

Chapter 21

Configuring the DHCP External Server Application

This chapter provides information for The following sections describe how to configure the DHCP external server application on the E-series router:

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DHCP External Server Overview

You can configure the E-series router to provide support for an external DHCP server. This enables the router, which is not running DHCP relay or DHCP proxy server, to monitor DHCP packets and to keep information for subscribers based on their IP address and MAC address. When the E-series router's DHCP external server application is used, all DHCP traffic to and from the DHCP server is monitored by the router.



NOTE: You cannot configure both the DHCP local server and one of the following in the same virtual router: DHCP external server, DHCP relay, or DHCP relay proxy. If you issue the **set dhcp relay** command when a local server has been configured, the local server is deactivated.

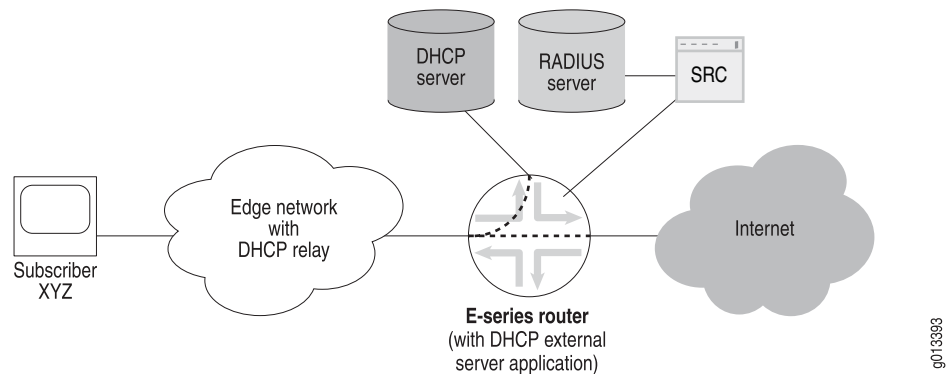
The services provided by integrating the E-series router's DHCP external server application with SRC software are similar to those provided when the DHCP local server is integrated with SRC software. The router's DHCP external application is used together with other features of the router to provide subscriber management. For additional information, see *Chapter 23, Configuring Subscriber Management*.



NOTE: To ensure that DHCP external server with DHCP relay proxy processes unicast reply packets (such as renewal ACK and NAK packets), you must configure DHCP external server with the IP address of the DHCP relay proxy's giaddr. This configuration ensures that DHCP external server processes renewal ACK packets, which in turn enables the updating of client leases.

Figure 14 shows a network that includes an external DHCP server and the E-series router.

Figure 14: DHCP External Server



In Figure 14, the subscriber requests an address from the DHCP server through the E-series router. All communication between the subscriber and the DHCP server is monitored by the E-series router. After the subscriber receives an IP address, the subscriber is able to access the Internet and use the value-added services provided by the E-series router and by the SAE software. For this to occur, the edge network must be using a DHCP relay function.

When the subscriber requests an IP address from the DHCP server, the E-series router performs the following actions:

- Identifies the subscriber's IP address, MAC address, giaddr, and client identifier
- Extracts the lease time, creates a shadow lease, and starts its own lease timer that is associated with the subscriber

The E-series router views the subscriber as active once the subscriber sends a packet. The router then performs the following actions:

- Processes the subscriber's IP address by using a route map
- Extracts the dynamic subscriber interface profile (optional)
- Creates the subscriber's dynamic subscriber interface

If the SRC software is configured, the router also performs the following actions:

- Alerts the SRC software that the dynamic subscriber interface exists
- Alerts the SRC software that the subscriber's address exists and provides DHCP options

The SRC software then provides its enhanced services to the subscriber.

The E-series router monitors all traffic between the subscriber and the DHCP server, and resets the shadow lease by monitoring the DHCP server/client lease renewal. When the subscriber disconnects, the shadow lease will eventually expire. The E-series router then performs the following actions:

- Deletes the subscriber's dynamic subscriber interface
- Alerts the SRC software that the dynamic subscriber interface has been deleted
- Alerts the SRC software that the subscriber's address has been deleted

For additional information on managing client bindings, see *Viewing and Deleting DHCP Client Bindings*, in *Chapter 17, DHCP Overview*.

DHCP External Server Configuration Requirements

To configure the E-series router to support an external DHCP server, you enable the DHCP external server application on the router. If you are using DHCP packet detection, you must also specify each external DHCP server that determines which packets are monitored. The E-series router monitors all DHCP traffic between subscriber clients and the specified DHCP servers.

Enabling and Disabling the DHCP External Server Application

Use to enable the DHCP external server application on the E-series router. Use the no version of the command to disable the application.

To enable the DHCP external server application on the router:

- Issue the **service dhcp-external** command:

```
host1(config)#service dhcp-external
```

To disable the DHCP external server application on the router:

- Issue the **no service dhcp-external** command:

```
host1(config)#no service dhcp-external
```

Related Topics

- **service dhcp-external** command

Monitoring DHCP Traffic Between Remote Clients and DHCP Servers

You can configure the router to monitor DHCP packets between remote clients and specified DHCP servers. You can specify up to four DHCP servers.

To monitor DHCP packets between remote clients and a DHCP server:

- Issue the **ip dhcp-external server-address** command and specify the IP address of the DHCP server:

```
host1(config)#ip dhcp-external server-address 10.10.10.1
host1(config)#ip dhcp-external server-address 10.20.10.1
```

You can specify a maximum of four DHCP servers to monitor.

Related Topics

- **ip dhcp-external server-address** command

Synchronizing the DHCP External Application and the Router

In some cases the router and the DHCP external application might not be synchronized. For example, an unsynchronized condition might occur when you first enable the DHCP external server application. You can resynchronize and create subscriber state information that is based on lease renewals.

To synchronize the external DHCP server with the E-series router:

- Issue the **ip dhcp-external server-sync** command from Global Configuration mode:

```
host1(config)#ip dhcp-external server-sync
```

Related Topics

- **ip dhcp-external server-sync** command

Configuring Interoperation with Ethernet DSLAMs

The DHCP external server application uses the giaddr it receives in DHCP server-destined packets to determine the next hop for a subscriber's access routes. However, when interoperating with Ethernet digital subscriber line access multiplexers (DSLAMs), using the giaddr sent by the DSLAM can result in traffic being dropped. To ensure that traffic is forwarded properly, you can configure the DHCP external server application to disregard the DSLAM's giaddr and learn the subscriber's correct next-hop address.

The dropped traffic situation can occur because of the way some DSLAMs create the giaddr that is sent to the DHCP external server application. Some Ethernet DSLAMs use a DHCP relay implementation that inserts giaddr values and relay agent options in DHCP packets that are received from end users. The intent is that this information is provided to a DHCP server, which uses the values to determine the configuration parameters for the subscriber.

However, when the DHCP external server application receives the giaddr from an Ethernet DSLAM, the application installs the subscriber access route with the Ethernet DSLAM's IP address as the next hop. This operation results in the subscriber-destined traffic being incorrectly sent to the Ethernet DSLAM, which cannot process the traffic.

To avoid dropping the traffic in this situation, use the **ip set dhcp-external disregard-giaddr-next-hop** command to configure the DHCP external server application to ignore the giaddr when determining the next hop for the subscriber access routes. The E-series router then uses Address Resolution Protocol (ARP) to discover the subscriber's IP address and sends the traffic to the learned IP address.

To configure the DHCP external server application to ignore the giaddr when determining the next hop for the subscriber access routes:

- Issue the **ip dhcp-external disregard-giaddr-next-hop** command from Global Configuration mode:
`host1(config)#ip dhcp-external disregard-giaddr-next-hop`

Related Topics

- **ip dhcp-external disregard-giaddr-next-hop** command

Configuring the DHCP External Server to Support the Creation of Dynamic Subscriber Interfaces

You can configure the DHCP external server to support the creation of dynamic subscriber interfaces. This configuration requires that the user's DHCP control traffic and data traffic traverse the same client-facing ingress port on the E-series router.

You must use the **ip dhcp-external auto-configure** command within a specific virtual router context.

To configure the DHCP external server to support the creation of dynamic subscriber interfaces:

- Issue the **ip dhcp-external auto-configure** command from Global Configuration mode:
`host1(config)#ip dhcp-external auto-configure`

To configure the DHCP external server to support the creation of dynamic subscriber interfaces built over dynamic VLANs that are based on the agent-circuit-id option (suboption 1) of the option 82 field in DHCP messages, include the **agent-circuit-identifier** keyword.

- Issue the **ip dhcp-external auto-configure** command with the **agent-circuit-identifier** keyword from Global Configuration mode:
`host1(config)#ip dhcp-external auto-configure agent-circuit-identifier`

The use of the option 82 field enables you to stack an IP interface that is associated with a particular subscriber over a dynamically created VLAN; the VLAN is dynamically created based on the agent-circuit-id option (suboption 1) that is contained in the DHCP option 82 field.

For information about configuring agent-circuit-id-based dynamic VLAN subinterfaces, see *JUNOS Link Layer Configuration Guide, Chapter 13, Configuring Dynamic Interfaces Using Bulk Configuration*.

Related Topics

- `ip dhcp-external auto-configure` command

Deleting Clients from a Virtual Router's DHCP Binding Table

You can delete clients from a virtual router's DHCP binding table. You can delete all clients or a specific client.



NOTE: This command is deprecated and might be removed completely in a future release. The function provided by this command has been replaced by the **dhcp delete-binding** command.

To delete clients from a virtual router's DHCP binding table, issue the **dhcp-external delete-binding** command in Privileged Exec configuration mode:

- To delete all clients:
`host1#dhcp-external delete-binding all`
- To delete a specific client:
`host1#dhcp-external delete-binding binding-id 3972819365`

Related Topics

- `dhcp delete-binding` command
- `dhcp-external delete-binding` command