CHAPTER 5

Configuring Routing Information Protocol

The CSS enables you to configure global Routing Information Protocol (RIP) attributes used to advertise routes on the CSS. By default, RIP advertises RIP routes and local routes for interfaces running RIP. The **rip** command advertises other routes.

The timers used by RIP in the CSS include the following default values. These RIP timer values are not user-configurable in the CSS.

- Transmit (Tx) time that is a random value between 15 and 45 seconds (it avoids router synchronization problems
- Route expiration time of 180 seconds (if the CSS loses the link to the next hop router, the route is immediately removed).
- Hold-down time (the amount of time the CSS transmits with an infinite metric) of 120 seconds.

This chapter contains the following major sections:

Note If you prefer OSPF instead of RIP on the CSS, refer to Chapter 3, Configuring Open Shortest Path First (OSPF), for information on configuring OSPF.

RIP Configuration Quick Start

Table 5-1 provides a quick overview of the steps required to configure global RIP attributes for the CSS. Each step includes the CLI command required to complete the task. For a complete description of each feature and all the options associated with the CLI command, see the sections following Table 5-1.

Table 5-1 RIP Configuration Quick Start

Task and Command Example
1. Configure the CSS to advertise a route through RIP. `(config)# rip advertise 192.168.1.0/24 9`
2. Configure the CSS to advertise routes from other protocols through RIP (such as firewall routes, OSPF routes, and static routes configured for the Ethernet interface ports). `(config)# rip redistribute static 3`
3. Set the maximum number of routes that RIP can insert into the routing table. `(config)# rip equal-cost 4`
4. (Recommended) Display a RIP configuration for one IP address or all IP addresses configured in the CSS. `(config)# show rip`

The following running-configuration example shows the results of entering the commands in Table 5-1.

```
!************************** GLOBAL ***************************
  rip advertise 192.168.1.0 255.255.255.0 9
  rip redistribute static 3
  rip equal-cost 4
```

Configuring RIP Advertise

To advertise a route through RIP on the CSS, use the **rip advertise** command. The syntax for this command is:

rip advertise *ip_address subnet_mask* {*metric*}

The variables for this command are as follows:

- *ip_address* - The IP address for the route prefix. Enter an IP address in dotted-decimal notation (for example, 192.168.1.0).
- *subnet_mask* - The IP prefix length in CIDR bitcount notation (for example, /24) or in dotted-decimal notation (for example, 255.255.255.0).
- *metric* - (Optional) Metric to use when advertising this route. Enter a number from 1 to 15. The default is 1.

For example:

```
(config)# rip advertise 192.168.1.0/24 9
```

Note The network does not have to be present in the routing table to be advertised. The **SNTP ip advertise** command is intended for advertising VIP addresses.

To stop advertising a route through RIP on the CSS, enter:

```
(config)# no rip advertise 192.168.1.0/24
```

Configuring RIP Redistribute

By default, RIP advertises RIP routes and local routes for interfaces running RIP. Use the **rip redistribute** command to advertise routes from other protocols through RIP. This command instructs RIP to advertise other routes, such as firewall routes, OSPF routes, and so on.

The syntax for this command is

rip redistribute [**firewall**|**local**|**ospf**|**static**] {*metric*}

The options and variables for this command are as follows:

- **firewall** - Advertises firewall routes through RIP.
- **local** - Advertises local routes (interfaces *not* running RIP).
- **static** - Advertises static routes configured for the Ethernet interface ports.
- **ospf** - Advertises OSPF routes through RIP.
- *metric* - (Optional) Metric to use when advertising this route. Enter a number from 1 to 15. The default is 1.

For example:

```
(config)# rip redistribute static 3
```

To stop advertising routes from other protocols through RIP, use either the **local, static**, or **firewall** option.

The following commands stop advertising static routes:

```
(config)# no rip redistribute firewall
(config)# no rip redistribute local
(config)# no rip redistribute static
(config)# no rip redistribute ospf
```

Configuring Equal-Cost RIP Routes

To set the maximum number of routes that RIP can insert into the routing table., use the **rip equal-cost** command Enter a number from 1 to 15. The default is 1. For example:

```
(config)# rip equal-cost 4
```

To reset the number of routes to the default value of 1, enter:

```
(config)# no rip equal-cost
```

Showing RIP Configurations

Use the **show rip** command to show a RIP configuration for one IP address or all IP addresses configured in the CSS. This command provides the following options and variables:

- **show rip** - Displays RIP configurations for all interfaces
- **show rip** *ip_address* - Displays a single RIP interface entry
- **show rip globals** - Displays RIP global statistics
- **show rip statistics** - Displays RIP interface statistics for all interfaces
- **show rip statistics** *ip_address* - Displays RIP interface statistics for a specific interface

Table 5-2 describes the fields in the **show rip** command output.

Table 5-2 Field Descriptions for the show rip Command

Field	Description
IP Address	The advertised RIP interface address.
State	The operational state of the RIP interface.
RIP Send	The RIP version that the interface sends. The possible field values are as follows: • **none** - Do not send RIP packets • **RIPv1** - Send RIP version 1 packets only • **RIPv2** - Send RIP version 2 packets only (default)
RIP Recv	The RIP version that the interface receives. The possible values are as follows: • **both** - Receive both version 1 and version 2 (default) • **none** - Receive no RIP packets • **Ripv1** - Receive RIP version 1 packets only • **Ripv2** - Receive RIP version 2 packets only
Default Metric	The default metric used for advertising the RIP interface.

Table 5-2 Field Descriptions for the show rip Command (continued)

Field	Description
Tx Log	The setting for logging RIP packet transmissions (enabled or disabled). The default setting is disabled.
Rx Log	The setting for logging RIP packets received (enabled or disabled). The default setting is disabled.

To display global RIP statistics, enter:

```
# show rip globals
```

Table 5-3 describes the fields in the **show rip globals** command output.

Table 5-3 Field Descriptions for the show rip globals Command

Field	Description
RIP Route Changes	The global number of route changes made to the IP route database by RIP
RIP Query Responses	The global number of query responses sent to RIP query from other systems

To display the RIP interface statistics for all RIP interface entries, enter:

```
# show rip statistics
```

Table 5-4 describes the fields in the **show rip statistics** command output.

Table 5-4 Field Descriptions for the show rip statistics Command

Field	Description
System Route Changes	The global number of route changes made to the IP route database by RIP
System Global Query Responses	The global number of query responses sent to RIP query from other systems
IP Address	The RIP interface IP address
Triggered Updates Sent	The number of triggered RIP updates sent by the interface
Bad Packets Received	The number of bad RIP response packets received by the interface
Bad Routes Received	The number of bad routes in valid RIP packets received by the interface