syntax

```
traceoptions {
  file filename <files number> <match regular-expression> <size bytes> [world-readable | no-world-readable];
  flag flag;
  level level;
  <no-remote-trace>;
}
```

Hierarchy Level

[edit forwarding-options helpers]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement standardized and match option introduced in Junos OS Release 8.0.
Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description

Configure tracing operations for BOOTP, DNS, TFTP, or custom UDP port packet forwarding.

Default

If you do not include this statement, no tracing operations are performed.

Options

- **file filename**—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks (" "). All files are placed in a file named `fud` in the directory `/var/log`. If you include the `file` statement, you must specify a filename.
- **files number**—(Optional) Maximum number of trace files. When a trace file named `trace-file` reaches its maximum size, it is renamed `trace-file.0`, then `trace-file.1`, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum number of files, you also must specify a maximum file size with the `size` option and a filename.

- **Range**: 2 through 1000
- **Default**: 3 files

- **flag flag**—Tracing operation to perform. To specify more than one tracing operation, include multiple `flag` statements. You can include the following flags:
  - **address**—Trace address management events
  - **all**—Trace all events
  - **bootp**—Trace BOOTP or DHCP services events
  - **config**—Trace configuration events
  - **domain**—Trace DNS service events
  - **ifdb**—Trace interface database operations
  - **io**—Trace I/O operations
- main—Trace main loop events
- port—Trace arbitrary protocol events
- rtsock—Trace routing socket operations
- tftp—Trace TFTP service events
- trace—Trace tracing operations
- ui—Trace user interface operations
- util—Trace miscellaneous utility operations

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

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

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

size size—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named trace-file reaches this size, it is renamed trace-file.0. When the trace-file file again reaches its maximum size, trace-file.0 is renamed trace-file.1 and trace-file is renamed trace-file.0. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the files option and filename.

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

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

Default: 128 KB

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

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

Related Documentation
- Tracing BOOTP, DNS, and TFTP Forwarding Operations
CHAPTER 14

Operational Commands (DHCP and DHCP Relay)

- clear dhcp relay binding
- clear dhcp server binding
- clear dhcp relay statistics
- clear dhcp server statistics
- clear dhcpv6 relay binding
- clear dhcpv6 server binding
- clear dhcpv6 relay statistics
- clear dhcpv6 server statistics
- clear system services dhcp binding
- clear system services dhcp conflict
- clear system services dhcp statistics
- request dhcp server reconfigure
- request dhcpv6 server reconfigure
- request system reboot
- show dhcp relay binding
- show dhcp server binding
- show dhcp relay statistics
- show dhcp server statistics
- show dhcpv6 relay binding
- show dhcpv6 server binding
- show dhcpv6 relay statistics
- show dhcpv6 server statistics
- show route extensive
- show route protocol
- show system services dhcp binding
- show system services dhcp conflict
• show system services dhcp global
• show system services dhcp pool
• show system services dhcp statistics
clear dhcp relay binding

Syntax
clear dhcp relay binding
   <address>
   <all>
   <dual-stack>
   <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 8.3.
Options all and interface added in Junos OS Release 8.4.
Options interfaces-vlan and interfaces-wildcard added in Junos OS Release 12.1.
Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.
Option dual-stack added in Junos OS Release 15.1.

Description
Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table.

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.

dual-stack—(Optional) Clear the binding state for DHCPv4 clients and the associated DHCPv6 bindings in the single-session DHCP dual stack. DHCPv6 clients created in a DHCPv6-only stack are not affected.

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

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

interfaces-wildcard—(Optional) The set of interfaces on which to clear bindings. 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.
Required Privilege
Level

Related Documentation
- Clearing DHCP Bindings for Subscriber Access
- show dhcp relay binding on page 372

List of Sample Output
- clear dhcp relay binding on page 340
- clear dhcp relay binding all on page 340
- clear dhcp relay binding dual-stack all on page 340
- clear dhcp relay binding interface on page 341
- clear dhcp relay binding <interfaces-vlan> on page 341
- clear dhcp relay binding <interfaces-wildcard> on page 341

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
198.51.100.32     00:00:5e:00:53:01  active   2007-02-08 16:41:17 EST
192.168.14.8      00:00:5e:00:53:02  active   2007-02-10 10:01:06 EST

user@host> clear dhcp relay binding 198.51.100.32

user@host> show dhcp relay binding
IP address       Hardware address   Type     Lease expires at
192.168.14.8      00:00:5e:00:53:02  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 dual-stack all

The following command clears all DHCP relay agent bindings for all DHCPv4 clients and the associated DHCPv6 bindings in the single-session DHCP dual stack. DHCPv6 clients created in a DHCPv6-only stack are not affected.

```
user@host> clear dhcp relay binding dual-stack 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 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>
<dual-stack>
```

Release Information

Command introduced in Junos OS Release 9.0.
Options interfaces-vlan and interfaces-wildcard added in Junos OS Release 12.1.
Command updated with dual-stack statement in Junos OS Release 17.3.

Description

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

NOTE: If you delete the DHCP server configuration, DHCP server bindings might still remain. To ensure that DHCP bindings are removed, issue the clear dhcp server binding command before you delete the DHCP server configuration.

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.

**dual-stack**—(Optional) Remove either both arms or single arm of dual-stack.

---

**NOTE:**

- The dual-stack command is added in the syntax removes both arms of the dual-stack with a single command entry.
- When the dual-stack command is not added in the syntax, the clear dhcpv6 server binding command clears only the family specific arm of the dual-stack.

---

**Required Privilege Level**

view

**Related Documentation**

- Clearing DHCP Bindings for Subscriber Access
- show dhcp server binding on page 378

**List of Sample Output**

clear dhcp server binding <ip-address> on page 343
clear dhcp server binding all on page 344
clear dhcp server binding interface on page 344
clear dhcp server binding <interfaces-vlan> on page 344
clear dhcp server binding <interfaces-wildcard> on page 344
clear dhcp server binding dual-stack all on page 344

**Output Fields**

See show dhcp server binding 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)

<table>
<thead>
<tr>
<th>IP address</th>
<th>Hardware address</th>
<th>Type</th>
<th>Lease expires at</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.1</td>
<td>00:00:5e:00:53:01</td>
<td>active</td>
<td>2007-01-17 11:38:47 PST</td>
</tr>
<tr>
<td>198.51.100.3</td>
<td>00:00:5e:00:53:02</td>
<td>active</td>
<td>2007-01-17 11:38:41 PST</td>
</tr>
</tbody>
</table>

user@host> clear dhcp server binding 198.51.100.1
user@host> show dhcp server binding

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

<table>
<thead>
<tr>
<th>IP address</th>
<th>Hardware address</th>
<th>Type</th>
<th>Lease expires at</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.3</td>
<td>00:00:5e:00:53:02</td>
<td>active</td>
<td>2007-01-17 11:38:41 PST</td>
</tr>
</tbody>
</table>

user@host> 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 binding dual-stack all

The following command clears all the dual-stack local server bindings.

user@host> clear dhcp server binding dual-stack all
clear dhcp relay statistics

**Syntax**

```plaintext
clear dhcp relay statistics
<bulk-leasequery-connections>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
```

**Syntax**

Syntax for EX Series switches:

```plaintext
show dhcp relay statistics
<routing-instance routing-instance-name>
```

**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 Routers.

**Description**

Clear all Dynamic Host Configuration Protocol (DHCP) relay statistics.

**Options**

- `logical-system logical-system-name`—(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.
- `routing-instance routing-instance-name`—(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**

- [show dhcp relay statistics on page 385](#)

**List of Sample Output**

- [clear dhcp relay statistics on page 346](#)

**Output Fields**

Table 16 on page 346 lists the output fields for the `clear dhcp relay statistics` command.
Table 16: clear dhcp relay statistics Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packets dropped</td>
<td>Number of packets discarded by the extended DHCP relay agent application due to errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</td>
</tr>
<tr>
<td>Total</td>
<td>Total number of packets discarded by the extended DHCP relay agent application.</td>
</tr>
<tr>
<td>Bad hardware address</td>
<td>Number of packets discarded because an invalid hardware address was specified.</td>
</tr>
<tr>
<td>Bad opcode</td>
<td>Number of packets discarded because an invalid operation code was specified.</td>
</tr>
<tr>
<td>Bad options</td>
<td>Number of packets discarded because invalid options were specified.</td>
</tr>
<tr>
<td>Invalid server address</td>
<td>Number of packets discarded because an invalid server address was specified.</td>
</tr>
<tr>
<td>Lease Time Violation</td>
<td>Number of packets discarded because of a lease time violation</td>
</tr>
<tr>
<td>No available addresses</td>
<td>Number of packets discarded because there were no addresses available for assignment.</td>
</tr>
<tr>
<td>No interface match</td>
<td>Number of packets discarded because they did not belong to a configured interface.</td>
</tr>
<tr>
<td>Norouting instance match</td>
<td>Number of packets discarded because they did not belong to a configured routing instance.</td>
</tr>
<tr>
<td>No valid local address</td>
<td>Number of packets discarded because there was no valid local address.</td>
</tr>
<tr>
<td>Packet too short</td>
<td>Number of packets discarded because they were too short.</td>
</tr>
<tr>
<td>Read error</td>
<td>Number of packets discarded because of a system read error.</td>
</tr>
<tr>
<td>Send error</td>
<td>Number of packets that the extended DHCP relay application could not send.</td>
</tr>
<tr>
<td>Option 60</td>
<td>Number of packets discarded containing DHCP option 60 vendor-specific information.</td>
</tr>
<tr>
<td>Option 82</td>
<td>Number of packets discarded because DHCP option 82 information could not be added.</td>
</tr>
</tbody>
</table>

Messages received  Number of DHCP messages received.

- BOOTREQUEST—Number of BOOTP protocol data units (PDUs) received
- DHCPDECLINE—Number of DHCP PDUs of type DECLINE received
- DHCPDISCOVER—Number of DHCP PDUs of type DISCOVER received
- DHCPINFORM—Number of DHCP PDUs of type INFORM received
- DHCPRELEASE—Number of DHCP PDUs of type RELEASE received
- DHCPREQUEST—Number of DHCP PDUs of type REQUEST received

Messages sent  Number of DHCP messages sent.

- BOOTREPLY—Number of BOOTP PDUs transmitted
- DHCPOFFER—Number of DHCP OFFER PDUs transmitted
- DHCPACK—Number of DHCP ACK PDUs transmitted
- DHCPNACK—Number of DHCP NACK PDUs transmitted

Sample Output

clear dhcp relay statistics

The following sample output displays the DHCP relay statistics before and after the clear dhcp relay statistics command is issued.
user@host> show dhcp relay statistics
Packets dropped:
  Total                      1
  Lease Time Violated        1

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

Messages sent:
  BOOTREPLY                  44
  DHCPOFFER                  11
  DHCPACK                    11
  DHCPNAK                    11

user@host> clear dhcp relay statistics

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

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

Messages sent:
  BOOTREPLY                  0
  DHCPOFFER                  0
  DHCPACK                    0
  DHCPNAK                    0
clear dhcp server statistics

Syntax

clear dhcp server statistics
<bulk-leasequery-connections>
<logical-system logical-system-name>
<routing-instance routing-instance-name>

Release Information

Command introduced in Junos OS Release 9.0.

Description

Clear all extended Dynamic Host Configuration Protocol (DHCP) local server statistics.

Options

bulk-leasequery-connections—(Optional) Clear bulk leasequery statistics.

logical-system logical-system-name—(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.

routing-instance routing-instance-name—(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.

Required Privilege Level

view

List of Sample Output

clear dhcp server statistics on page 348

Output Fields

See show dhcp server statistics 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                     1
  Lease Time Violation      1

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 relay binding

Syntax

clear dhcpv6 relay binding
<address>
<all>
<dual-stack>
<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 11.4.
Command introduced in Junos OS Release 12.3R2 for EX Series switches.
Options interfaces-vlan and interfaces-wildcard added in Junos OS Release 12.1.
Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.
Option dual-stack added in Junos OS Release 15.1.

Description

Clear the binding state of Dynamic Host Configuration Protocol for IPv6 (DHCPv6) clients from the client table.

Options

address—(Optional) Clear the binding state for the DHCPv6 client, using one of the following entries:

- CID—The specified Client ID (CID).
- ipv6-prefix—The specified IPv6 prefix.
- session-id—The specified session ID.

all—(Optional) Clear the binding state for all DHCPv6 clients.

dual-stack—(Optional) Clear the binding state for DHCPv6 clients and the associated DHCPv4 bindings in the single-session DHCP dual stack. DHCPv4 clients created in a DHCPv4-only stack are not affected.

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

interfaces-wildcard—(Optional) The set of interfaces on which to clear bindings. This option supports the use of the wildcard character (*).

interface interface-name—(Optional) Clear the binding state for DHCPv6 clients on the specified interface.

logical-system logical-system-name—(Optional) Clear the binding state for DHCPv6 clients on the specified logical system.

routing-instance routing-instance-name—(Optional) Clear the binding state for DHCPv6 clients on the specified routing instance.
List of Sample Output

- clear dhcpv6 relay binding on page 351
- clear dhcpv6 relay binding <prefix> on page 351
- clear dhcpv6 relay binding all on page 352
- clear dhcpv6 relay binding dual-stack all on page 352
- clear dhcpv6 relay binding interface on page 352
- clear dhcpv6 relay binding <interfaces-vlan> on page 352
- clear dhcpv6 relay binding <interfaces-wildcard> on page 352

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:db8:3c4d:15::/64  1      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:01
2001:db8:3c4d:16::/64  2      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:02
2001:db8:3c4d:17::/64  3      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:03
2001:db8:3c4d:18::/64  4      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:04
2001:db8:3c4d:19::/64  5      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:05
2001:db8:3c4d:20::/64  6      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:06

user@host> clear dhcpv6 relay binding 2001:db8:3c4d:15::/64
user@host> show dhcpv6 relay binding

Prefix     Session Id  Expires  State          Interface    Client DUID
2001:db8:3c4d:16::/64  2      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:02
2001:db8:3c4d:17::/64  3      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:03
2001:db8:3c4d:18::/64  4      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:04
2001:db8:3c4d:19::/64  5      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:05
```

**clear dhcpv6 relay binding <prefix>**

```
user@host> clear dhcpv6 relay binding 2001:db8:3c4d:15::/64
user@host> show dhcpv6 relay binding

Prefix     Session Id  Expires  State          Interface    Client DUID
2001:db8:3c4d:16::/64  2      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:02
2001:db8:3c4d:17::/64  3      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:03
2001:db8:3c4d:18::/64  4      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:04
2001:db8:3c4d:19::/64  5      83720    BOUND    ge-1/0/0.0
LL_TIME:0x1-0x4bfa26af-00:10:94:00:00:05
```
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 dual-stack all

The following command clears all DHCPv6 relay agent bindings for all DHCPv6 clients and the associated DHCPv4 bindings in the single-session DHCP dual stack. DHCPv4 clients created in a DHCPv4-only stack are not affected.

user@host> clear dhcpv6 relay binding dual-stack all

clear dhcv6p relay binding interface

The following command clears DHCPv6 relay agent bindings on a specific interface:

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

clear dhcpv6 relay binding <interfaces-vlan>

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

user@host> clear dhcpv6 relay binding interface ae0

clear dhcpv6 relay binding <interfaces-wildcard>

The following command uses the interfaces-wildcard option to clear all DHCPv6 relay agent bindings over a specific interface:

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

Syntax

clear dhcpv6 server binding
  <address>
  <all>
  <interface interface-name>
  <interfaces-vlan>
  <interfaces-wildcard>
  <logical-system logical-system-name>
  <routing-instance routing-instance-name>
  <dual-stack>

Release Information

Options interfaces-vlan and interfaces-wildcard added in Junos OS Release 12.1.
Command updated with dual-stack statement in Junos OS Release 17.3.

Description

Clear the binding state of a Dynamic Host Configuration Protocol for IPv6 (DHCPv6) client from the client table on the extended DHCPv6 local server.

Options

address—(Optional) Clear the binding state for the DHCPv6 client, using one of the following entries:
  • CID—The specified Client ID (CID).
  • ipv6-prefix—The specified IPv6 prefix.
  • session-id—The specified session ID.

all—(Optional) Clear the binding state for all DHCPv6 clients.

interface interface-name—(Optional) Clear the binding state for DHCPv6 clients on the specified interface.

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 DHCPv6 clients on the specified logical system.

routing-instance routing-instance-name—(Optional) Clear the binding state for DHCPv6 clients on the specified routing instance.

dual-stack—(Optional) Remove either both arms or single arm of dual-stack.
NOTE:

- The dual-stack command is added in the syntax removes both arms of the dual-stack with a single command entry.
- When the dual-stack command is not added in the syntax, the clear dhcpv6 server binding command clears only the family specific arm of the dual-stack.

**Required Privilege**
clear

**Related Documentation**
- Clearing DHCP Bindings for Subscriber Access
- show dhcpv6 server binding on page 401

**List of Sample Output**
clear dhcpv6 server binding all on page 354
clear dhcpv6 server binding <ipv6-prefix> on page 354
clear dhcpv6 server binding interface on page 354
clear dhcpv6 server binding <interfaces-vlan> on page 355
clear dhcpv6 server binding <interfaces-wildcard> on page 355
clear dhcpv6 server binding dual-stack all on page 355

**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 binding dual-stack all

The following command clears all the dual-stack local server bindings.

user@host> clear dhcpv6 server binding dual-stack all
clear dhcpv6 relay statistics

Syntax

```
clear dhcpv6 relay statistics
<bulk-leasequery-connections>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
```

Release Information

Command introduced in Junos OS Release 11.4.
Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.

Description

Clear all Dynamic Host Configuration Protocol for IPv6 (DHCPv6) relay statistics.

Options

- `bulk-leasequery-connections` — (Optional) Clear bulk leasequery statistics.
- `logical-system logical-system-name` — (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.
- `routing-instance routing-instance-name` — (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

```
view
```

List of Sample Output

```
clear dhcpv6 relay statistics on page 356
```

Output Fields

See `show dhcpv6 relay statistics` for an explanation of output fields.

Sample Output

```
clear dhcpv6 relay statistics

The following sample output displays the DHCPv6 relay statistics before and after the `clear dhcpv6 relay statistics` command is issued.

user@host> show dhcpv6 relay statistics
DHCPv6 Packets dropped:
  Total                       0
  Lease Time Violated         1

Messages received:
  DHCPV6_DECLINE              0
  DHCPV6_SOLICIT              10
  DHCPV6_INFORMATION_REQUEST  0
  DHCPV6_RELEASE              0
  DHCPV6_REQUEST              10
  DHCPV6_CONFIRM              0
  DHCPV6_RENEW                0
```
DHCPv6 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
clear dhcpv6 server statistics

Syntax

```
clear dhcpv6 server statistics
  <bulk-leasequery-connections>
  <interface interface-name>
  <logical-system logical-system-name>
  <routing-instance routing-instance-name>
```

Release Information


Description

Clear all extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.

Options

- `logical-system logical-system-name`—(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.
- `routing-instance routing-instance-name`—(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.

Required Privilege

- `clear`

Related Documentation

- [show dhcpv6 server statistics on page 411](#)

List of Sample Output

```
clear dhcpv6 server statistics on page 358
```

Output Fields

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
```
clear system services dhcp binding

Syntax  
clear system services dhcp binding
<address>

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

Description  
(EX Series switches only) Remove obsolete IP address bindings on a Dynamic Host
Configuration Protocol (DHCP) server and return them to the IP address pool.

Options  
address—(Optional) Remove a specific IP address binding and return it to the address
pool.

Required Privilege  
view and system

Level

Related Documentation  
• show system services dhcp binding on page 445

List of Sample Output  
clear system services dhcp binding on page 359

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

Sample Output

clear system services dhcp binding

user@host> clear system services dhcp binding
**clear system services dhcp conflict**

**Syntax**
```
clear system services dhcp conflict
<address>
```

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

**Description**
(J Series routers and EX Series switches only) Remove IP addresses from the Dynamic Host Configuration Protocol (DHCP) server conflict list and return them to the IP address pool.

**Options**
- `address`—(Optional) Remove a specific IP address from the conflict list and return it to the address pool.

**Required Privilege**
view and system

**Related Documentation**
- show system services dhcp conflict on page 448

**List of Sample Output**
- clear system services dhcp conflict on page 360

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

**Sample Output**
```
clear system services dhcp conflict
user@host> clear system services dhcp conflict
```
clear system services dhcp statistics

Syntax

```plaintext
clear system services dhcp statistics
```

Release Information

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

Description

(J Series routers and EX Series switches only) Clear Dynamic Host Configuration Protocol (DHCP) server statistics.

Options

This command has no options.

Required Privilege

view and system

Related Documentation

- show system services dhcp statistics on page 454

List of Sample Output

clear system services dhcp statistics on page 361

Output Fields

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

Sample Output

clear system services dhcp statistics

```plaintext
user@host> clear system services dhcp statistics
```
request dhcp server reconfigure

Syntax

request dhcp server reconfigure (all | address | interface interface-name | logical-system logical-system-name | routing-instance routing-instance-name)

Release Information

Command introduced in Junos OS Release 10.0.
Command introduced in Junos OS Release 12.3R2 for EX Series switches.

Description

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 clear dhcp server binding command.

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 clear-on-abort statement to configure the client to be cleared when reconfiguration fails.

Options

all—Initiate reconfiguration for all DHCP clients.

address—Initiate reconfiguration for DHCP client with the specified IP address or MAC address.

interface interface-name—Initiate reconfiguration for all DHCP clients on this logical interface (clients whose initial login requests were received over the specified interface).

NOTE: You cannot use the interface interface-name option with the request dhcp server reconfigure 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.

logical-system logical-system-name—Initiate reconfiguration for all DHCP clients on the specified logical system.

routing-instance routing-instance-name—Initiate reconfiguration reconfigured for all DHCP clients in the specified routing instance.

Required Privilege

view
Related Documentation

- Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114

List of Sample Output

request dhcp server reconfigure on page 363

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

Syntax

request dhcpv6 server reconfigure (all | address | client-id | interface interface-name | logical-system logical-system-name | routing-instance routing-instance-name | session-id)

Release Information
Command introduced in Junos OS Release 10.4.
Command introduced in Junos OS Release 12.3R2 for EX Series switches.

Description
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 clear dhcpv6 server binding command.

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 clear-on-abort statement to configure the client to be cleared when reconfiguration fails.

Options
all—Initiate reconfiguration for all DHCPv6 clients.
address—Initiate reconfiguration for DHCPv6 client with the specified IPv6 address.
client-id—Initiate reconfiguration for DHCPv6 client with the specified client ID.
interface interface-name—Initiate reconfiguration for all DHCPv6 clients on this logical interface (clients whose initial login requests were received over the specified interface).
logical-system logical-system-name—Initiate reconfiguration for all DHCPv6 clients on the specified logical system.
routing-instance routing-instance-name—Initiate reconfiguration configured for all DHCPv6 clients in the specified routing instance.
session-id—Initiate reconfiguration for DHCPv6 client with the specified session ID.

Required Privilege
view

Related Documentation
• Configuring Dynamic Client Reconfiguration of Extended Local Server Clients on page 114

List of Sample Output
request dhcpv6 server reconfigure on page 365

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

request dhcpv6 server reconfigure

user@host> request dhcpv6 server reconfigure 2001db8::2/16
request system reboot

List of Syntax

Syntax on page 366
Syntax (EX Series Switches) on page 366
Syntax (TX Matrix Router) on page 366
Syntax (TX Matrix Plus Router) on page 366
Syntax (MX Series Router) on page 366

Syntax

request system reboot
<at time>
<both-routing-engines>
<in minutes>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "text">
<other-routing-engine>

Syntax (EX Series Switches)

request system reboot
<all-members>
<at time>
<both-routing-engines>
<in minutes>
<local>
<media (external | internal)>
<member member-id>
<message "text">
<other-routing-engine>
<slice slice>

Syntax (TX Matrix Router)

request system reboot
<all-chassis | all-lcc | lcc number | scc>
<at time>
<both-routing-engines>
<in minutes>
<media (compact-flash | disk)>
<message "text">
<other-routing-engine>

Syntax (TX Matrix Plus Router)

request system reboot
<all-chassis | all-lcc | lcc number | sfc number>
<at time>
<both-routing-engines>
<in minutes>
<media (compact-flash | disk)>
<message "text">
<other-routing-engine>
<partition (1 | 2 | alternate)>

Syntax (MX Series Router)

request system reboot
<all-members>
<at time>
<both-routing-engines>
<in minutes>
<local>
<media (external | internal)>
<message member-id>
<message "text">
<message other-routing-engine>

Release Information
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.

NOTE: Starting with Junos OS Release 15.1F3, the statement request system
reboot reboots only the guest operating system on the PTX5000 with
RE-PTX-X8-64G and, MX240, MX480, and MX960 with RE-S-X6-64G.

Starting with Junos OS Release 15.1F5, the statement request system reboot
reboots only the guest operating system on the MX2010, and MX2020 with
REMX2K-X8-64G.

Options
none—Reboot the software immediately.

all-chassis—(TX Matrix routers 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 routers 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 routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace number with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the local Virtual Chassis member.

media(compact-flash | disk)—(Optional) Boot medium for next boot.

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.
Required Privilege Level

Related Documentation

- clear system reboot
- request system halt
  
  *Routing Matrix with a TX Matrix Plus Router Solutions Page*

- request vmhost reboot

List of Sample Output

request system reboot on page 370
request system reboot (at 2300) on page 370
request system reboot (in 2 Hours) on page 370
request system reboot (Immediately) on page 370
request system reboot (at 1:20 AM) on page 370

Output Fields

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@test.example.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 relay binding

Syntax

show dhcp relay binding
<address>
<brief>
<detail>
<interface interface-name>
<interfaces-vlan>
<interfaces-wildcard>
<ip-address | mac-address>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
<summary>

Release Information

Command introduced in Junos OS Release 8.3.
Options interface and mac-address added in Junos OS Release 8.4.
Options interfaces-vlan and interfaces-wildcard added in Junos OS Release 12.1.
Command introduced in Junos OS Release 12.1X48R3 for PTX Series Packet Transport Routers.

Description

Display the address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.

Options

address—(Optional) Display DHCP binding information for a specific client identified by one of the following entries:

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

brief—(Optional) Display brief information about the active client bindings. This is the default, and produces the same output as show dhcp relay binding.

detail—(Optional) Display detailed client binding information.

interface interface-name—(Optional) Perform this operation on the specified interface.
You can optionally filter on VLAN ID and SVLAN ID.

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

interfaces-wildcard—(Optional) The set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).

logical-system logical-system-name—(Optional) Perform this operation on the specified logical system.

routing-instance routing-instance-name—(Optional) Perform this operation on the specified routing instance.
summary—(Optional) Display a summary of DHCP client information.

Required Privilege Level: view

Related Documentation:
- Clearing DHCP Bindings for Subscriber Access
- clear dhcp relay binding on page 339

List of Sample Output:
- show dhcp relay binding on page 375
- show dhcp relay binding detail on page 375
- show dhcp relay binding interface on page 375
- show dhcp relay binding interface vlan-id on page 376
- show dhcp relay binding interface svlan-id on page 376
- show dhcp relay binding ip-address on page 376
- show dhcp relay binding mac-address on page 376
- show dhcp relay binding session-id on page 376
- show dhcp relay binding <interfaces-vlan> on page 376
- show dhcp relay binding <interfaces-wildcard> on page 376
- show dhcp relay binding summary on page 377

Output Fields:
Table 17 on page 373 lists the output fields for the show dhcp relay binding command. Output fields are listed in the approximate order in which they appear.

Table 17: show dhcp relay binding Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>number clients, (number init, number bound, number selecting, number requesting, number renewing, number renewing, number releasing)</td>
<td>Summary counts of the total number of DHCP clients and the number of DHCP clients in each state.</td>
<td>summary</td>
</tr>
<tr>
<td>IP address</td>
<td>IP address of the DHCP client.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Session id</td>
<td>Session ID of the subscriber session.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Generated Remote ID</td>
<td>Remote ID generated by the Option 82 Agent Remote ID (suboption 1)</td>
<td>detail</td>
</tr>
<tr>
<td>Hardware address</td>
<td>Hardware address of the DHCP client.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Expires</td>
<td>Number of seconds in which the lease expires.</td>
<td>brief detail</td>
</tr>
</tbody>
</table>
Table 17: show dhcp relay binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
<td>State of the DHCP relay address binding table on the DHCP client:</td>
<td>brief</td>
</tr>
<tr>
<td></td>
<td>• <strong>BOUND</strong>—Client has an active IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>INIT</strong>—Initial state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>REBINDING</strong>—Client is broadcasting a request to renew the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>RELEASE</strong>—Client is releasing the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>RENEWING</strong>—Client is sending a request to renew the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>REQUESTING</strong>—Client is requesting a DHCP server.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>SELECTING</strong>—Client is receiving offers from DHCP servers.</td>
<td></td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>Incoming client interface.</td>
<td>brief</td>
</tr>
<tr>
<td><strong>Lease Expires</strong></td>
<td>Date and time at which the client’s IP address lease expires.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Lease Expires in</strong></td>
<td>Number of seconds in which the lease expires.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Lease Start</strong></td>
<td>Date and time at which the client’s IP address lease started.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Lease time violated</strong></td>
<td>Lease time violation has occurred.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Incoming Client Interface</strong></td>
<td>Client’s incoming interface.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Server IP Address</strong></td>
<td>IP address of the DHCP server.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Server Interface</strong></td>
<td>Interface of the DHCP server.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Bootp Relay Address</strong></td>
<td>IP address of BOOTP relay.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Type of DHCP packet processing performed on the router:</td>
<td>All levels</td>
</tr>
<tr>
<td></td>
<td>• <strong>active</strong>—Router actively processes and relays DHCP packets.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>passive</strong>—Router passively snoops DHCP packets passing through the router.</td>
<td></td>
</tr>
<tr>
<td><strong>Lease expires at</strong></td>
<td>Date and time at which the client’s IP address lease expires.</td>
<td>All levels</td>
</tr>
<tr>
<td><strong>Dual Stack Group</strong></td>
<td>Name of dual stack that is configured with the DHCP binding.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Dual Stack Peer Prefix</strong></td>
<td>Prefix of dual stack DHCPv6 peer.</td>
<td>detail</td>
</tr>
<tr>
<td><strong>Dual Stack Peer Address</strong></td>
<td>Address of the dual stack DHCPv6 peer.</td>
<td>detail</td>
</tr>
</tbody>
</table>
Sample Output

```plaintext
show dhcp relay binding

user@host> show dhcp relay binding

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.11</td>
<td>41</td>
<td>00:00:5e:00:53:01</td>
<td>86371</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.12</td>
<td>42</td>
<td>00:00:5e:00:53:02</td>
<td>86371</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.13</td>
<td>43</td>
<td>00:00:5e:00:53:03</td>
<td>86371</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.14</td>
<td>44</td>
<td>00:00:5e:00:53:04</td>
<td>86371</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.15</td>
<td>45</td>
<td>00:00:5e:00:53:05</td>
<td>86371</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
</tbody>
</table>

show dhcp relay binding detail

user@host> show dhcp relay binding detail

Client IP Address: 198.51.100.11
  Hardware Address: 00:00:5e:00:53:01
  State: BOUND(DHCP_RELAY_STATE_BOUND_ON_INTF_DELETE)
  Lease Expires: 2009-07-21 11:00:06 PDT
  Lease Expires in: 86361 seconds
  Lease Start: 2009-07-20 11:00:06 PDT
  Lease time violated: yes
  Last Packet Received: 2009-07-20 11:00:06 PDT
  Incoming Client Interface: ge-1/0/0.0
  Server Ip Address: 198.51.100.22
  Server Interface: none
  Bootp Relay Address: 198.51.100.32
  Session Id: 41
  Dual Stack Group: dual-stack-retail6
  Dual Stack Peer Prefix: 2001:db8:0:4::/64
  Dual Stack Peer Address: 2001:db8:1:0:8003::1/128

Client IP Address: 198.51.100.12
  Hardware Address: 00:00:5e:00:53:02
  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: 198.51.100.22
  Server Interface: none
  Bootp Relay Address: 198.51.100.32
  Session Id: 42
  Generated Remote ID host:ge-1/0/0:100

show dhcp relay binding interface

user@host> show dhcp relay binding interface fe-0/0/2

<table>
<thead>
<tr>
<th>IP address</th>
<th>Hardware address</th>
<th>Type</th>
<th>Lease expires at</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.1</td>
<td>00:00:5e:00:53:01</td>
<td>active</td>
<td>2007-03-27 15:06:20 EDT</td>
</tr>
</tbody>
</table>
```
### show dhcp relay binding interface vlan-id

```
user@host> show dhcp relay binding interface ge-1/1/0:100
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.15</td>
<td>6</td>
<td>00:00:5e:00:53:94</td>
<td>86124</td>
<td>BOUND</td>
<td>ge-1/1/0:100</td>
</tr>
</tbody>
</table>

### show dhcp relay binding interface vlan-id

```
user@host> show dhcp relay binding interface ge-1/1/0:10-100
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.16</td>
<td>7</td>
<td>00:00:5e:00:53:92</td>
<td>86124</td>
<td>BOUND</td>
<td>ge-1/1/0:10-100</td>
</tr>
</tbody>
</table>

### show dhcp relay binding ip-address

```
user@host> show dhcp relay binding 198.51.100.13
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.13</td>
<td>43</td>
<td>00:00:5e:00:53:03</td>
<td>86293</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
</tbody>
</table>

### show dhcp relay binding mac-address

```
user@host> show dhcp relay binding 00:00:5e:00:53:05
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.15</td>
<td>45</td>
<td>00:00:5e:00:53:05</td>
<td>86279</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
</tbody>
</table>

### show dhcp relay binding session-id

```
user@host> show dhcp relay binding 41
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.11</td>
<td>41</td>
<td>00:00:5e:00:53:53</td>
<td>86305</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
</tbody>
</table>

### show dhcp relay binding <interfaces-vlan>

```
user@host> show dhcp relay binding ge-1/0/0:100-200
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.0.17</td>
<td>42</td>
<td>00:00:5e:00:53:02</td>
<td>86346</td>
<td>BOUND</td>
<td>ge-1/0/0.1073741827</td>
</tr>
<tr>
<td>192.168.0.16</td>
<td>41</td>
<td>00:00:5e:00:53:01</td>
<td>86346</td>
<td>BOUND</td>
<td>ge-1/0/0.1073741827</td>
</tr>
</tbody>
</table>

### show dhcp relay binding <interfaces-wildcard>

```
user@host> show dhcp relay binding ge-1/3/*
```

<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.0.9</td>
<td>24</td>
<td>00:00:5e:00:53:04</td>
<td>86361</td>
<td>BOUND</td>
<td>ge-1/3/0.110</td>
</tr>
<tr>
<td>192.168.0.8</td>
<td>23</td>
<td>00:00:5e:00:53:03</td>
<td>86361</td>
<td>BOUND</td>
<td>ge-1/3/0.110</td>
</tr>
<tr>
<td>192.168.0.7</td>
<td>22</td>
<td>00:00:5e:00:53:02</td>
<td>86361</td>
<td>BOUND</td>
<td>ge-1/3/0.110</td>
</tr>
</tbody>
</table>
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 server binding

Syntax
show dhcp server binding
<address>
<interfaces-vlan><brief | detail | summary>
<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
Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol (DHCP) local server.

NOTE: If you delete the DHCP server configuration, DHCP server bindings might still remain. To ensure that DHCP bindings are removed, issue the clear dhcp server binding command before you delete the DHCP server configuration.

Options
address—(Optional) Display DHCP binding information for a specific client identified by one of the following entries:
  - ip-address—The specified IP address.
  - mac-address—The specified MAC address.
  - session-id—The specified session ID.

brief | detail | summary—(Optional) Display the specified level of output about active client bindings. The default is brief, which produces the same output as show dhcp server binding.

interface interface-name—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.

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

interfaces-wildcard—(Optional) The set of interfaces on which to show the binding state information. This option supports the use of the wildcard character (*).

logical-system logical-system-name—(Optional) Display information about active client bindings for DHCP clients on the specified logical system.

routing-instance routing-instance-name—(Optional) Display information about active client bindings for DHCP clients on the specified routing instance.
Required Privilege Level

Related Documentation

- Clearing DHCP Bindings for Subscriber Access
- Verifying and Managing Agent Circuit Identifier-Based Dynamic VLAN Configuration
- clear dhcp server binding on page 342

List of Sample Output

- show dhcp server binding on page 382
- show dhcp server binding detail on page 382
- show dhcp server binding detail (ACI Interface Set Configured) on page 383
- show dhcp server binding interface <vlan-id> on page 383
- show dhcp server binding interface <svlan-id> on page 383
- show dhcp server binding <ip-address> on page 383
- show dhcp server binding <session-id> on page 384
- show dhcp server binding summary on page 384
- show dhcp server binding <interfaces-vlan> on page 384
- show dhcp server binding <interfaces-wildcard> on page 384

Output Fields

Table 18 on page 379 lists the output fields for the `show dhcp server binding` command. Output fields are listed in the approximate order in which they appear.

Table 18: show dhcp server binding Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>number clients,</td>
<td>Summary counts of the total number of DHCP clients and the number of DHCP clients</td>
<td>summary</td>
</tr>
<tr>
<td>(number init,</td>
<td>in each state.</td>
<td></td>
</tr>
<tr>
<td>number bound,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number selecting,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number requesting,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number renewing,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number releasing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP address</td>
<td>IP address of the DHCP client.</td>
<td>brief</td>
</tr>
<tr>
<td>Session Id</td>
<td>Session ID of the subscriber session.</td>
<td>brief</td>
</tr>
<tr>
<td>Hardware address</td>
<td>Hardware address of the DHCP client.</td>
<td>brief</td>
</tr>
<tr>
<td>Expires</td>
<td>Number of seconds in which lease expires.</td>
<td>brief</td>
</tr>
</tbody>
</table>
### Table 18: show dhcp server binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
<td>State of the address binding table on the extended DHCP local server:</td>
<td><strong>brief</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>BOUND</strong>—Client has active IP address lease.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>FORCERENEW</strong>—Client has received forcerenew message from server.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>INIT</strong>—Initial state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>RELEASE</strong>—Client is releasing IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>RENEWING</strong>—Client sending request to renew IP address lease.</td>
<td></td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>Interface on which the request was received.</td>
<td><strong>brief</strong></td>
</tr>
<tr>
<td><strong>Lease Expires</strong></td>
<td>Date and time at which the client's IP address lease expires.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Lease Expires in</strong></td>
<td>Number of seconds in which lease expires.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Lease Start</strong></td>
<td>Date and time at which the client's IP address lease started.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Lease time violated</strong></td>
<td>Lease time violation has occurred.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Last Packet Received</strong></td>
<td>Date and time at which the router received the last packet.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Incoming Client Interface</strong></td>
<td>Client's incoming interface.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Client Interface Svlan Id</strong></td>
<td>S-VLAN ID of the client's incoming interface.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Client Interface Vlan Id</strong></td>
<td>VLAN ID of the client's incoming interface.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Demux Interface</strong></td>
<td>Name of the IP demultiplexing (demux) interface.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Server IP Address or Server Identifier</strong></td>
<td>IP address of DHCP server.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Server Interface</strong></td>
<td>Interface of DHCP server.</td>
<td><strong>detail</strong></td>
</tr>
<tr>
<td><strong>Client Pool Name</strong></td>
<td>Name of address pool used to assign client IP address lease.</td>
<td><strong>detail</strong></td>
</tr>
</tbody>
</table>
### Table 18: show dhcp server binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
</table>
| **Liveness Detection State** | State of the liveness detection status for a subscriber’s Bidirectional Forwarding Detection (BFD) protocol session:  
  **NOTE:** This output field displays status only when liveness detection has been explicitly configured for a subscriber and the liveness detection protocol is actively functioning for that subscriber.  
  *DOWN*—Liveness detection has been enabled for a subscriber but the broadband network gateway (BNG) detects that the liveness detection session for the BFD protocol is in the **DOWN** state.  
  A liveness detection session that was previously in an **UP** state has transitioned to a **DOWN** state, beginning with a liveness detection failure, and ending with the deletion of the client binding. The **DOWN** state is reported only during this transition period of time.  
  *UNKNOWN*—Liveness detection has been enabled for a subscriber but the actual liveness detection state has not yet been determined.  
  The **UNKNOWN** state is reported after a DHCP subscriber initially logs in while the underlying liveness detection protocol handshake, such as BFD, is still processing and the BFD session has not yet reached the **UP** state.  
  *UP*—Liveness detection has been enabled for a subscriber, and the BNG and the subscriber or client have both determined that the liveness detection session for the BFD protocol is in the **UP** state.  
  *WENT_DOWN*—State is functionally equivalent to the **DOWN** state. A liveness detection session that was previously in an **UP** state has transitioned to a **DOWN** state implying a liveness detection failure.  
  The **WENT_DOWN** state applies to the internal distribution of the liveness detection mechanism between the Junos DHCP Daemon for Subscriber Services (JDHCPd), the BFD plug-in within the Broadband Edge Subscriber Management Daemon (BBE-SMGD), and the Packet Forwarding Engine. |
| **ACI Interface Set Name** | Internally generated name of the dynamic agent circuit identifier (ACI) interface set.                                                                                                                                 | detail |
| **ACI Interface Set Index** | Index number of the dynamic ACI interface set.                                                                                                                                                                 | detail |
| **ACI Interface Set Session ID** | Identifier of the dynamic ACI interface set entry in the session database.                                                                                                                                       | detail |
| **Client Profile Name** | DHCP client profile name.                                                                                                                                                                                       | detail |
| **Dual Stack Group** | DHCP server profile name.                                                                                                                                                                                     | detail |
| **Dual Stack Peer Prefix** | IPv6 prefix of peer.                                                                                                                                                                                          | detail |
Table 18: show dhcp server binding Output Fields *(continued)*

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Stack Peer Address</td>
<td>IPv6 address of peer.</td>
<td>detail</td>
</tr>
</tbody>
</table>

Sample Output

show dhcp server binding

```plaintext
user@host> show dhcp server binding
<table>
<thead>
<tr>
<th>IP address</th>
<th>Session Id</th>
<th>Hardware address</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>198.51.100.15</td>
<td>6</td>
<td>00:00:5e:00:53:01</td>
<td>86180</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.16</td>
<td>7</td>
<td>00:00:5e:00:53:02</td>
<td>86180</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.17</td>
<td>8</td>
<td>00:00:5e:00:53:03</td>
<td>86180</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.18</td>
<td>9</td>
<td>00:00:5e:00:53:04</td>
<td>86180</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
<tr>
<td>198.51.100.19</td>
<td>10</td>
<td>00:00:5e:00:53:05</td>
<td>86180</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
</tr>
</tbody>
</table>
```

show dhcp server binding detail

```plaintext
user@host> show dhcp server binding detail
Client IP Address: 198.51.100.15
Hardware Address: 00:00:5e:00:53:01
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: 198.51.100.9
Server Interface: none
Session Id: 6
Client Pool Name: 6
Liveness Detection State: UP

Client IP Address: 198.51.100.16
Hardware Address: 00:00:5e:00:53:02
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
Lease time violated: yes
Incoming Client Interface: ge-1/0/0.0
Server Ip Address: 198.51.100.9
Server Interface: none
Session Id: 7
Client Pool Name: 7
Liveness Detection State: UP
```

When DHCP binding is configured with dual-stack, we get the following output:

```plaintext
user@host> show dhcp server binding detail
Client IP Address: 100.20.0.10
Hardware Address: 00:00:64:03:01:02
State: BOUND(LOCAL_SERVER_STATE_BOUND)
```
show dhcp server binding detail

show dhcp server binding <vlan-id>

show dhcp server binding <svlan-id>

show dhcp server binding <ip-address>
show dhcp server binding <session-id>

user@host> show dhcp server binding 6
IP address        Session Id  Hardware address   Expires     State      Interface
198.51.100.15      6           00:00:5e:00:53:01  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
ge-1/0/0.1073741827
192.168.0.17      42          00:00:5e:00:53:02  86346       BOUND
192.168.0.16      41          00:00:5e:00:53:01  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
ge-1/3/0.110
192.168.0.9       24          00:00:5e:00:53:04  86361       BOUND
192.168.0.8       23          00:00:5e:00:53:03  86361       BOUND
ge-1/3/0.110
192.168.0.7       22          00:00:5e:00:53:02  86361       BOUND
show dhcp relay statistics

Syntax
show dhcp relay statistics
   <bulk-leasequery-connections>
   <logical-system logical-system-name>
   <routing-instance routing-instance-name>

Syntax
Syntax for EX Series switches:
show dhcp relay statistics
   <routing-instance routing-instance-name>

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 Routers.

Description
Display Dynamic Host Configuration Protocol (DHCP) relay statistics.

Options
bulk-leasequery-connections—(Optional) Display information about bulk leasequery operations.

logical-system logical-system-name—(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.

routing-instance routing-instance-name—(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
view

Related Documentation
• clear dhcp relay statistics on page 345

List of Sample Output
show dhcp relay statistics on page 387
show dhcp relay statistics bulk-leasequery-connections on page 388

Output Fields
Table 19 on page 386 lists the output fields for the show dhcp relay statistics command. Output fields are listed in the approximate order in which they appear.
### Table 19: show dhcp relay statistics Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packets dropped</strong></td>
<td>Number of packets discarded by the extended DHCP relay agent application due to errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Total</strong>—Total number of packets discarded by the extended DHCP relay agent application.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Bad hardware address</strong>—Number of packets discarded because an invalid hardware address was specified.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Bad opcode</strong>—Number of packets discarded because an invalid operation code was specified.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Bad options</strong>—Number of packets discarded because invalid options were specified.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Invalid server address</strong>—Number of packets discarded because an invalid server address was specified.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Lease Time Violation</strong>—Number of packets discarded because of a lease time violation</td>
</tr>
<tr>
<td></td>
<td>• <strong>No available addresses</strong>—Number of packets discarded because there were no addresses available for assignment.</td>
</tr>
<tr>
<td></td>
<td>• <strong>No interface match</strong>—Number of packets discarded because they did not belong to a configured interface.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Norouting instance match</strong>—Number of packets discarded because they did not belong to a configured routing instance.</td>
</tr>
<tr>
<td></td>
<td>• <strong>No valid local address</strong>—Number of packets discarded because there was no valid local address.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Packet too short</strong>—Number of packets discarded because they were too short.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Read error</strong>—Number of packets discarded because of a system read error.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Send error</strong>—Number of packets that the extended DHCP relay application could not send.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Option 60</strong>—Number of packets discarded containing DHCP option 60 vendor-specific information.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Option 82</strong>—Number of packets discarded because DHCP option 82 information could not be added.</td>
</tr>
<tr>
<td><strong>Messages received</strong></td>
<td>Number of DHCP messages received.</td>
</tr>
<tr>
<td></td>
<td>• <strong>BOOTREQUEST</strong>—Number of BOOTP protocol data units (PDUs) received</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPDECLINE</strong>—Number of DHCP PDUs of type DECLINE received</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPDISCOVER</strong>—Number of DHCP PDUs of type DISCOVER received</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPINFORM</strong>—Number of DHCP PDUs of type INFORM received</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPRELEASE</strong>—Number of DHCP PDUs of type RELEASE received</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPREQUEST</strong>—Number of DHCP PDUs of type REQUEST received</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPLEASEACTIVE</strong>—Number of active DHCP leases</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPLEASEUNASSIGNED</strong>—Number of DHCP leases that are managed by the server but have not yet been assigned</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPLEASEUNKNOWN</strong>—Number of unknown DHCP leases</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPLEASEQUERYDONE</strong>—The leasequery is complete</td>
</tr>
<tr>
<td><strong>Messages sent</strong></td>
<td>Number of DHCP messages sent.</td>
</tr>
<tr>
<td></td>
<td>• <strong>BOOTREPLY</strong>—Number of BOOTP PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPOFFER</strong>—Number of DHCP OFFER PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPACK</strong>—Number of DHCP ACK PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPNACK</strong>—Number of DHCP NACK PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPFORCERENEW</strong>—Number of DHCP FORCERENEW PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPLEASEQUERY</strong>—Number of DHCP leasequery messages transmitted</td>
</tr>
<tr>
<td></td>
<td>• <strong>DHCPLEASEBULKLEASEQUERY</strong>—Number of DHCP bulk leasequery messages transmitted</td>
</tr>
</tbody>
</table>
Table 19: show dhcp relay statistics Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Server Response</td>
<td>State of the external DHCP server responsiveness.</td>
</tr>
<tr>
<td>Packets forwarded</td>
<td>Number of packets forwarded.</td>
</tr>
<tr>
<td>• BOOTREQUEST</td>
<td>Number of BOOTREQUEST protocol data units (PDUs) forwarded</td>
</tr>
<tr>
<td>• BOOTREPLY</td>
<td>Number of BOOTREPLY protocol data units (PDUs) forwarded</td>
</tr>
<tr>
<td>External Server Response</td>
<td>State of the external DHCP server responsiveness.</td>
</tr>
<tr>
<td>Total Requested Servers</td>
<td>Total number of servers with which the DHCP relay agent has requested a bulk leasequery connection.</td>
</tr>
<tr>
<td>Total Attempted Servers</td>
<td>Total number of servers with which the DHCP relay agent has attempted to create a bulk leasequery connection.</td>
</tr>
<tr>
<td>Total Connected</td>
<td>Total number of servers that have formed a bulk leasequery connection with the DHCP relay agent.</td>
</tr>
<tr>
<td>Total Terminated by Server</td>
<td>Total number of servers that have terminated a bulk leasequery connection with the DHCP relay agent.</td>
</tr>
<tr>
<td>Total Max Attempted</td>
<td>Total number of servers where the DHCP relay agent reached the maximum retry limit when it attempted to create a bulk leasequery connection.</td>
</tr>
<tr>
<td>Total Closed due to Errors</td>
<td>Total number of bulk leasequery connections that closed due to an internal error on the DHCP relay agent.</td>
</tr>
<tr>
<td>In-Flight Connected</td>
<td>Number of current bulk leasequery connections on the DHCP relay agent.</td>
</tr>
<tr>
<td>Bulk Leasequery Reply Packet Retries</td>
<td>Number of bulk leasequery reply packets that the DHCP relay agent has retried.</td>
</tr>
</tbody>
</table>

Sample Output

show dhcp relay statistics

```
user@host> show dhcp relay statistics
Packets dropped:
   Total                      34
   Bad hardware address       1
   Bad opcode                 1
   Bad options                3
   Invalid server address     5
   Lease Time Violation       1
   No available addresses     1
   No interface match         2
   No routing instance match  9
   No valid local address     4
   Packet too short           2
   Read error                 1
```
Send error 1
Option 60 1
Option 82 2

Messages received:
- BOOTREQUEST: 116
- DHCPDECLINE: 0
- DHCPDISCOVER: 11
- DHCPINFORM: 0
- DHCPRELEASE: 0
- DHCPREQUEST: 105
- DHCPLEASEACTIVE: 0
- DHCPLEASEUNASSIGNED: 0
- DHCPLEASEUNKNOWN: 0
- DHCPLEASEQUERYDONE: 0

Messages sent:
- BOOTREPLY: 0
- DHCPOFFER: 2
- DHCPACK: 1
- DHCPNAK: 0
- DHCPFORCERENEW: 0
- DHCPLEASEQUERY: 0
- DHCPBULKLEASEQUERY: 0

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

External Server Response:
- State: Responding

```
show dhcp relay statistics bulk-leasequery-connections

user@host> show dhcp relay statistics bulk-leasequery-connections

Total Requested Servers: 0
Total Attempted Servers: 0
Total Connected: 0
Total Terminated by Server: 0
Total Max Attempted: 0
Total Closed due to Errors: 0
In-Flight Connected: 0
Bulk Leasequery Reply Packet Retries: 0
```
**show dhcp server statistics**

**Syntax**

```
show dhcp server statistics
 <bulk-leasequery-connections>
 <logical-system logical-system-name>
 <routing-instance routing-instance-name>
```

**Release Information**

Command introduced in Junos OS Release 9.0.

**bulk-leasequery-connections** option introduced in Junos OS Release 16.1.

**Description**

Display extended Dynamic Host Configuration Protocol (DHCP) local server statistics.

**Options**

- **bulk-leasequery-connections**—(Optional) Display bulk leasequery statistics.
- **bulk-leasequery-connections**—(Optional) Display information about bulk leasequery statistics.
- **logical-system logical-system-name**—(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.
- **routing-instance routing-instance-name**—(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**

view

**Related Documentation**

- clear dhcp server statistics on page 348

**List of Sample Output**

- show dhcp server statistics on page 391
- show dhcp server statistics on page 392

**Output Fields**

Table 20 on page 390 lists the output fields for the show dhcp server statistics command. Output fields are listed in the approximate order in which they appear.
Table 20: show dhcp server statistics Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packets dropped</strong></td>
<td>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.</td>
</tr>
<tr>
<td>• Total</td>
<td>Total number of packets discarded by the extended DHCP local server</td>
</tr>
<tr>
<td>• Authentication</td>
<td>Number of packets discarded because they could not be authenticated</td>
</tr>
<tr>
<td>• Bad hardware address</td>
<td>Number of packets discarded because an invalid hardware address was specified</td>
</tr>
<tr>
<td>• Bad opcode</td>
<td>Number of packets discarded because an invalid operation code was specified</td>
</tr>
<tr>
<td>• Bad options</td>
<td>Number of packets discarded because invalid options were specified</td>
</tr>
<tr>
<td>• Dynamic profile</td>
<td>Number of packets discarded due to dynamic profile information</td>
</tr>
<tr>
<td>• Invalid server address</td>
<td>Number of packets discarded because an invalid server address was specified</td>
</tr>
<tr>
<td>• Lease Time Violation</td>
<td>Number of packets discarded because of a lease time violation</td>
</tr>
<tr>
<td>• No available addresses</td>
<td>Number of packets discarded because there were no addresses available for assignment</td>
</tr>
<tr>
<td>• No interface match</td>
<td>Number of packets discarded because they did not belong to a configured interface</td>
</tr>
<tr>
<td>• Norouting instance match</td>
<td>Number of packets discarded because they did not belong to a configured routing instance</td>
</tr>
<tr>
<td>• No valid local address</td>
<td>Number of packets discarded because there was no valid local address</td>
</tr>
<tr>
<td>• Packet too short</td>
<td>Number of packets discarded because they were too short</td>
</tr>
<tr>
<td>• Read error</td>
<td>Number of packets discarded because of a system read error</td>
</tr>
<tr>
<td>• Send error</td>
<td>Number of packets that the extended DHCP local server could not send</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Messages received</strong></th>
<th>Number of DHCP messages received.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• BOOTREQUEST</td>
<td>Number of BOOTP protocol data units (PDUs) received</td>
</tr>
<tr>
<td>• DHCPDECLINE</td>
<td>Number of DHCP PDUs of type DECLINE received</td>
</tr>
<tr>
<td>• DHCPDISCOVER</td>
<td>Number of DHCP PDUs of type DISCOVER received</td>
</tr>
<tr>
<td>• DHCPINFORM</td>
<td>Number of DHCP PDUs of type INFORM received</td>
</tr>
<tr>
<td>• DHCPRELEASE</td>
<td>Number of DHCP PDUs of type RELEASE received</td>
</tr>
<tr>
<td>• DHCPREQUEST</td>
<td>Number of DHCP PDUs of type REQUEST received</td>
</tr>
<tr>
<td>• DHCPLEASEQUERY</td>
<td>Number of DHCP leasequery messages received.</td>
</tr>
<tr>
<td>• DHCPSINGLELEASEQUERY</td>
<td>Number of DHCP bulk leasequery messages received.</td>
</tr>
<tr>
<td>• DHCPRENEW</td>
<td>Number of DHCP renew messages received; subset of DHCPREQUEST counter.</td>
</tr>
<tr>
<td>• DHCPREBIND</td>
<td>Number of DHCP rebind messages received; subset of DHCPREQUEST counter.</td>
</tr>
</tbody>
</table>
### Table 20: show dhcp server statistics Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Messages sent</strong></td>
<td>Number of DHCP messages sent.</td>
</tr>
<tr>
<td></td>
<td>• BOOTREPLY—Number of BOOTP PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPOFFER—Number of DHCP OFFER PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPACK—Number of DHCP ACK PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPNACK—Number of DHCP NACK PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPFORCERENEW—Number of DHCP FORCERENEW PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPLEASEUNASSIGNED—Number of DHCP leases that are managed by the server but have not yet been assigned</td>
</tr>
<tr>
<td></td>
<td>• DHCPLEASEUNKNOWN—Number of unknown DHCP leases</td>
</tr>
<tr>
<td></td>
<td>• DHCPLEASEACTIVE—Number of active DHCP leases</td>
</tr>
<tr>
<td></td>
<td>• DHCPLEASEQUERYDONE—The leasequery is complete</td>
</tr>
<tr>
<td>Total Accepted Connections</td>
<td>Total number of bulk leasequery connections accepted by the server.</td>
</tr>
<tr>
<td>Total Not-Accepted Connections</td>
<td>Total number of bulk leasequery connections not accepted by the server.</td>
</tr>
<tr>
<td>Connections Closed due to Errors</td>
<td>Number of bulk leasequery connections that the server closed due to an internal error.</td>
</tr>
<tr>
<td>Connections Closed due to max-empty-replies</td>
<td>Number of bulk leasequery connections that the server closed because the maximum number of empty replies was reached.</td>
</tr>
<tr>
<td>In-flight Connections</td>
<td>Number of bulk leasequery connections on the server.</td>
</tr>
</tbody>
</table>

### Sample Output

**show dhcp server statistics**

```bash
user@host> show dhcp server statistics
Packets dropped:
    Total                      1
    Lease Time Violation       1

Messages received:
    BOOTREQUEST                25
    DHCPDECLINE                0
    DHCPIPDISCOVER             10
    DHCPINFORM                 0
    DHCPRELEASE                4
    DHCPREQUEST                10
    DHCPRENEW                  4
    DHCPREBIND                 2

Messages sent:
    BOOTREPLY                  20
    DHCPOFFER                  10
    DHCPACK                    10
```

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DHCPNAK 0
DHCPFORCERENEW 0

show dhcp server statistics

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

Messages received:
  BOOTREQUEST 238
  DHCPDECLINE 0
  DHCPDISCOVER 1
  DHCPINFORM 0
  DHCPRELEASE 0
  DHCPREQUEST 237
  DHCPRENEW 236
  DHCPREBIND 0

Messages sent:
  BOOTREPLY 20
  DHCPOFFER 10
  DHCPACK 10
  DHCPNAK 0
  DHCPFORCERENEW 0
show dhcpv6 relay binding

Syntax

show dhcpv6 relay binding
<address>
<brief>
<detail>
<interface interface-name>
<interfaces-vlan>
<interfaces-wildcard>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
<summary>

Release Information

Command introduced in Junos OS Release 11.4. interfaces-vlan and interfaces-wildcard options introduced in Junos OS Release 12.1.

Description

Display the DHCPv6 address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.

Options

address—(Optional) One of the following identifiers for the DHCPv6 client whose binding state you want to show:

- CID—The specified Client ID (CID).
- ipv6-prefix—The specified IPv6 prefix.
- session-id—The specified session ID.

brief—(Optional) Display brief information about the active client bindings. This is the default, and produces the same output as show dhcpv6 relay binding.

detail—(Optional) Display detailed client binding information.

interface interface-name—(Optional) Perform this operation on the specified interface. You can optionally filter on VLAN ID and S-VLAN ID.

interfaces-vlan—(Optional) Interface VLAN ID or S-VLAN ID interface on which to show binding state information.

interfaces-wildcard—(Optional) Set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).

logical-system logical-system-name—(Optional) Perform this operation on the specified logical system.

routing-instance routing-instance-name—(Optional) Perform this operation on the specified routing instance.

summary—(Optional) Display a summary of DHCPv6 client information.
Required Privilege Level: view

Related Documentation:
- Clearing DHCP Bindings for Subscriber Access
- clear dhcpv6 relay binding on page 350

List of Sample Output:
- show dhcpv6 relay binding on page 396
- show dhcpv6 relay binding (Address) on page 396
- show dhcpv6 relay binding detail (Client ID) on page 397
- show dhcpv6 relay binding detail on page 397
- show dhcpv6 relay binding detail (Dual-Stack) on page 397
- show dhcpv6 relay binding detail (Multi-Relay Topology) on page 398
- show dhcpv6 relay binding (Session ID) on page 398
- show dhcpv6 relay binding (Subscriber with Multiple Addresses) on page 398
- show dhcpv6 relay binding detail (Subscriber with Multiple Addresses) on page 399
- show dhcpv6 relay binding (Interfaces VLAN) on page 399
- show dhcpv6 relay binding (Interfaces Wildcard) on page 400
- show dhcpv6 relay binding (Interfaces Wildcard) on page 400
- show dhcpv6 relay binding summary on page 400

Output Fields: Table 21 on page 394 lists the output fields for the show dhcpv6 relay binding command. Output fields are listed in the approximate order in which they appear.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>number clients, (number init, number bound, number selecting, number requesting, number renewing, number rebinding)</td>
<td>Summary counts of the total number of DHCPv6 clients and the number of DHCPv6 clients in each state.</td>
<td>summary</td>
</tr>
<tr>
<td>Client IPv6 Prefix</td>
<td>Prefix of the DHCPv6 client.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Client DUID</td>
<td>DHCP for IPv6 Unique Identifier (DUID) of the client.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Client IPv6 Address</td>
<td>IPv6 address assigned to the subscriber.</td>
<td>detail</td>
</tr>
<tr>
<td>Session id</td>
<td>Session ID of the subscriber session.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Expires</td>
<td>Number of seconds in which the lease expires.</td>
<td>brief detail</td>
</tr>
</tbody>
</table>
Table 21: show dhcpv6 relay binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>State of the DHCPv6 relay address binding table on the DHCPv6 client:</td>
<td>brief detail</td>
</tr>
<tr>
<td></td>
<td>• BOUND—Client has an active IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• INIT—Initial state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• REBINDING—Client is broadcasting a request to renew the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RECONFIGURE—Client is broadcasting a request to reconfigure the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RELEASE—Client is releasing the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RENEWING—Client is sending a request to renew the IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• REQUESTING—Client is requesting a DHCPv6 server.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• SELECTING—Client is receiving offers from DHCPv6 servers.</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>Incoming client interface.</td>
<td>brief</td>
</tr>
<tr>
<td>Lease Expires</td>
<td>Date and time at which the client's IP address lease expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Lease Expires in</td>
<td>Number of seconds in which the lease expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Preferred Lease Expires</td>
<td>Date and UTC time at which the client's IPv6 prefix expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Preferred Lease Expires in</td>
<td>Number of seconds at which the client's IPv6 prefix expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Lease Start</td>
<td>Date and time at which the client's IP address lease started.</td>
<td>detail</td>
</tr>
<tr>
<td>Lease time violated</td>
<td>Lease time violation has occurred.</td>
<td>detail</td>
</tr>
<tr>
<td>Incoming Client Interface</td>
<td>Client's incoming interface.</td>
<td>detail</td>
</tr>
<tr>
<td>Server Address</td>
<td>IP address of the DHCPv6 server.</td>
<td>detail</td>
</tr>
<tr>
<td></td>
<td>Displays unknown for a DHCPv6 relay agent in a multi-relay topology that is not</td>
<td></td>
</tr>
<tr>
<td></td>
<td>directly adjacent to the DHCPv6 server and does not detect the IP address of the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>server. In that case, the output instead displays the Next Hop Server Facing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relay field.</td>
<td></td>
</tr>
<tr>
<td>Next Hop Server Facing Relay</td>
<td>Next-hop address in the direction of the DHCPv6 server.</td>
<td>detail</td>
</tr>
<tr>
<td>Server Interface</td>
<td>Interface of the DHCPv6 server.</td>
<td>detail</td>
</tr>
<tr>
<td>Relay Address</td>
<td>IP address of the relay.</td>
<td>detail</td>
</tr>
<tr>
<td>Client Pool Name</td>
<td>Address pool that granted the client lease.</td>
<td>detail</td>
</tr>
<tr>
<td>Client ID Length</td>
<td>Length of client ID.</td>
<td>All levels</td>
</tr>
</tbody>
</table>
### Table 21: show dhcpv6 relay binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Id</td>
<td>Client ID.</td>
<td>All levels</td>
</tr>
<tr>
<td>Generated Circuit ID</td>
<td>Circuit ID generated by the DHCPv6 Interface-ID option (option 18)</td>
<td>detail</td>
</tr>
<tr>
<td>Generated Remote ID Enterprise Number</td>
<td>The Juniper Networks IANA private enterprise number</td>
<td>detail</td>
</tr>
<tr>
<td>Generated Remote ID</td>
<td>Remote ID generated by the DHCPv6 Remote-ID option (option 37)</td>
<td>detail</td>
</tr>
<tr>
<td>Dual Stack Group</td>
<td>Name of the dual-stack group for the DHCPv6 binding.</td>
<td>detail</td>
</tr>
<tr>
<td>Dual Stack Peer Address</td>
<td>Address of the dual-stack DHCPv4 peer.</td>
<td>detail</td>
</tr>
</tbody>
</table>

### Sample Output

**show dhcpv6 relay binding**

```
user@host> show dhcpv6 relay binding
Prefix                   Session Id  Expires  State    Interface    Client DUID
2001:db8:3c4d:15::/64    1           83720    BOUND    ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
2001:db8:3c4d:16::/64    2           83720    BOUND    ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:02
2001:db8:3c4d:17::/64    3           83720    BOUND    ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:03
2001:db8:3c4d:18::/64    4           83720    BOUND    ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:04
2001:db8:3c4d:19::/64    5           83720    BOUND    ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:05
2001:db8:3c4d: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:db8:1111:2222::/64 detail
Session Id: 1
Client IPv6 Prefix: 2001:db8:3c4d:15::/64
Client DUID: LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
State: BOUND(RELAY_STATE_BOUND)
Lease Expires: 2011-05-25 07:12:09 PDT
Lease Expires in: 77115 seconds
Preferred Lease Expires: 2012-07-24 00:18:14 UTC
Preferred Lease Expires in: 600 seconds
Lease Start: 2011-05-24 07:12:09 PDT
Incoming Client Interface: ge-1/0/0.0
Server Address: 2001:db8:aaaa:bbbb::1
Server Interface: none
Relay Address: 2001:db8:1111:2222::
Client Pool Name: pool-25
```
show dhcpv6 relay binding detail (Client ID)

show dhcpv6 relay binding detail

show dhcpv6 relay binding detail (Dual-Stack)
show dhcpv6 relay binding detail (Multi-Relay Topology)

```
user@host > show dhcpv6 relay binding detail
Session Id:  13
Client IPv6 Prefix:  2001:db8:3000:0:8001::5/128
Client DUID:  LL0x1-00:00:65:03:01:02
State:  BOUND(DHCPV6_RELAY_STATE_BOUND)
Lease Expires:  2011-11-21 06:14:50 PST
Lease Expires in:  293 seconds
Preferred Lease Expires:  2012-07-24 00:18:14 UTC
Preferred Lease Expires in:  600 seconds
Lease Start:  2011-11-21 06:09:50 PST
Incoming Client Interface:  ge-1/0/0.0
Server Address:  unknown
Next Hop Server Facing Relay:  2001:db8:4000::2
Server Interface:  none
Client Id Length:  10
Client Id:  /0x00030001/0x00006503/0x0102
Dual Stack Group:  group1
Dual Stack Peer Address:  192.0.2.4
```

show dhcpv6 relay binding (Session ID)

```
user@host> show dhcpv6 relay binding 41
Prefix  Session Id  Expires  State  Interface  Client DUID
2001:db8:3c4d:15::/64  41  78837  BOUND  ge-1/0/0.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
```

show dhcpv6 relay binding (Subscriber with Multiple Addresses)

```
user@host> show dhcpv6 relay binding
Prefix  Session Id  Expires  State  Interface  Client DUID
2001:db8:1001::1:24/128  23  593  BOUND  ge-9/0/9.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:1001::1:1c/128  23  393  BOUND  ge-9/0/9.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:1001::1:14/128  23  193  BOUND  ge-9/0/9.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:3001::300/120  23  293  BOUND  ge-9/0/9.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:3001::200/120  23  193  BOUND  ge-9/0/9.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:3001::100/120  23  93  BOUND  ge-9/0/9.0
LL_TIME0x1-0x55306754-00:10:94:00:00:02
```
show dhcpv6 relay binding detail (Subscriber with Multiple Addresses)

```plaintext
user@host> show dhcpv6 relay binding detail
Session Id:  3
  Client IPv6 Address:                   2001:db8:1001::1:2/128
  Lease Expires:                         2015-05-15 02:34:51 PDT
  Lease Expires in:                      24 seconds
  Preferred Lease Expires:               2015-05-15 02:34:51 PDT
  Preferred Lease Expires in:            24 seconds
  Client IPv6 Address:                   2001:db8:1001::1:12/128
  Lease Expires:                         2015-05-15 02:41:31 PDT
  Lease Expires in:                      424 seconds
  Preferred Lease Expires:               2015-05-15 02:41:31 PDT
  Preferred Lease Expires in:            424 seconds
  Client IPv6 Address:                   2001:db8:1001::1:a/128
  Lease Expires:                         2015-05-15 02:38:11 PDT
  Lease Expires in:                      224 seconds
  Preferred Lease Expires:               2015-05-15 02:38:11 PDT
  Preferred Lease Expires in:            224 seconds
  Client IPv6 Prefix:                    2001:db8:3001::/120
  Lease Expires:                         2015-05-15 02:34:51 PDT
  Lease Expires in:                      24 seconds
  Preferred Lease Expires:               2015-05-15 02:34:51 PDT
  Preferred Lease Expires in:            24 seconds
  Client IPv6 Prefix:                    2001:db8:3001::200/120
  Lease Expires:                         2015-05-15 02:38:11 PDT
  Lease Expires in:                      224 seconds
  Preferred Lease Expires:               2015-05-15 02:38:11 PDT
  Preferred Lease Expires in:            224 seconds
  Client IPv6 Prefix:                    2001:db8:3001::100/120
  Lease Expires:                         2015-05-15 02:36:31 PDT
  Lease Expires in:                      124 seconds
  Preferred Lease Expires:               2015-05-15 02:36:31 PDT
  Preferred Lease Expires in:            124 seconds
  Client DUID:                           LL_TIME0x1-0x55554c6e-00:10:94:00:00:02
  State:                                 BOUND (DHCPV6_RELAY_STATE_BOUND)
  Lease Start:                           2015-05-15 02:34:21 PDT
  Last Packet Received:                  2015-05-15 02:34:22 PDT
  Incoming Client Interface:             ge-9/0/9.0
  Client Interface Vlan Id:              111
  Demux Interface:                       demux0.3221225475
  Server Ip Address:                     2001:db8:5001::1
  Server Interface:                      none
  Client Profile Name:                   DHCP-IPDEMUX-PROF
  Client Id Length:                      14
  Client Id:                             /0x00010001/0x55554c6e/0x00109400/0x00002
  Generated Circuit ID:                  ge-9/0/9:9

show dhcpv6 relay binding (Interfaces VLAN)

```plaintext
```plaintext
user@host> show dhcpv6 relay binding ge-1/0/100-200
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:DB8::/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:DB8:19::/32     31       79681    BOUND    demux0.1073741825
   LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:C9::/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:DB8:19::/32     33       79681    BOUND    ge-1/3/0.110
   LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:C9::/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 server binding

Syntax

```
show dhcpv6 server binding
  <address>
  <brief | detail | summary>
  <interface interface-name>
  <interfaces-vlan>
  <interfaces-wildcard>
  <logical-system logical-system-name>
  <routing-instance routing-instance-name>
```

Release Information

Options interfaces-vlan and interfaces-wildcard added in Junos OS Release 12.1.

Description

Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server.

Options

- **address**—(Optional) One of the following identifiers for the DHCPv6 client whose binding state you want to show:
  - **CID**—The specified Client ID (CID).
  - **ipv6-prefix**—The specified IPv6 prefix.
  - **session-id**—The specified session ID.

- **brief | detail | summary**—(Optional) Display the specified level of output about active client bindings. The default is **brief**, which produces the same output as `show dhcpv6 server binding`.

- **interface interface-name**—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.

- **interfaces-vlan**—(Optional) Interface VLAN ID or S-VLAN ID interface on which to show binding state information.

- **interfaces-wildcard**—(Optional) Set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).

- **logical-system logical-system-name**—(Optional) Display information about active client bindings for DHCPv6 clients on the specified logical system.

- **routing-instance routing-instance-name**—(Optional) Display information about active client bindings for DHCPv6 clients on the specified routing instance.

Required Privilege Level

- view
Related Documentation

- Clearing DHCP Bindings for Subscriber Access
- clear dhcpv6 server binding on page 353

List of Sample Output

- show dhcpv6 server binding on page 404
- show dhcpv6 server binding detail on page 404
- show dhcpv6 server binding interface on page 404
- show dhcpv6 server binding interface detail on page 404
- show dhcpv6 server binding (IPv6 Prefix) on page 405
- show dhcpv6 server binding (Session ID) on page 405
- show dhcpv6 server binding (Interfaces VLAN) on page 405
- show dhcpv6 server binding (Interfaces Wildcard) on page 405
- show dhcpv6 server binding (Interfaces Wildcard) on page 406
- show dhcpv6 server binding summary on page 406

Output Fields

Table 22 on page 402 lists the output fields for the `show dhcpv6 server binding` command. Output fields are listed in the approximate order in which they appear.

Table 22: show dhcpv6 server binding Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>number clients,</code></td>
<td>Summary counts of the total number of DHCPv6 clients and the number of DHCPv6</td>
<td>summary</td>
</tr>
<tr>
<td><code>number init,</code></td>
<td>clients, (number init, number bound, number selecting, number requesting,</td>
<td></td>
</tr>
<tr>
<td><code>number releasing</code>)</td>
<td>number releasing)</td>
<td></td>
</tr>
<tr>
<td>Prefix</td>
<td>Client’s DHCPv6 prefix, or prefix used to support multiple address assignment.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Session Id</td>
<td>Session ID of the subscriber session.</td>
<td>brief detail</td>
</tr>
<tr>
<td>Expires</td>
<td>Number of seconds in which lease expires.</td>
<td>brief detail</td>
</tr>
<tr>
<td>State</td>
<td>State of the address binding table on the extended DHCPv6 local server:</td>
<td>brief detail</td>
</tr>
<tr>
<td></td>
<td>• BOUND—Client has active IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• INIT—Initial state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RECONFIGURE—Server has sent reconfigure message to client.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RELEASE—Client is releasing IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RENEWING—Client sending request to renew IP address lease.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• REQUESTING—Client requesting a DHCPv6 server.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• SELECTING—Client receiving offers from DHCPv6 servers.</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>Interface on which the DHCPv6 request was received.</td>
<td>brief</td>
</tr>
<tr>
<td>Client IPv6 Address</td>
<td>Client’s IPv6 address.</td>
<td>detail</td>
</tr>
<tr>
<td>Client IPv6 Prefix</td>
<td>Client’s IPv6 prefix.</td>
<td>detail</td>
</tr>
</tbody>
</table>
Table 22: show dhcpv6 server binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client DUID</td>
<td>Client's DHCP Unique Identifier (DUID).</td>
<td>brief detail</td>
</tr>
<tr>
<td>Lease expires</td>
<td>Date and time at which the client's IP address lease expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Lease expires in</td>
<td>Number of seconds in which lease expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Preferred Lease</td>
<td>Date and UTC time at which the client's IPv6 prefix expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Expires in</td>
<td>Number of seconds at which client's IPv6 prefix expires.</td>
<td>detail</td>
</tr>
<tr>
<td>Lease Start</td>
<td>Date and time at which the client's address lease was obtained.</td>
<td>detail</td>
</tr>
<tr>
<td>Lease time violated</td>
<td>Lease time violation has occurred.</td>
<td>detail</td>
</tr>
<tr>
<td>Incoming Client</td>
<td>Client's incoming interface.</td>
<td>detail</td>
</tr>
<tr>
<td>Interface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Server IP Address</td>
<td>IP address of DHCPv6 server.</td>
<td>detail</td>
</tr>
<tr>
<td>Server Interface</td>
<td>Interface of DHCPv6 server.</td>
<td>detail</td>
</tr>
<tr>
<td>Client Pool Name</td>
<td>Address pool used to assign IPv6 address.</td>
<td>detail</td>
</tr>
<tr>
<td>Client Prefix Pool</td>
<td>Address pool used to assign IPv6 prefix.</td>
<td>detail</td>
</tr>
<tr>
<td>Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client Id length</td>
<td>Length of the DHCPv6 client ID, in bytes.</td>
<td>detail</td>
</tr>
<tr>
<td>Client Id</td>
<td>ID of the DHCPv6 client.</td>
<td>detail</td>
</tr>
<tr>
<td>Server Id</td>
<td>DHCP unique identifier (DUID) for the DHCPv6 server.</td>
<td>detail</td>
</tr>
<tr>
<td>Client Interface</td>
<td>S-VLAN ID of the client's incoming interface.</td>
<td>detail</td>
</tr>
<tr>
<td>Svlan Id</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client Interface Vlan</td>
<td>VLAN ID of the client's incoming interface.</td>
<td>detail</td>
</tr>
<tr>
<td>Id</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual Stack Group</td>
<td>DHCPv6 server profile name.</td>
<td>detail</td>
</tr>
<tr>
<td>Dual Stack Peer</td>
<td>DHCPv6 Peer IP address.</td>
<td>detail</td>
</tr>
<tr>
<td>Address</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sample Output

**show dhcpv6 server binding**

```
user@host> show dhcpv6 server binding
Prefix                  Session Id  Expires  State    Interface    Client DUID
2001:db8:1111:2222::/64 6           86321    BOUND    ge-1/0/0.0
2001:db8:1111:2222::/64 7           86321    BOUND    ge-1/0/0.0
2001:db8:1111:2222::/64 8           86321    BOUND    ge-1/0/0.0
2001:db8:1111:2222::/64 9           86321    BOUND    ge-1/0/0.0
2001:db8:1111:2222::/64 10          86321    BOUND    ge-1/0/0.0
2001:db8:2002::1/74 11              86321    BOUND    ge-1/0/0.0
```

**show dhcpv6 server binding detail**

```
user@host> show dhcpv6 server binding detail
Session Id:  2
Client IPv6 Prefix:                    3ffe:ffff:0:4::/64
Client IPv6 Address:                   3000:0:0:8003::1/128
Client DUID:                           LL0x1-00:00:64:01:01:02
State:                                 BOUND(DHCPV6_LOCAL_SERVER_STATE_BOUND)
Lease Expires:                         2016-11-07 08:30:39 PST
Lease Expires in:                      43706 seconds
Preferred Lease Expires:               2016-11-07 08:30:39 PST
Preferred Lease Expires in:            43706 seconds
Lease Start:                           2016-11-04 11:00:37 PDT
Last Packet Received:                  2016-11-06 09:00:39 PST
Incoming Client Interface:             ae0.3221225472
Client Interface Svlan Id:             2000
Client Interface Vlan Id:              1
Server Ip Address:                     3000::2
Server Interface:                      none
Client Profile Name:                   my-dual-stack
Client Id Length:                      10
Client Id:                             /0x00030001/0x00006401/0x0102
Dual Stack Group:                      my-dual-stack
Dual Stack Peer Address:               100.20.0.10
```

**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:db8:1111:2222::/64 1           86055    BOUND    ge-1/0/0.101
```

**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:db8:1111:2222::/64
Client DUID:                           LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
```
<table>
<thead>
<tr>
<th>Prefix</th>
<th>Session Id</th>
<th>Expires</th>
<th>State</th>
<th>Interface</th>
<th>Client DUID</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001:db8::/32</td>
<td>8</td>
<td>86235</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
<td>LL_TIME0x1-0x2e159c0-00:10:94:00:00:03</td>
</tr>
<tr>
<td>2001:db8::/32</td>
<td>11</td>
<td>87583</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
<td>LL_TIME0x1-0x2e159c0-00:10:94:00:00:03</td>
</tr>
<tr>
<td>2001:db8::/32</td>
<td>12</td>
<td>87583</td>
<td>BOUND</td>
<td>ge-1/0/0.0</td>
<td>LL_TIME0x1-0x2e159c0-00:10:94:00:00:03</td>
</tr>
<tr>
<td>2001:db8::/32</td>
<td>30</td>
<td>79681</td>
<td>BOUND</td>
<td>demux0.1073741824</td>
<td>LL_TIME0x1-0x4d5d009f-00:10:94:00:00:00:01</td>
</tr>
<tr>
<td>2001:db8::/32</td>
<td>31</td>
<td>79681</td>
<td>BOUND</td>
<td>demux0.1073741824</td>
<td>LL_TIME0x1-0x4d5d009f-00:10:94:00:00:00:01</td>
</tr>
<tr>
<td>2001:db8::/32</td>
<td>32</td>
<td>79681</td>
<td>BOUND</td>
<td>demux0.1073741824</td>
<td>LL_TIME0x1-0x4d5d009f-00:10:94:00:00:00:01</td>
</tr>
</tbody>
</table>

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show dhcpv6 server binding (Interfaces Wildcard)

```
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
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:db8:19::/32  33       79681    BOUND    ge-1/3/0.110
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:db8:C9::/32  24       79681    BOUND    ge-1/3/0.110
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
```

show dhcpv6 server binding summary

```
user@host> show dhcpv6 server binding summary
5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```
show dhcpv6 relay statistics

**Syntax**

```
show dhcpv6 relay statistics
  <bulk-leasequery-connections>
  <logical-system logical-system-name>
  <routing-instance routing-instance-name>
```

**Release Information**

- Command introduced in Junos OS Release 11.4.
- Command introduced in Junos OS Release 12.3R2 for EX Series switches.

**Description**


**Options**

- `bulk-leasequery-connections` — (Optional) Display bulk leasequery statistics.
- `logical-system logical-system-name` — (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.
- `routing-instance routing-instance-name` — (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**

- `view`

**Related Documentation**

- clear dhcpv6 relay statistics on page 356
- show dhcpv6 relay statistics on page 409
- show dhcpv6 relay statistics bulk-leasequery-connections on page 410

**List of Sample Output**

- show dhcpv6 relay statistics on page 409
- show dhcpv6 relay statistics bulk-leasequery-connections on page 410

**Output Fields**

Table 23 on page 408 lists the output fields for the `show dhcpv6 relay statistics` command. Output fields are listed in the approximate order in which they appear.
Table 23: show dhcpv6 relay statistics Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DHCPv6 Packets dropped</strong></td>
<td>Number of packets discarded by the extended DHCPv6 relay agent application due to errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</td>
</tr>
<tr>
<td></td>
<td>• Total—Total number of packets discarded by the DHCPv6 relay agent application.</td>
</tr>
<tr>
<td></td>
<td>• Bad options—Number of packets discarded because invalid options were specified.</td>
</tr>
<tr>
<td></td>
<td>• Bad send—Number of packets that the extended DHCP relay application could not send.</td>
</tr>
<tr>
<td></td>
<td>• Bad src address—Number of packets discarded because the family type was not AF_INET6.</td>
</tr>
<tr>
<td></td>
<td>• No client id—Number of packets discarded because they could not be matched to a client.</td>
</tr>
<tr>
<td></td>
<td>• Lease Time Violation—Number of packets discarded because of a lease time violation</td>
</tr>
<tr>
<td></td>
<td>• No safd—Number of packets discarded because they arrived on an unconfigured interface.</td>
</tr>
<tr>
<td></td>
<td>• Short packet—Number of packets discarded because they were too short.</td>
</tr>
<tr>
<td></td>
<td>• Relay hop count—Number of packets discarded because the hop count in the packet exceeded 32.</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_DECLINE—Number of DHCPv6 PDUs of type DECLINE received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_SOLICIT—Number of DHCPv6 PDUs of type SOLICIT received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_INFORMATION_REQUEST—Number of DHCPv6 PDUs of type INFORMATION-REQUEST received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_RELEASE—Number of DHCPv6 PDUs of type RELEASE received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_REQUEST—Number of DHCPv6 PDUs of type REQUEST received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_CONFIRM—Number of DHCPv6 PDUs of type CONFIRM received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_RENEW—Number of DHCPv6 PDUs of type RENEW received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_REBIND—Number of DHCPv6 PDUs of type REBIND received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_RELAY_REPL—Number of DHCPv6 PDUs of type RELAY-REPL received</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6LEASEQUERY_REPLY—Number of DHCPv6 replies received from the DHCPv6 server</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6LEASEQUERY_DATA—xxxx</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6LEASEQUERY_DONE—The leasequery is complete</td>
</tr>
<tr>
<td><strong>Messages sent</strong></td>
<td>Number of DHCPv6 messages sent.</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_ADVERTISE—Number of DHCPv6 ADVERTISE PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_REPLY—Number of DHCPv6 REPLY PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_RECONFIGURE—Number of DHCPv6 RECONFIGURE PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCPv6_RELAY_FOWR—Number of DHCPv6 RELAY-FORW PDUs transmitted</td>
</tr>
<tr>
<td></td>
<td>• DHCP6LEASEQUERY—Number of DHCP leasequery messages transmitted</td>
</tr>
<tr>
<td><strong>Packets forwarded</strong></td>
<td>Number of packets forwarded by the extended DHCPv6 relay agent application.</td>
</tr>
<tr>
<td></td>
<td>• FWD REQUEST—Number of DHCPv6 REQUEST packets forwarded</td>
</tr>
<tr>
<td></td>
<td>• FWD REPLY—Number of DHCPv6 REPLY packets forwarded</td>
</tr>
<tr>
<td><strong>External Server Response</strong></td>
<td>State of the external DHCP server responsiveness.</td>
</tr>
<tr>
<td><strong>Total Requested Servers</strong></td>
<td>Total number of servers with which the DHCP relay agent has requested a bulk leasequery connection.</td>
</tr>
</tbody>
</table>
Table 23: show dhcpv6 relay statistics Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Attempted</td>
<td>Total number of servers with which the DHCP relay agent has attempted to create a bulk leasequery connection.</td>
</tr>
<tr>
<td>Servers</td>
<td></td>
</tr>
<tr>
<td>Total Connected</td>
<td>Total number of servers that have formed a bulk leasequery connection with the DHCP relay agent.</td>
</tr>
<tr>
<td>Total Terminated</td>
<td>Total number of servers that have terminated a bulk leasequery connection with the DHCP relay agent.</td>
</tr>
<tr>
<td>by Server</td>
<td></td>
</tr>
<tr>
<td>Total Max Attempted</td>
<td>Total number of servers where the DHCP relay agent reached the maximum retry limit when it attempted to create a bulk leasequery connection.</td>
</tr>
<tr>
<td>Total Closed due to Errors</td>
<td>Total number of bulk leasequery connections that closed due to an internal error on the DHCP relay agent.</td>
</tr>
<tr>
<td>In-Flight Connected</td>
<td>Number of current bulk leasequery connections on the DHCP relay agent.</td>
</tr>
<tr>
<td>Bulk Leasequery Reply Packet Retries</td>
<td>Number of bulk leasequery reply packets that the DHCP relay agent has retried.</td>
</tr>
</tbody>
</table>

Sample Output

```bash
user@host> show dhcpv6 relay statistics
DHCPv6 Packets dropped:
  Total                       1
  Lease Time Violation        1

Messages received:
  DHCPv6_DECLINE              0
  DHCPv6_SOLICIT              10
  DHCPv6_INFORMATION_REQUEST  0
  DHCPv6_RELEASE              0
  DHCPv6_REQUEST              10
  DHCPv6_CONFIRM              0
  DHCPv6_RENEW                0
  DHCPv6_REBIND               0
  DHCPv6_RELAY_REPL           0
  DHCPv6_LEASEQUERY_REPLY     0
  DHCPv6_LEASEQUERY_DATA      0
  DHCPv6_LEASEQUERY_DONE      0

Messages sent:
  DHCPv6_ADVERTISE            0
  DHCPv6_REPLY                 0
  DHCPv6_RECONFIGURE           0
  DHCPv6_RELAY_FORW            0
  DHCPv6_LEASEQUERY            0

Packets forwarded:
  Total                       4
  Fwd REQUEST                 2
```
show dhcpv6 relay statistics bulk-leasequery-connections

```
user@host> show dhcp relay statistics bulk-leasequery-connections

Total Requested Servers:  0
Total Attempted Servers:  0
Total Connected:          0
Total Terminated by Server: 0
Total Max Attempted:      0
Total Closed due to Errors: 0
In-Flight Connected:      0
Bulk Leasequery Reply Packet Retries: 0
```
show dhcpv6 server statistics

Syntax
show dhcpv6 server statistics
   <bulk-leasequery-connections>
   <logical-system logical-system-name>
   <routing-instance routing-instance-name>

Release Information

Description
Display extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.

Options
bulk-leasequery-connections—(Optional) Display bulk leasequery statistics.
logical-system logical-system-name—(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.
routing-instance routing-instance-name—(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.

Required Privilege
view

Related Documentation
• clear dhcpv6 server statistics on page 358

List of Sample Output
show dhcpv6 server statistics on page 413
show dhcpv6 server statistics bulk-leasequery-connections on page 413

Output Fields
Table 24 on page 412 lists the output fields for the show dhcpv6 server statistics command. Output fields are listed in the approximate order in which they appear.
Table 24: show dhcpv6 server statistics Output Fields

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packets dropped</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Total</strong>—Total number of packets discarded by the extended DHCPv6 local server</td>
</tr>
<tr>
<td></td>
<td>- <strong>Strict Reconfigure</strong>—Number of solicit messages discarded because the client does not support reconfiguration</td>
</tr>
<tr>
<td></td>
<td>- <strong>Bad hardware address</strong>—Number of packets discarded because an invalid hardware address was specified</td>
</tr>
<tr>
<td></td>
<td>- <strong>Bad opcode</strong>—Number of packets discarded because an invalid operation code was specified</td>
</tr>
<tr>
<td></td>
<td>- <strong>Bad options</strong>—Number of packets discarded because invalid options were specified</td>
</tr>
<tr>
<td></td>
<td>- <strong>Invalid server address</strong>—Number of packets discarded because an invalid server address was specified</td>
</tr>
<tr>
<td></td>
<td>- <strong>Lease Time Violation</strong>—Number of packets discarded because of a lease time violation</td>
</tr>
<tr>
<td></td>
<td>- <strong>No available addresses</strong>—Number of packets discarded because there were no addresses available for assignment</td>
</tr>
<tr>
<td></td>
<td>- <strong>No interface match</strong>—Number of packets discarded because they did not belong to a configured interface</td>
</tr>
<tr>
<td></td>
<td>- <strong>Norouting instance match</strong>—Number of packets discarded because they did not belong to a configured routing instance</td>
</tr>
<tr>
<td></td>
<td>- <strong>No valid local address</strong>—Number of packets discarded because there was no valid local address</td>
</tr>
<tr>
<td></td>
<td>- <strong>Packet too short</strong>—Number of packets discarded because they were too short</td>
</tr>
<tr>
<td></td>
<td>- <strong>Read error</strong>—Number of packets discarded because of a system read error</td>
</tr>
<tr>
<td></td>
<td>- <strong>Send error</strong>—Number of packets that the extended DHCPv6 local server could not send</td>
</tr>
<tr>
<td><strong>Messages received</strong></td>
<td>Number of DHCPv6 messages received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_CONFIRM</strong>—Number of DHCPv6 CONFIRM PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6DECLINE</strong>—Number of DHCPv6 DECLINE PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_INFORMATION_REQUEST</strong>—Number of DHCPv6 INFORMATION-REQUEST PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_REBIND</strong>—Number of DHCPv6 REBIND PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_RELAY_FORWARD</strong>—Number of DHCPv6 RELAY-FORWARD PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_RELAY_REPLY</strong>—Number of DHCPv6 RELAY-REPLY PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_RELEASE</strong>—Number of DHCPv6 RELEASE PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_RENEW</strong>—Number of DHCPv6 RENEW PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_REQUEST</strong>—Number of DHCPv6 REQUEST PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_SOLICIT</strong>—Number of DHCPv6 SOLICIT PDUs received.</td>
</tr>
<tr>
<td></td>
<td>- <strong>DHCPV6_LEASEQUERY</strong>—Number of DHCPv6 leasequery messages received.</td>
</tr>
</tbody>
</table>
Table 24: show dhcpv6 server statistics Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Messages sent</td>
<td>Number of DHCPv6 messages sent.</td>
</tr>
<tr>
<td>• DHCPV6_ADVERTISE</td>
<td>Number of DHCPv6 ADVERTISE PDUs transmitted.</td>
</tr>
<tr>
<td>• DHCPV6_REPLY</td>
<td>Number of DHCPv6 ADVERTISE PDUs transmitted.</td>
</tr>
<tr>
<td>• DHCPV6_LOGICAL_NAK</td>
<td>Number of logical NAK messages sent, signifying T1 and T2 timers with values of zero; subset of DHCPV6_REPLY counter. (Displays only at verbose level.)</td>
</tr>
<tr>
<td>• DHCPV6_RECONFIGURE</td>
<td>Number of DHCPv6 RECONFIGURE PDUs transmitted.</td>
</tr>
<tr>
<td>• DHCPV6LEASEQUERY_REPLY</td>
<td>Number of DHCPv6 leasequery replies transmitted to the DHCPv6</td>
</tr>
<tr>
<td></td>
<td>relay agent.</td>
</tr>
<tr>
<td>• DHCPV6LEASEQUERY_DATA</td>
<td>Number of DHCPv6 LEASEQUERY-DATA packets transmitted.</td>
</tr>
<tr>
<td>• DHCPV6LEASEQUERY_DONE</td>
<td>Number of DHCPv6 LEASEQUERY-DONE packets sent.</td>
</tr>
</tbody>
</table>

Sample Output

show dhcpv6 server statistics

user@host> show dhcpv6 server statistics
Dhcpv6 Packets dropped:
    Total                      1
    Lease Time Violation       1

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
    DHCPV6LEASEQUERY           0

Messages sent:
    DHCPV6_ADVERTISE           9
    DHCPV6_REPLY               5
    DHCPV6_RECONFIGURE         0
    DHCPV6LEASEQUERY_REPLY     0
    DHCPV6LEASEQUERY_DATA      0
    DHCPV6LEASEQUERY_DONE      0

show dhcpv6 server statistics bulk-leasequery-connections

user@host> show dhcpv6 server statistics bulk-leasequery-connections
Total Accepted Connections:                     0
Total Not-Accepted Connections:                 0
Connections Closed due to Errors:               0
Connections Closed due to max-empty-replies:    0
In-flight Connections:                          0
show route extensive

**List of Syntax**

Syntax on page 414  
Syntax (EX Series Switches) on page 414

**Syntax**  

```
show route extensive  
<destination-prefix>  
<logical-system (all | logical-system-name)>
```

**Syntax (EX Series Switches)**  

```
show route extensive  
<destination-prefix>
```

**Release Information**  

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

**Description**  

Display extensive information about the active entries in the routing tables.

**Options**  

`none`—Display all active entries in the routing table.

`destination-prefix`—(Optional) Display active entries for the specified address or range of addresses.

`logical-system (all | logical-system-name)`—(Optional) Perform this operation on all logical systems or on a particular logical system.

**Required Privilege**  

Level: view

**List of Sample Output**  

show route extensive on page 421  
show route extensive (Access Route) on page 428  
show route extensive (BGP PIC Edge) on page 428  
show route extensive (FRR and LFA) on page 429  
show route extensive (IS-IS) on page 430  
show route extensive (Route Reflector) on page 430  
show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 430  
show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 431

**Output Fields**  

Table 25 on page 414 describes the output fields for the `show route extensive` command. Output fields are listed in the approximate order in which they appear.

**Table 25: show route extensive Output Fields**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>routing-table-name</code></td>
<td>Name of the routing table (for example, inet.0).</td>
</tr>
<tr>
<td><code>number destinations</code></td>
<td>Number of destinations for which there are routes in the routing table.</td>
</tr>
</tbody>
</table>
### Table 25: show route extensive Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>number routes</td>
<td>Number of routes in the routing table and total number of routes in the following states:</td>
</tr>
<tr>
<td></td>
<td>• active (routes that are active).</td>
</tr>
<tr>
<td></td>
<td>• holddown (routes that are in the pending state before being declared inactive).</td>
</tr>
<tr>
<td></td>
<td>• hidden (routes that are not used because of a routing policy).</td>
</tr>
<tr>
<td>route-destination (entry, announced)</td>
<td>Route destination (for example: 10.0.0.1/24). The entry value is the number of route for this destination, and the announced value is the number of routes being announced for this destination. Sometimes the route destination is presented in another format, such as:</td>
</tr>
<tr>
<td></td>
<td>• MPLS-label (for example, 80001).</td>
</tr>
<tr>
<td></td>
<td>• interface-name (for example, ge-1/0/2).</td>
</tr>
<tr>
<td></td>
<td>• neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:Local/96).</td>
</tr>
<tr>
<td></td>
<td>• neighbor-address—Address of the neighbor.</td>
</tr>
<tr>
<td></td>
<td>• control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord.</td>
</tr>
<tr>
<td></td>
<td>• encapsulation type—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.</td>
</tr>
<tr>
<td></td>
<td>• vc-id—Virtual circuit identifier.</td>
</tr>
<tr>
<td></td>
<td>• source—Source of the advertisement: Local or Remote.</td>
</tr>
<tr>
<td>TSI</td>
<td>Protocol header information.</td>
</tr>
<tr>
<td>label stacking</td>
<td>(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.</td>
</tr>
<tr>
<td></td>
<td>• S=Route 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).</td>
</tr>
<tr>
<td></td>
<td>• If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).</td>
</tr>
<tr>
<td>[protocol, preference]</td>
<td>Protocol from which the route was learned and the preference value for the route.</td>
</tr>
<tr>
<td></td>
<td>• +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</td>
</tr>
<tr>
<td></td>
<td>• -—A hyphen indicates the last active route.</td>
</tr>
<tr>
<td></td>
<td>• *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route.</td>
</tr>
</tbody>
</table>

In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1’s complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.
### Table 25: show route extensive Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level</strong></td>
<td>(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.</td>
</tr>
<tr>
<td><strong>Route Distinguisher</strong></td>
<td>IP subnet augmented with a 64-bit prefix.</td>
</tr>
<tr>
<td><strong>PMSI</strong></td>
<td>Provider multicast service interface (MVPN routing table).</td>
</tr>
<tr>
<td><strong>Next-hop type</strong></td>
<td>Type of next hop. For a description of possible values for this field, see the Output Field table in the <code>show route detail</code> command.</td>
</tr>
<tr>
<td><strong>Next-hop reference count</strong></td>
<td>Number of references made to the next hop.</td>
</tr>
<tr>
<td><strong>Flood nexthop branches exceed maximum message</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>IP address of the route source.</td>
</tr>
<tr>
<td><strong>Next hop</strong></td>
<td>Network layer address of the directly reachable neighboring system.</td>
</tr>
<tr>
<td><strong>via</strong></td>
<td>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 <strong>Selected</strong>. This field can also contain the following information:</td>
</tr>
<tr>
<td></td>
<td>- <strong>Weight</strong>—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.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Balance</strong>—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.</td>
</tr>
<tr>
<td><strong>Label-switched-path lsp-path-name</strong></td>
<td>Name of the LSP used to reach the next hop.</td>
</tr>
<tr>
<td><strong>Label operation</strong></td>
<td>MPLS label and operation occurring at this routing device. The operation can be <strong>pop</strong> (where a label is removed from the top of the stack), <strong>push</strong> (where another label is added to the label stack), or <strong>swap</strong> (where a label is replaced by another label).</td>
</tr>
<tr>
<td><strong>Offset</strong></td>
<td>Whether the metric has been increased or decreased by an offset value.</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td><em>(Local only)</em> Local interface name.</td>
</tr>
<tr>
<td><strong>Protocol next hop</strong></td>
<td>Network layer address of the remote routing device that advertised the prefix. This address is used to recursively derive a forwarding next hop.</td>
</tr>
</tbody>
</table>
### Table 25: show route extensive Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>label-operation</strong></td>
<td>MPLS label and operation occurring at this routing device. The operation can be <strong>pop</strong> (where a label is removed from the top of the stack), <strong>push</strong> (where another label is added to the label stack), or <strong>swap</strong> (where a label is replaced by another label).</td>
</tr>
</tbody>
</table>
| **Indirect next hops** | 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.  
When BGP PIC Edge is enabled, the output lines that contain **indirect next hop: weight** follow next hops that the software can use to repair paths where a link failure occurs. The next-hop weight has one of the following values:  
- **0x1** indicates active next hops.  
- **0x4000** indicates passive next hops. |
| **State** | State of the route (a route can be in more than one state). See the Output Field table in the show route detail command. |
| **Session ID** | The BFD session ID number that represents the protection using MPLS fast reroute (FRR) and loop-free alternate (LFA). |
| **Weight** | Weight for the backup path. If the weight of an indirect next hop is larger than zero, the weight value is shown.  
For sample output, see **show route table**. |
Table 25: show route extensive Output Fields *(continued)*

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactive reason</td>
<td>If the route is inactive, the reason for its current state is indicated. Typical reasons include:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Active preferred</strong>—Currently active route was selected over this route.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Always compare MED</strong>—Path with a lower multiple exit discriminator (MED) is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>AS path</strong>—Shorter AS path is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Cisco Non-deterministic MED selection</strong>—Cisco nondeterministic MED is enabled and a path with a lower MED is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Cluster list length</strong>—Path with a shorter cluster list length is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Forwarding use only</strong>—Path is only available for forwarding purposes.</td>
</tr>
<tr>
<td></td>
<td>• <strong>IGP metric</strong>—Path through the next hop with a lower IGP metric is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>IGP metric type</strong>—Path with a lower OSPF link-state advertisement type is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Interior &gt; Exterior &gt; Exterior via Interior</strong>—Direct, static, IGP, or EBGP path is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Local preference</strong>—Path with a higher local preference value is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Next hop address</strong>—Path with a lower metric next hop is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>No difference</strong>—Path from a neighbor with a lower IP address is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Not Best in its group</strong>—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).</td>
</tr>
<tr>
<td></td>
<td>• <strong>Number of gateways</strong>—Path with a higher number of next hops is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Origin</strong>—Path with a lower origin code is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>OSPF version</strong>—Path does not support the indicated OSPF version.</td>
</tr>
<tr>
<td></td>
<td>• <strong>RIB preference</strong>—Route from a higher-numbered routing table is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Route destinguisher</strong>—64-bit prefix added to IP subnets to make them unique.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Route metric or MED comparison</strong>—Route with a lower metric or MED is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Route preference</strong>—Route with a lower preference value is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Router ID</strong>—Path through a neighbor with a lower ID is available.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Unusable path</strong>—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.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Update source</strong>—Last tiebreaker is the lowest IP address value.</td>
</tr>
<tr>
<td>Local AS</td>
<td>Autonomous system (AS) number of the local routing device.</td>
</tr>
<tr>
<td>Age</td>
<td>How long the route has been known.</td>
</tr>
<tr>
<td>AIGP</td>
<td>Accumulated interior gateway protocol (AIGP) BGP attribute.</td>
</tr>
<tr>
<td>Metric</td>
<td>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.</td>
</tr>
<tr>
<td>MED-plus-IGP</td>
<td>Metric value for BGP path selection to which the IGP cost to the next-hop destination has been added.</td>
</tr>
<tr>
<td>TTL-Action</td>
<td>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.</td>
</tr>
</tbody>
</table>

For sample output, see `show route table`. 
Table 25: show route extensive Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>Name of the protocol that has added the route.</td>
</tr>
<tr>
<td>Announcement bits</td>
<td>List of protocols that are consumers of the route. Using the following output as an example, Announcement bits (3): 0-KRT 5-Resolve tree 2 8-BGP RT Background there are (3) announcement bits to reflect the three clients (protocols) that have state for this route: Kernel (0-KRT), 5 (resolution tree process 2), and 8 (BGP). The notation n-Resolve inet indicates that the route is used for route resolution for next hops found in the routing table. n is an index used by Juniper Networks customer support only.</td>
</tr>
<tr>
<td>AS path</td>
<td>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: I—IGP, E—EGP, Recorded—The AS path is recorded by the sample process (sampled). ?—Incomplete; typically, the AS path was aggregated. When AS path numbers are included in the route, the format is as follows: [ ]—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. { }—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. ()—Parentheses enclose a confederation. ( [ ] )—Parentheses and brackets enclose a confederation set. <strong>NOTE:</strong> 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.</td>
</tr>
<tr>
<td>validation-state</td>
<td>(BGP-learned routes) Validation status of the route: Invalid—Indicates that the prefix is found, but either the corresponding AS received from the EBGP peer is not the AS that appears in the database, or the prefix length in the BGP update message is longer than the maximum length permitted in the database. Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. Unverified—Indicates that origin validation is not enabled for the BGP peers. Valid—Indicates that the prefix and autonomous system pair are found in the database.</td>
</tr>
<tr>
<td>FECs bound to route</td>
<td>Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.</td>
</tr>
<tr>
<td>AS path: I &lt;Originator&gt;</td>
<td>(For route reflected output only) Originator ID attribute set by the route reflector.</td>
</tr>
</tbody>
</table>
Table 25: show route extensive Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>route status</td>
<td>Indicates the status of a BGP route:</td>
</tr>
<tr>
<td></td>
<td>• Accepted — The specified BGP route is imported by the default BGP policy.</td>
</tr>
<tr>
<td></td>
<td>• Import — The route is imported into a Layer 3 VPN routing instance.</td>
</tr>
<tr>
<td></td>
<td>• Import-Protect — A remote instance egress that is protected.</td>
</tr>
<tr>
<td></td>
<td>• Multipath — A BGP multipath active route.</td>
</tr>
<tr>
<td></td>
<td>• MultipathContrib — The route is not active but contributes to the BGP multipath.</td>
</tr>
<tr>
<td></td>
<td>• Protect — An egress route that is protected.</td>
</tr>
<tr>
<td></td>
<td>• Stale — A route that is marked stale due to graceful restart.</td>
</tr>
<tr>
<td>Primary Upstream</td>
<td>When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.</td>
</tr>
<tr>
<td>RPF Nexthops</td>
<td>When multipoint LDP with MoFRR is configured, the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.</td>
</tr>
<tr>
<td>Label</td>
<td>Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.</td>
</tr>
<tr>
<td>weight</td>
<td>Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.</td>
</tr>
<tr>
<td>VC Label</td>
<td>MPLS label assigned to the Layer 2 circuit virtual connection.</td>
</tr>
<tr>
<td>MTU</td>
<td>Maximum transmission unit (MTU) of the Layer 2 circuit.</td>
</tr>
<tr>
<td>VLAN ID</td>
<td>VLAN identifier of the Layer 2 circuit.</td>
</tr>
<tr>
<td>Cluster list</td>
<td>(For route reflected output only) Cluster ID sent by the route reflector.</td>
</tr>
<tr>
<td>Originator ID</td>
<td>(For route reflected output only) Address of router that originally sent the route to the route reflector.</td>
</tr>
<tr>
<td>Prefixes bound to route</td>
<td>Forwarding Equivalent Class (FEC) bound to this route. Applicable only to routes installed by LDP.</td>
</tr>
<tr>
<td>Communities</td>
<td>Community path attribute for the route. See the Output Field table in the show route detail command for all possible values for this field.</td>
</tr>
<tr>
<td>Layer2-info: encaps</td>
<td>Layer 2 encapsulation (for example, VPLS).</td>
</tr>
<tr>
<td>control flags</td>
<td>Control flags: none or Site Down.</td>
</tr>
<tr>
<td>mtu</td>
<td>Maximum transmission unit (MTU) information.</td>
</tr>
<tr>
<td>Label-Base, range</td>
<td>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.</td>
</tr>
</tbody>
</table>
Table 25: show route extensive Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>status vector</td>
<td>Layer 2 VPN and VPLS network layer reachability information (NLRI).</td>
</tr>
<tr>
<td>Localpref</td>
<td>Local preference value included in the route.</td>
</tr>
<tr>
<td>Router ID</td>
<td>BGP router ID as advertised by the neighbor in the open message.</td>
</tr>
<tr>
<td>Primary Routing Table</td>
<td>In a routing table group, the name of the primary routing table in which the route resides.</td>
</tr>
<tr>
<td>Secondary Tables</td>
<td>In a routing table group, the name of one or more secondary tables in which the route resides.</td>
</tr>
<tr>
<td>Originating RIB</td>
<td>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.</td>
</tr>
<tr>
<td>Node path count</td>
<td>Number of nodes in the path.</td>
</tr>
<tr>
<td>Forwarding nexthops</td>
<td>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.</td>
</tr>
</tbody>
</table>

Sample Output

show route extensive

```
user@host> show route extensive
inet.0: 22 destinations, 23 routes (21 active, 0 holddown, 1 hidden)
  203.0.113.10/16 (1 entry, 1 announced)
    TSI: KRT in-kernel 203.0.113.10/16 -> {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:  64496
      Age: 1:34:06
      Task: RT
      Announcement bits (2): 0-KRT 3-Resolve tree 2
      AS path: I

  203.0.113.30/30 (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:  64496
    Age: 1:32:40
    Task: IF
    Announcement bits (1): 3-Resolve tree 2
    AS path: I

  203.0.113.30/30 (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:  64496
    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
```

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State: <Int>
Inactive reason: Route Preference
Local AS: 64496
Age: 1:32:40 Metric: 1
Area: 0.0.0.0
Task: OSPF
AS path: I

203.0.113.103/32 (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: 644969
  Age: 1:32:43
  Task: IF
  Announcement bits (1): 3-Resolve tree
  AS path: I

...
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)

203.0.113.103/32 (1 entry, 1 announced)
State: <FlashAll>
  *RSVP  Preference: 7
  Next-hop reference count: 6
  Next hop: 203.0.113.216 via ge-3/1/0.0 weight 0x1, selected
  Label-switched-path green-r1-r3
  Label operation: Push 100096
  State: <Active Int>
  Local AS: 64496
  Age: 1:28:12 Metric: 2
  Task: RSVP
  Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
  AS path: I

203.0.113.238/32 (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: 64496
  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: 64496
  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: 64496
  Age: 1:34:08 Metric: 1
Task: MPLS
Announcement bits (1): 0-KRT
AS path: I

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
299840 (1 entry, 1 announced)

TSI:
KRT in-kernel 299840 /S2 -> {indirect(1048575)}
*RSPV   Preference: 7/2
Next hop type: Flood
Address: 0x9174a30
Next-hop reference count: 4
Next hop type: Router, Next hop index: 798
Address: 0x9174c28
Next-hop reference count: 2
Next hop: 198.51.100.2 via lt-1/2/0.9 weight 0x1
Label-switched-path R2-to-R4-2p2mp
Label operation: Pop
Next hop type: Router, Next hop index: 1048574
Address: 0x92544f0
Next-hop reference count: 2
Next hop: 198.51.100.2 via lt-1/2/0.7 weight 0x1
Label-switched-path R2-to-R200-p2mp
Label operation: Pop
Next hop: 198.51.100.2 via lt-1/2/0.5 weight 0x8001
Label operation: Pop
State: <Active Int>
Age: 1:29       Metric: 1
Task: RSVP
Announcement bits (1): 0-KRT
AS path: I...

800010 (1 entry, 1 announced)

TSI:
KRT in-kernel 800010 /S6 -> {vt-3/2/0.32769}
*VPLS   Preference: 7
Next-hop reference count: 2
Next hop: via vt-3/2/0.32769, selected
Label operation: Pop
State: <Active Int>
Age: 1:31:53
Task: Common L2 VC
Announcement bits (1): 0-KRT
AS path: I

vt-3/2/0.32769 (1 entry, 1 announced)

TSI:
KRT in-kernel vt-3/2/0.32769.0 /S6 -> {indirect(1048574)}
*VPLS   Preference: 7
Next-hop reference count: 2
Next hop: 203.0.113.216 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: 203.0.113.103
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: 203.0.113.103 Metric: 2
     Push 800012
  Indirect next hop: 87272e4 1048574
  Indirect path forwarding next hops: 1
     Next hop: 203.0.113.216 via ge-3/1/0.0 weight 0x1

203.0.113.103/32 Originating RIB: inet.3
   Metric: 2                 Node path count: 1
   Forwarding nexthops: 1
   Nexthop: 203.0.113.216 via ge-3/1/0.0

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

2001:db8::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: 64496
      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: 64496
      Age: 1:34:07
      Task: IF
      AS path: I

ff02::2/128 (1 entry, 1 announced)
TSI:
  KRT in-kernel ff02::2/128 -> {}
     *PIM Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 64496
        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: 64496
        Age: 1:34:08

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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: 64496
  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)

203.0.113.103:1:3:1/96 (1 entry, 1 announced)
  *BGP Preference: 170/-101
  Route Distinguisher: 203.0.113.103:1
  Next-hop reference count: 7
  Source: 203.0.113.103
  Protocol next hop: 203.0.113.103
  Indirect next hop: 2 no-forward
  State: <Secondary Active Int Ext>
  Local AS: 64496 Peer AS: 64496
  Age: 1:28:12 Metric2: 1
  Task: BGP_69.203.0.113.103+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: 203.0.113.103
  Primary Routing Table bgp.l2vpn.0

203.0.113.152:1:1:1/96 (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: 203.0.113.152
  Indirect next hop: 0 -
  State: <Active Int Ext>
  Age: 1:34:03 Metric2: 1
  Task: green-l2vpn
  Announcement bits (1): 1-BGP.0.0.0.0+179
AS path: I
Communities: Layer2-info: encaps:VPLS, control flags: Site-Down, mtu: 0
Label-base: 800016, range: 8, status-vector: 0x9F

203.0.113.152:1:5:1/96 (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: 203.0.113.152
Indirect next hop: 0 -
State: <Active Int Ext>
Age: 1:34:03 Metric2: 1
Task: green-l2vpn
Announcement bits (1): 1-BGP.0.0.0.0+179
AS path: I
Communities: Layer2-info: encaps:VPLS, control flags:, mtu: 0
Label-base: 800008, range: 8, status-vector: 0x9F

l2circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
TSI:

203.0.113.163: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: 203.0.113.163 Indirect next hop: 86af000 296
State: <Active Int>
Local AS: 64499
Age: 10:21
Task: l2 circuit
Announcement bits (1): 0-LDP
AS path: I
VC Label 100000, MTU 1500, VLAN ID 512

203.0.113.55/24 (1 entry, 1 announced)
TSI:
KRT queued (pending) add
198.51.100.0/24 -> {Push 300112}
*BGP Preference: 170/-101
Next hop type: Router
Address: 0x925c208
Next-hop reference count: 2
Source: 203.0.113.9
Next hop: 203.0.113.9 via ge-1/2/0.15, selected
Label operation: Push 300112
Label TTL action: prop-ttl
State: <Active Ext>
Local AS: 64509 Peer AS: 65539
Age: 1w0d 23:06:56
AIGP: 25
Task: BGP_65539.203.0.113.9+56732
Announcement bits (1): 0-KRT
AS path: 65539 64508 I
Accepted
show route extensive (Access Route)

user@host> show route 203.0.113.102 extensive
inet.0: 39256 destinations, 39258 routes (39255 active, 0 holddown, 1 hidden)
203.0.113.102/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 203.0.113.102/32 => {192.0.2.2}
OSPF area: 0.0.0.0, LSA ID: 203.0.113.102, LSA type: Extern
  *Access Preference: 13
  Next-hop reference count: 78472
  Next hop: 192.0.2.2 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

user@host> show route 2001:db8:4641:1::/48 extensive
inet6.0: 75 destinations, 81 routes (75 active, 0 holddown, 0 hidden)
2001:db8:4641:1::/48 (1 entry, 1 announced)
TSI:
KRT in-kernel 2001:db8:4641:1::/48 => {#0 0.13.1.0.0.1}
  *Access Preference: 13
  Next hop type: Router, Next hop index: 74548
  Address: 0x1638c1d8
  Next-hop reference count: 6
  Next hop: #0 0.13.1.0.0.1 via demux0.1073753267, selected
  Session Id: 0x0
  State: <Active Int>
  Age: 4:17
  Validation State: unverified
Task: RPD Unix Domain Server./var/run/rpd_serv.local
  Announcement bits (2): 0-KRT 4-Resolve tree 2
AS path: I
2001:db8:4641:1::/128 (1 entry, 1 announced)
TSI:
KRT in-kernel 2001:db8:4641:1::/128 => {#0 0.13.1.0.0.1}
  *Access-internal Preference: 12
  Next hop type: Router, Next hop index: 74548
  Address: 0x1638c1d8
  Next-hop reference count: 6
  Next hop: #0 0.13.1.0.0.1 via demux0.1073753267, selected
  Session Id: 0x0
  State: <Active Int>
  Age: 4:17
  Validation State: unverified
Task: RPD Unix Domain Server./var/run/rpd_serv.local
  Announcement bits (2): 0-KRT 4-Resolve tree 2
AS path: I

show route extensive (BGP PIC Edge)

user@host> show route 198.51.100.6 extensive
ed.inet.0: 6 destinations, 9 routes (6 active, 0 holddown, 0 hidden)
198.51.100.6/32 (3 entries, 2 announced)
State: <CalcForwarding>

TSI:
KRT in-kernel 198.51.100.6/32 -> {indirect(1048574), indirect(1048577)}

Page 0 idx 0 Type 1 val 9219e30
Nexthop: Self
AS path: [2] 3 I
Communities: target:2:1
Path 198.51.100.6 from 198.51.100.4 Vector len 4. Val: 0

#Multipath Preference: 255
Next hop type: Indirect
Address: 0x93f4010
Next-hop reference count: 2

Protocol next hop: 198.51.1001.4
Push 299824
Indirect next hop: 944c000 1048574 INH Session ID: 0x3
Indirect next hop: weight 0x1
Protocol next hop: 198.51.100.5
Push 299824
Indirect next hop: 944c1d8 1048577 INH Session ID: 0x4
Indirect next hop: weight 0x4000
State: <ForwardingOnly Int Ext>
Inactive reason: Forwarding use only
Age: 25  Metric2: 15
Validation State: unverified
Task: RT
Announcement bits (1): 0-KRT
AS path: 3 I
Communities: target:2:1

show route extensive (FRR and LFA)

user@host> show route 203.0.113.20 extensive
inet.0: 46 destinations, 49 routes (45 active, 0 holddown, 1 hidden)
203.0.113.20/24 (2 entries, 1 announced)
State: FlashAll

TSI:
KRT in-kernel 203.0.113.20/24 -> {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: 203.0.113.112 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: 203.0.113.122 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: 64500
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: 203.0.113.112 via ge-2/1/8.0, selected
Session Id: 0x201
State: Int
Inactive reason: Route Preference
Local AS: 64500
Age: 5:35 Metric: 3
Area: 0.0.0.0
Task: OSPF
AS path: I

show route extensive (IS-IS)

user@host> show route extensive
IS-IS Preference: 15
Level: 1
Next hop type: Router, Next hop index: 1048577
Address: 0xXXXXXXXXXX
Next-hop reference count: YY
Next hop: 203.0.113.22 via ae1.0 balance 43%, selected
Session Id: 0x141
Next hop: 203.0.113.22 via ae0.0 balance 57%

show route extensive (Route Reflector)

user@host> show route extensive
203.0.113.0/8 (1 entry, 1 announced)

TSI:
KRT in-kernel 203.0.113.0/8 -> {indirect(40)}
  *BGP Preference: 170/-101
  Source: 192.168.4.214
  Protocol next hop: 198.51.100.192 Indirect next hop: 84ac908 40
  State: <Active Int Ext>
  Local AS: 65548 Peer AS: 65548
  Age: 3:09 Metric: 0 Metric2: 0
  Task: BGP_65548.192.168.4.214+1033
  Announcement bits (2): 0-KRT 4-Resolve inet.0
  AS path: 65544 64507 I <Originator>
  Cluster list: 198.51.100.1
  Originator ID: 203.0.113.88
  Communities: 7777:7777
  Localpref: 100
  Router ID: 203.0.113.4
  Indirect next hops: 1
    Protocol next hop: 203.0.113.192 Metric: 0
    Indirect next hop: 84ac908 40
    Indirect path forwarding next hops: 0
    Next hop type: Discard

show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs)

user@host> show route label 299872 detail
mpls.0: 13 destinations, 13 routes (13 active, 0 holddown, 0 hidden)
299872 (1 entry, 1 announced)
  *LDP Preference: 9
  Next hop type: Flood
  Next-hop reference count: 3
  Address: 0x9097d90
Next hop: via vt-0/1/0.1
Next-hop index: 661
Label operation: Pop
Address: 0x9172130
Next hop: via so-0/0/3.0
Next-hop index: 654
Label operation: Swap 299872
State: **Active Int>
Local AS: 64511
Age: 8:20       Metric: 1
Task: LDP
Announcement bits (1): 0-KRT
AS path: I
FECs bound to route: P2MP root-addr 203.0.113.166, grp 203.0.1.1, src 192.168.142.2

show route label detail (Multipoint LDP with Multicast-Only Fast Reroute)

user@host> show route label 301568 detail

mpls.0: 18 destinations, 18 routes (18 active, 0 holddown, 0 hidden)
301568 (1 entry, 1 announced)
  *LDP   Preference: 9
    Next hop type: Flood
    Address: 0x2735208
    Next-hop reference count: 3
    Next hop type: Router, Next hop index: 1397
    Address: 0x2735d2c
    Next-hop reference count: 3
    Next hop: 203.0.113.82 via ge-1/2/22.0
    Label operation: Pop
    Load balance label: None;
    Next hop type: Router, Next hop index: 1395
    Address: 0x2736290
    Next-hop reference count: 3
    Next hop: 203.0.113.2 via ge-1/2/18.0
    Label operation: Pop
    Load balance label: None;
    State: <Active Int AckRequest MulticastRPF>
    Local AS:  64500
    Age: 54:05      Metric: 1
    Validation State: unverified
    Task: LDP
    Announcement bits (1): 0-KRT
    AS path: I
    FECs bound to route: P2MP root-addr 198.51.100.1, grp: 232.1.1.1,
src: 192.168.219.11
    Primary Upstream : 198.51.100.3:0--198.51.100.2:0
    RPF Nexthops :
      ge-1/2/15.0, 1.2.94.1, Label: 301568, weight: 0x1
      ge-1/2/14.0, 1.2.3.1, Label: 301568, weight: 0x1
    Backup Upstream : 198.51.100.3:0--198.51.100.6:0
    RPF Nexthops :
      ge-1/2/20.0, 198.51.100.96, Label: 301584, weight: 0xfffe
      ge-1/2/19.0, 198.51.100.36, Label: 301584, weight: 0xfffe
show route protocol

List of Syntax  Syntax on page 432
Syntax (EX Series Switches) on page 432

Syntax  
show route protocol protocol
  <brief | detail | extensive | terse>
  <logical-system (all | logical-system-name)>

Syntax (EX Series Switches)  
show route protocol protocol
  <brief | detail | extensive | terse>

Release Information  
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
ospf2 and ospf3 options introduced in Junos OS Release 9.2.
ospf2 and ospf3 options introduced in Junos OS Release 9.2 for EX Series switches.
flow option introduced in Junos OS Release 10.0.
flow option introduced in Junos OS Release 10.0 for EX Series switches.

Description  
Display the route entries in the routing table that were learned from a particular protocol.

Options  
brief | detail | extensive | terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.
logical-system (all | logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.

protocol—Protocol from which the route was learned:

- access—Access route for use by DHCP application
- access-internal—Access-internal route for use by DHCP application
- aggregate—Locally generated aggregate route
- arp—Route learned through the Address Resolution Protocol
- atmvpn—Asynchronous Transfer Mode virtual private network
- bgp—Border Gateway Protocol
- ccc—Circuit cross-connect
- direct—Directly connected route
- dvmrp—Distance Vector Multicast Routing Protocol
- esis—End System-to-Intermediate System
- flow—Locally defined flow-specification route
- frr—Precomputed protection route or backup route used when a link goes down
- isis—Intermediate System-to-Intermediate System
• **ldp**—Label Distribution Protocol
• **l2circuit**—Layer 2 circuit
• **l2vpn**—Layer 2 virtual private network
• **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.

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Output Fields  For information about output fields, see the output field tables for the `show route` command, the `show route detail` command, the `show route extensive` command, or the `show route terse` command.

Sample Output

**show route protocol access**

```
user@host> show route protocol access
inet.0: 30380 destinations, 30382 routes (30379 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
13.160.0.3/32  *[Access/13] 00:00:09
  > to 13.160.0.2 via fe-0/0/0.0
13.160.0.4/32  *[Access/13] 00:00:09
  > to 13.160.0.2 via fe-0/0/0.0
13.160.0.5/32  *[Access/13] 00:00:09
  > to 13.160.0.2 via fe-0/0/0.0
```

**show route protocol access-internal extensive**

```
user@host> show route protocol access-internal 13.160.0.19 extensive
inet.0: 100020 destinations, 100022 routes (100019 active, 0 holddown, 1 hidden)
13.160.0.19/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 13.160.0.19/32 -> {13.160.0.2}
  *[Access/Internal] Preference: 12
  Next-hop reference count: 200000
  Next hop: 13.160.0.2 via fe-0/0/0.0, selected
  State: <Active Int>
  Age: 36
  Task: RPD Unix Domain Server./var/run/rpd_serv.local
  Announcement bits (1): 0-KRT
AS path: I
```

**show route protocol arp**

```
user@host> show route protocol arp
inet.0: 43 destinations, 43 routes (42 active, 0 holddown, 1 hidden)
inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
cust1.inet.0: 1033 destinations, 2043 routes (1033 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
20.20.1.3/32  [ARP/4294967293] 00:04:35, from 20.20.1.1
  Unusable
20.20.1.4/32  [ARP/4294967293] 00:04:35, from 20.20.1.1
  Unusable
```
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
   Announcement bits (3): 0-KRT 2-BGP RT Background 3-Resolve tree

show route protocol bgp detail (Labeled Unicast)

user@host> show route protocol bgp 1.1.1.8/32 detail
inet.0: 45 destinations, 46 routes (45 active, 0 holddown, 0 hidden)
1.1.1.8/32 (2 entries, 2 announced)
State:
*BGP Preference: 1/-101
Next hop type: Indirect, Next hop index: 0
Address: 0xc007f30
Next-hop reference count: 2
Source: 1.1.1.1
Next hop type: Router, Next hop index: 614
Next hop: 20.1.1.2 via ge-0/0/1.0, selected
Label-switched-path lsp1
Label operation: Push 1000126, Push 1000125, Push 1000124, Push 1000123, Push 299872(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 1000126: None; Label 1000125: None; Label 1000124: None;
Label 1000123: None; Label 299872: None;
Label element ptr: 0xc007860
Label parent element ptr: 0xc007860
Label element references: 1
Label element child references: 0
Label element lsp id: 0
Session Id: 0x140
Protocol next hop: 1.1.1.4
Label operation: Push 1000126, Push 1000125, Push 1000124, Push 1000123(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl, prop-ttl
Load balance label: Label 1000126: None; Label 1000125: None; Label 1000124: None;
Label 1000123: None;
Indirect next hop: Oxae8d300 1048576 INH Session ID: 0x142
State:
Local AS: 69 Peer AS: 10458
Age: 22:43 Metric2: 2
Validation State: unverified
Task: BGP_5.1.1.1
Announcement bits (2): 0-KRT 7-Resolve tree 2
AS path: I
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Localpref: 100
Router ID: 1.1.1.1

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            >172.16.100.1    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

172.16.8.0/24        *[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
172.16.30.0/24       *[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

2001:db8::10:255:165:1/128
  *[Direct/0] 25w4d 04:13:21
  > via lo0.0

fe80::2a0:a5ff:fe12:ad7/128
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: 1

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
  Protocol next hop: 10.245.255.63 Indirect next hop: 86af000 296
State: <Active Int>
Local AS: 99
Age: 10:21
Task: l2 circuit
Announcement bits (1): 0-LDP
AS path: I
VC Label 100000, MTU 1500, VLAN ID 512

show route protocol l2vpn extensive

user@host> show route protocol l2vpn extensive

inet.0: 14 destinations, 15 routes (13 active, 0 holddown, 1 hidden)
inet.3: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
mpls.0: 7 destinations, 7 routes (7 active, 0 holddown, 0 hidden)
  800001 (1 entry, 1 announced)
  TSI:
  KRT in-kernel 800001 /36 -> {so-0/0/0.0}
    *L2VPN Preference: 7
    Next hop: via so-0/0/0.0 weight 49087 balance 97%, selected
    Label operation: Pop Offset: 4
    State: <Active Int>
    Local AS: 69
    Age: 7:48
    Task: Common L2 VC
    Announcement bits (1): 0-KRT
    AS path: I
  so-0/0/0.0 (1 entry, 1 announced)
    TSI:
    KRT in-kernel so-0/0/0.0.0 /16 -> {indirect(288)}
    *L2VPN Preference: 7
    Next hop: via so-0/0/1.0, selected
    Label operation: Push 800000 Offset: -4
    Push 800000 Offset: -4
    Indirect next hop: 851420a0 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] 1d 23:03:35, metric 1
  > via t1-4/0/0.0, Push 100000
192.168.17.1/32  *[LDP] 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] 1d 23:03:35, metric 1
  > via t1-4/0/0.0, Pop
100064(S=0) *[LDP] 1d 23:03:35, metric 1
  > via t1-4/0/0.0, Pop
100080  *[LDP] 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: 64500
  Age: 1d 23:03:35  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: 64500
  Age: 1d 23:03:35  Metric: 1
  Task: LDP
  Announcement bits (2): 0-Resolve tree 1 2-Resolve tree 2
  AS path: I

private1__.inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
mpls.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)

100064 (1 entry, 1 announced)
TSI:
KRT in-kernel 100064 /36 -> {t1-4/0/0.0}
  *LDP  Preference: 9
  Next-hop reference count: 2
  Next hop: via t1-4/0/0.0, selected
  State: <Active Int>
  Local AS: 64500
  Age: 1d 23:03:58        Metric: 1
  Task: LDP
  Announcement bits (1): 0-KRT
  AS path: I
  Prefixes bound to route: 192.168.17.1/32

100064(S=0) (1 entry, 1 announced)
TSI:
KRT in-kernel 100064 /40 -> {t1-4/0/0.0}
  *LDP  Preference: 9
  Next-hop reference count: 2
  Next hop: via t1-4/0/0.0, selected
  Label operation: Pop
  State: <Active Int>
  Local AS: 64500
  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

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: 64500
  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

  172.16.233.5/32  *[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

172.16.233.5/32 *[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

172.16.233.9/32  *[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

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

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
show system services dhcp binding

**Syntax**

```
show system services dhcp binding
<detail>
<address>
```

**Release Information**

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

**Description**

(EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server client binding information.

**Options**

- **none**—Display brief information about all active client bindings.
- **detail**—(Optional) Display detailed information about all active client bindings.
- **address**—(Optional) Display detailed client binding information for the specified IP address only.

**Required Privilege**

view and system

**Related Documentation**

- clear system services dhcp binding on page 359

**List of Sample Output**

- show system services dhcp binding on page 446
- show system services dhcp binding address on page 446
- show system services dhcp binding address detail on page 446

**Output Fields**

Table 26 on page 445 describes the output fields for the `show system services dhcp binding` command. Output fields are listed in the approximate order in which they appear.

**Table 26: show system services dhcp binding Output Fields**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocated address</td>
<td>List of IP addresses the DHCP server has assigned to clients.</td>
<td>All levels</td>
</tr>
<tr>
<td>MAC address</td>
<td>Corresponding media access control (MAC) hardware address of the client.</td>
<td>All levels</td>
</tr>
<tr>
<td>Client identifier</td>
<td><em>(address option only)</em> Client’s unique identifier (represented by an ASCII string or hexadecimal digits). This identifier is used by the DHCP server to index its database of address bindings.</td>
<td>All levels</td>
</tr>
<tr>
<td>Binding Type</td>
<td>Type of binding assigned to the client. DHCP servers can assign a dynamic binding from a pool of IP addresses or a static binding to one or more specific IP addresses.</td>
<td>All levels</td>
</tr>
<tr>
<td>Lease Expires at</td>
<td>Time the lease expires or never for leases that do not expire.</td>
<td>All levels</td>
</tr>
</tbody>
</table>
### Table 26: show system services dhcp binding Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease Obtained at</td>
<td>(address option only) Time the client obtained the lease from the DHCP server.</td>
<td>detail</td>
</tr>
<tr>
<td>State</td>
<td>Status of the binding. Bindings can be active or expired.</td>
<td>detail</td>
</tr>
<tr>
<td>Pool</td>
<td>Address pool that contains the IP address assigned to the client.</td>
<td>detail</td>
</tr>
<tr>
<td>Request received on</td>
<td>Interface on which the DHCP message exchange occurs. The IP address pool</td>
<td>detail</td>
</tr>
<tr>
<td></td>
<td>is configured based on the interface's IP address. If a relay agent is used, its IP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>address is also displayed.</td>
<td></td>
</tr>
<tr>
<td>DHCP options</td>
<td>User-defined options created for the DHCP server. If no options have been defined,</td>
<td>detail</td>
</tr>
<tr>
<td></td>
<td>this field is blank.</td>
<td></td>
</tr>
</tbody>
</table>

### Sample Output

**show system services dhcp binding**

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

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

**show system services dhcp binding address**

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

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

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

**show system services dhcp binding address detail**

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

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

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

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

**Syntax**

`show system services dhcp conflict`

**Release Information**

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

**Description**

(J Series routers only and EX Series switches) Display Dynamic Host Configuration Protocol (DHCP) client-detected conflicts for IP addresses. When a conflict is detected, the DHCP server removes the address from the address pool.

**Options**

This command has no options.

**Required Privilege**

view and system

**Related Documentation**

- clear system services dhcp conflict on page 360
- List of Sample Output showsystemservicesdhcpconflictonpage360
- Table 27 on page 448 describes the output fields for the `show system services dhcp conflict` command. Output fields are listed in the approximate order in which they appear.

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

**Sample Output**

show system services dhcp conflict

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

Detection time           Detection method  Address
2004-08-03 19:04:00 PDT  ARP               10.0.0.1
2004-08-04 04:23:12 PDT  Ping              10.0.0.2
2004-08-05 21:06:44 PDT  Client            10.0.0.3
```
show system services dhcp global

Syntax

show system services dhcp global

Release Information


Description

(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) global configuration options. Global options apply to all scopes and clients served by the DHCP server. Global options are overridden if specified otherwise in scope or client options. Scope options apply to specific subnets or ranges of addresses. Client options apply to specific clients.

Options

This command has no options.

Required Privilege Level

view and system

List of Sample Output

show system services dhcp global on page 450

Output Fields

Table 28 on page 449 describes the output fields for the show system services dhcp global command. Output fields are listed in the approximate order in which they appear.

Table 28: show system services dhcp global Output Fields

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

`show system services dhcp global`

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

Global settings:
  BOOTP lease length  infinite

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

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

**Syntax**

```
show system services dhcp pool
<detail>
<subnet-address>
```

**Release Information**

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

**Description**

(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server IP address pools.

**Options**

- **none**—Display brief information about all IP address pools.
- **detail**—(Optional) Display detailed information.
- **subnet-address**—(Optional) Display information for the specified subnet address.

**Required Privilege**

- **Level**
  - view and system

**List of Sample Output**

- `show system services dhcp pool` on page 452
- `show system services dhcp pool subnet-address` on page 452
- `show system services dhcp pool subnet-address detail` on page 452

**Output Fields**

Table 29 on page 451 describes the output fields for the `show system services dhcp pool` command. Output fields are listed in the approximate order in which they appear.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool name</td>
<td>Subnet on which the IP address pool is defined.</td>
<td>None specified</td>
</tr>
<tr>
<td>Low address</td>
<td>Lowest address in the IP address pool.</td>
<td>None specified</td>
</tr>
<tr>
<td>High address</td>
<td>Highest address in the IP address pool.</td>
<td>None specified</td>
</tr>
<tr>
<td>Excluded addresses</td>
<td>Addresses excluded from the address pool.</td>
<td>None specified</td>
</tr>
<tr>
<td>Subnet</td>
<td><em>(subnet-address) option only</em> Subnet to which the specified address pool belongs.</td>
<td>None specified</td>
</tr>
<tr>
<td>Address range</td>
<td><em>(subnet-address) option only</em> Range of IP addresses in the address pool.</td>
<td>None specified</td>
</tr>
<tr>
<td>Addresses assigned</td>
<td>Number of IP addresses in the pool that are assigned to DHCP clients and the total number of IP addresses in the pool.</td>
<td>detail</td>
</tr>
<tr>
<td>Active</td>
<td>Number of assigned IP addresses in the pool that are active.</td>
<td>detail</td>
</tr>
</tbody>
</table>
Table 29: show system services dhcp pool Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
<th>Level of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluded</td>
<td>Number of assigned IP addresses in the pool that are excluded.</td>
<td>detail</td>
</tr>
<tr>
<td>Default lease time</td>
<td>Lease time assigned to clients that do not request a specific lease time.</td>
<td>detail</td>
</tr>
<tr>
<td>Minimum lease time</td>
<td>Minimum time a client can retain an IP address lease on the server.</td>
<td>detail</td>
</tr>
<tr>
<td>Maximum lease time</td>
<td>Maximum time a client can retain an IP address lease on the server.</td>
<td>detail</td>
</tr>
<tr>
<td>DHCP options</td>
<td>User-defined options created for the DHCP server. If no options have been defined, this field is blank.</td>
<td>detail</td>
</tr>
</tbody>
</table>

Sample Output

code: show system services dhcp pool

```
show system services dhcp pool

user@host> show system services dhcp pool

Pool name    Low address   High address   Excluded addresses
192.0.2.0/24  192.0.2.2     192.0.2.254     192.0.2.1

show system services dhcp pool subnet-address

show system services dhcp pool subnet-address detail

```

code: show system services dhcp pool subnet-address

```
show system services dhcp pool subnet-address

user@host> show system services dhcp pool 192.0.2.0/24

Pool information:

Subnet                     192.0.2.0/24
Address range              192.0.2.2 - 192.0.2.254
Addresses assigned         2/253

show system services dhcp pool subnet-address detail

user@host> show system services dhcp pool 192.0.2.0/24 detail

Pool information:

Subnet                     192.0.2.0/24
Address range              192.0.2.2 - 192.0.2.254
Addresses assigned         2/253
Active: 1, Excluded: 1

DHCP lease times:

Default lease time         1 hour
Minimum lease time         2 hours
Maximum lease time         infinite

DHCP options:

Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }  
Name: domain-name, Value: mydomain.tld  
Name: router, Value: { 192.0.2.1 }  
Name: server-identifier, Value: 192.0.2.1  
Code: 19, Type: flag, Value: off
Code: 40, Type: string, Value: domain.tld
Code: 32, Type: ip-address, Value: 192.0.2.1
show system services dhcp statistics

**Syntax**

show system services dhcp statistics

**Release Information**

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

**Description**

(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server statistics.

**Options**

This command has no options.

**Required Privilege**

view and system

**Related Documentation**

- clear system services dhcp statistics on page 361

**List of Sample Output**

show system services dhcp statistics on page 455

**Output Fields**

Table 30 on page 454 describes the output fields for the `show system services dhcp statistics` command. Output fields are listed in the approximate order in which they appear.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default lease time</td>
<td>Lease time assigned to clients that do not request a specific lease time.</td>
</tr>
<tr>
<td>Minimum lease time</td>
<td>Minimum time a client can retain an IP address lease on the server.</td>
</tr>
<tr>
<td>Maximum lease time</td>
<td>Maximum time a client can retain an IP address lease on the server.</td>
</tr>
<tr>
<td>Packets dropped</td>
<td>Total number of packets dropped and number of packets dropped because of:</td>
</tr>
<tr>
<td></td>
<td>• Invalid hardware address</td>
</tr>
<tr>
<td></td>
<td>• Invalid opcode</td>
</tr>
<tr>
<td></td>
<td>• Invalid server address</td>
</tr>
<tr>
<td></td>
<td>• No available address</td>
</tr>
<tr>
<td></td>
<td>• No interface match</td>
</tr>
<tr>
<td></td>
<td>• No routing instance match</td>
</tr>
<tr>
<td></td>
<td>• No valid local addresses</td>
</tr>
<tr>
<td></td>
<td>• Packet too short</td>
</tr>
<tr>
<td></td>
<td>• Read error</td>
</tr>
<tr>
<td></td>
<td>• Send error</td>
</tr>
</tbody>
</table>
Table 30: show system services dhcp statistics Output Fields (continued)

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Messages received</strong></td>
<td>Number of the following message types sent from DHCP clients and received by the DHCP server:</td>
</tr>
<tr>
<td></td>
<td>- BOOTREQUEST</td>
</tr>
<tr>
<td></td>
<td>- DHCPDECLINE</td>
</tr>
<tr>
<td></td>
<td>- DHCPDISCOVER</td>
</tr>
<tr>
<td></td>
<td>- DHCPINFORM</td>
</tr>
<tr>
<td></td>
<td>- DHCPRELEASE</td>
</tr>
<tr>
<td></td>
<td>- DHCPREQUEST</td>
</tr>
<tr>
<td><strong>Messages sent</strong></td>
<td>Number of the following message types sent from the DHCP server to DHCP clients:</td>
</tr>
<tr>
<td></td>
<td>- BOOTREPLY</td>
</tr>
<tr>
<td></td>
<td>- DHCPACK</td>
</tr>
<tr>
<td></td>
<td>- DHCPOFFER</td>
</tr>
<tr>
<td></td>
<td>- DHCPNAK</td>
</tr>
</tbody>
</table>

Sample Output

**show system services dhcp statistics**

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

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

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

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

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