JUNIPER NETWORKS

Junos® OS for EX Series Ethernet Switches

RIP and RIPng for EX Series Switches

Release
14.1X53

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Release 14.1X53

The information in this document is current as of the date on the title page.

YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

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Table of Contents

List of Tables

About the Documentation

Documentation and Release Notes

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

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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.

   ```
   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:

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

Merging a Snippet

To merge a snippet, follow these steps:

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

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

   ```
   commit {
     file ex-script-snippet.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 the *CLI User Guide*.

Documentation Conventions

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

Table 1: Notice Icons

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

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

Table 2: Text and Syntax Conventions

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

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

Convention	Description	Examples
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces or emphasizes important new terms. • Identifies guide names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS CLI User Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Encloses optional keywords or variables.	**stub <default-metric** ***metric*****>;**
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** **(*string1* | *string2* | *string3*)**
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	**community name members [** ***community-ids*** **]**

Indention and braces ({ })	Identifies a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.

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

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

Documentation Feedback

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

- Online feedback rating system—On any page at the Juniper Networks Technical Documentation site at http://www.juniper.net/techpubs/index.html, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at https://www.juniper.net/cgi-bin/docbugreport/.
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Requesting Technical Support

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

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf.
- Product warranties—For product warranty information, visit http://www.juniper.net/support/warranty/.
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- Find CSC offerings: http://www.juniper.net/customers/support/
- Search for known bugs: http://www2.juniper.net/kb/
- Find product documentation: http://www.juniper.net/techpubs/
- Find solutions and answer questions using our Knowledge Base: http://kb.juniper.net/

- Download the latest versions of software and review release notes: http://www.juniper.net/customers/csc/software/
- Search technical bulletins for relevant hardware and software notifications: http://kb.juniper.net/InfoCenter/
- Join and participate in the Juniper Networks Community Forum: http://www.juniper.net/company/communities/
- Open a case online in the CSC Case Management tool: http://www.juniper.net/cm/

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

Opening a Case with JTAC

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

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

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

PART 1

Overview

CHAPTER 1

Layer 3 Protocols

Layer 3 Protocols Supported on EX Series Switches

EX Series switches support the Junos OS Layer 3 features and configuration statements listed in Table 3 on page 3:

Table 3: Supported Junos OS Layer 3 Protocol Statements and Features

Protocol	Notes	For More Information
BGP	Fully supported.	*Junos OS Routing Protocols Configuration Guide*
BFD	Fully supported.	*Junos OS Routing Protocols Configuration Guide*
ICMP	Fully supported.	*Junos OS Routing Protocols Configuration Guide*
IGMPv1, v2, and v3	Fully supported.	*Junos OS Multicast Protocols Configuration Guide*
IS-IS	Supported, with the exceptions noted in "Layer 3 Protocols Not Supported on EX Series Switches" on page 4.	*Junos OS Routing Protocols Configuration Guide*
MLD	Fully supported (MLD versions 1 and 2).	*Junos OS Multicast Protocols Configuration Guide*
MPLS	Supported, with the exceptions noted in "Layer 3 Protocols Not Supported on EX Series Switches" on page 4.	*Junos OS MPLS Applications Configuration Guide*
OSPFv1, v2 and v3	Supported, with the exceptions noted in "Layer 3 Protocols Not Supported on EX Series Switches" on page 4.	*Junos OS Routing Protocols Configuration Guide*
PIM	Fully supported on EX2200, EX3200, EX3300, EX4200, EX6200, and EX8200 switches.	*Junos OS Multicast Protocols Configuration Guide*
PPM	Supported. See *EX Series Switch Software Features Overview* for specific platform information.	*Junos OS Routing Protocols Configuration Guide*

Table 3: Supported Junos OS Layer 3 Protocol Statements and Features *(continued)*

Protocol	Notes	For More Information
RIP	Fully supported.	*Junos OS Routing Protocols Configuration Guide*
RIPng	Fully supported.	*Junos OS Routing Protocols Configuration Guide*
SNMP	Fully supported.	*Junos OS Network Management Configuration Guide*
VRRP	Fully supported.	See *Understanding VRRP on EX Series Switches*. See also *Junos OS High Availability Guide*.

Related Documentation

- Layer 3 Protocols Not Supported on EX Series Switches on page 4
- *EX Series Switch Software Features Overview*

Layer 3 Protocols Not Supported on EX Series Switches

EX Series switches do not support the Junos OS Layer 3 protocols and features listed in Table 4 on page 4:

Table 4: Junos OS Layer 3 Protocol Statements and Features That Are Not Supported

Feature	Configuration Statements Not Supported on EX Series Switches
DVMRP	• **dvmrp** and subordinate statements
Flow aggregation (cflowd)	• **cflow** and subordinate statements
IPsec	• **[edit services]** statements related to IPsec
IS-IS: • ES-IS • IPv6 in multicast routing protocols	• **clns-routing** statement • **ipv6-multicast** statement • **lsp-interval** statement • **label-switched-path** statement • **lsp-lifetime** statement • **te-metric** statement
Logical routers	• **logical-routers** and subordinate statements

Table 4: Junos OS Layer 3 Protocol Statements and Features That Are Not Supported *(continued)*

Feature	Configuration Statements Not Supported on EX Series Switches
MPLS: • Fast Reroute (FRR) • Label Distribution Protocol (LDP) (except on EX8200 switches) • Layer 3 VPNs (except on EX8200 switches) • Multiprotocol BGP (MP-BGP) for VPN-IPv4 family • Pseudowire emulation (PWE3) • Routing policy statements related to Layer 3 VPNs and MPLS (except on EX8200 switches) • Virtual Private LAN Service (VPLS)	• **ldp** and all subordinate statements (except on EX8200 switches)
Network Address Translation (NAT)	• **nat** and subordinate statements • Policy statements related to NAT
OSPF	• **demand-circuit** statement • **label-switched-path** and subordinate statements • **neighbor** statement within an OSPF area • **peer-interface** and subordinate statements within an OSPF area • **sham-link** statement • **te-metric** statement
PPM	• Not supported on EX2200 and EX3300 switches
Routing instances: • Routing instance forwarding	• **l2vpn** and subordinate statements (except on EX4500, EX4550, and EX8200 switches) • **ldp** and subordinate statements (except on EX8200 switches) • **vpls** and subordinate statements
Routed VLAN interfaces (RVIs)	• **family mpls** statement
SAP and SDP	• **sap** and all subordinate statements
General routing options in the **routing-options** hierarchy: • MPLS and label-switched-paths	• **auto-export** and subordinate statements • **dynamic-tunnels** and subordinate statements • **lsp-next-hop** and subordinate statements • **multicast** and subordinate statements • **p2mp-lsp-next-hop** and subordinate statements • **route-distinguisher-id** statement (except on EX8200 switches)

Table 4: Junos OS Layer 3 Protocol Statements and Features That Are Not Supported *(continued)*

Feature	Configuration Statements Not Supported on EX Series Switches

Traffic sampling and fowarding in the **forwarding-options** hierarchy	• **accounting** and subordinate statements
	• **family mpls** and **family multiservice** under **hash-key** hierarchy
	• Under **monitoring** ***group-name*** **family inet output** hierarchy:
	  ◦ **cflowd** statement
	  ◦ **export-format-cflowd-version-5** statement
	  ◦ **flow-active-timeout** statement
	  ◦ **flow-export-destination** statement
	  ◦ **flow-inactive-timeout** statement
	  ◦ **interface** statement
	• **port-mirroring** statement (On EX Series switches, port mirroring is implemented using the **analyzer** statement.)
	• **sampling** and subordinate statements

Related Documentation

- Layer 3 Protocols Supported on EX Series Switches on page 3
- *EX Series Switch Software Features Overview*

PART 2

Configuration

CHAPTER 2

Configuration Tasks

Configuring a RIP Network (J-Web Procedure)

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

You can use the J-Web interface to create RIP networks.

To configure a RIP network:

1. Select **Configure** > **Routing** > **RIP**.

   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.

2. Click one of the following options:

   - **Add**—Configures a RIP instance. Enter information into the RIP Configuration page as described in Table 5 on page 9.
   - **Edit**—Modifies an existing RIP instance. Enter information into the configuration page for RIP as described in Table 5 on page 9.
   - **Delete**—Deletes an existing RIP instance.

4. To modify RIP global settings, click **Edit**. Enter information in the configuration as described in Table 6 on page 10.

Table 5: RIP Routing Configuration Summary

Field	Function	Your Action
General tab		
Routing instance name	Specifies a name for the routing instance.	Type or select and edit the name.

Table 5: RIP Routing Configuration Summary *(continued)*

Field	Function	Your Action
Preference	Specifies the preference of external routes learned by RIP as compared to those learned from other routing protocols.	Type or select and edit the value.
Metric Out	Specifies the metric value to add to routes transmitted to the neighbor.	Type or select and edit the value.
Update interval	Specifies an update time interval to periodically send out routes learned by RIP to neighbors.	Type or select and edit the value.
Route timeout	Specifies the route timeout interval for RIP.	Type or select and edit the value.
Policies tab		
Import Policy	Applies one or more policies to routes being imported into the local routing device from the neighbors.	Click **Add** to add an import policy. Click **Move up** or **Move down** to move the selected policy up or down the list of policies. Click **Remove** to remove an import policy.
Export Policy	Applies a policy to routes being exported to the neighbors.	Click **Add** to add an export policy. Click **Move up** or **Move down** to move the selected policy up or down the list of policies. Click **Remove** to remove an export policy.
Neighbors tab		
RIP-Enabled Interfaces	Selects the interfaces to be associated with the RIP instance.	To enable RIP on an interface, click the check box next to the interface name. Click Edit if you want to modify an interface's settings.

Table 6: Edit RIP Global Settings

Field	Function	Your Action
General tab		
Send	Specifies RIP send options.	Select a value.
Receive	Configure RIP receive options.	Select a value.
Route timeout (sec)	Specifies the route timeout interval for RIP.	Type a value.
Update interval (sec)	Specifies the update time interval to periodically send out routes learned by RIP to neighbors.	Type or select and edit the value.
Hold timeout (sec)	Specifies the time period the expired route is retained in the routing table before being removed.	Type or select and edit the value.

Table 6: Edit RIP Global Settings *(continued)*

Field	Function	Your Action
Metric in	Specifies the metric to add to incoming routes when advertising into RIP routes that were learned from other protocols.	Type or select and edit the value.
RIB Group	Specifies a routing table group to install RIP routes into multiple routing tables.	Select and edit the name of the routing table group.
Message size	Specifies the number of route entries to be included in every RIP update message.	Type or select and edit the value.
Check Zero	Specifies whether the reserved fields in a RIP packet are zero. Options are: • **check-zero**—Discard version 1 packets that have nonzero values in the reserved fields and version 2 packets that have nonzero values in the fields that must be zero. This default behavior implements the RIP version 1 and version 2 specifications. • **no-check-zero**—Receive RIP version 1 packets with nonzero values in the reserved fields or RIP version 2 packets with nonzero values in the fields that must be zero. This is in spite of the fact that they are being sent in violation of the specifications in RFC 1058 and RFC 2453.	Select a value.
Graceful switchover	Configures graceful switchover for OSPF.	To disable graceful restart, select **Disable**. Type or select and edit the estimated time for the restart to finish, in seconds.
Authentication Type	Specifies the type of authentication for RIP route queries received on an interface. Options are: • None • MD5 • Simple	Select the authentication type. Enter the authentication key for MD5.
Policies tab		
Import Policy	Applies one or more policies to routes being imported into the local routing device from the neighbors.	Click **Add** to add an import policy. Click **Move up** or **Move down** to move the selected policy up or down the list of policies. Click **Remove** to remove an import policy.
Export Policy	Applies a policy to routes being exported to the neighbors.	Click **Add** to add an export policy. Click **Move up** or **Move down** to move the selected policy up or down the list of policies. Click **Remove** to remove an export policy.

Table 6: Edit RIP Global Settings *(continued)*

Field	Function	Your Action
Trace Options tab		
File Name	Specifies the name of the file to receive the output of the tracing operation.	Type or select and edit the name.
Number of Files	Specifies the maximum number of trace files.	Type or select and edit the name.
File Size	Specifies the maximum size for each trace file.	Type or select and edit the name.
World Readable	Specifies whether the trace file can be read by any user or not.	Select **True** to allow any user to read the file. Select **False** to disallow all users being able to read the file.
Flags	Specifies the tracing operation to perform.	Select a value from the list.

Related Documentation

- Monitoring RIP Routing Information on page 63
- Layer 3 Protocols Supported on EX Series Switches on page 3

CHAPTER 3

Configuration Statements: RIP

[edit protocols rip] Configuration Statement Hierarchy on EX Series Switches

This topic lists supported and unsupported configuration statements in the **[edit protocols rip]** hierarchy level on EX Series switches.

- *Supported* statements are those that you can use to configure some aspect of a software feature on the switch.
- *Unsupported* statements are those that appear in the command-line interface (CLI) on the switch, but that have no effect on switch operation if you configure them.
- Not all features are supported on all switch platforms. For detailed information about feature support on specific EX Series switch platforms, see *EX Series Switch Software Features Overview*.

This topic lists:

- Supported Statements in the [edit protocols rip] Hierarchy Level on page 14
- Unsupported Statements in the [edit protocols rip] Hierarchy Level on page 16

Supported Statements in the [edit protocols rip] Hierarchy Level

The following hierarchy shows the **[edit protocols rip]** configuration statements supported on EX Series switches:

```
protocols {
  rip {
    authentication-key password;
    authentication-type type;
    (check-zero | no-check-zero);
    group group-name {
      bfd-liveness-detection {
        authentication {
          algorithm (keyed-md5 | keyed-sha-1 | meticulous-keyed-md5 |
            meticulous-keyed-sha-1 | simple-password);
          loose-check;
        }
        detection-time {
          threshold milliseconds;
        }
        minimum-interval milliseconds;
        minimum-receive-interval milliseconds;
        multiplier number;
        no-adaptation;
        transmit-interval {
          minimum-interval milliseconds;
          threshold milliseconds;
        }
        version (1 | automatic);
      }
      export [ policy-names ];
      import [ policy-names ];
      metric-out metric;
      neighbor neighbor-name {
        any-sender;
        authentication-key password;
        authentication-type type;
        bfd-liveness-detection {
          authentication {
```

```
                algorithm (keyed-md5 | keyed-sha-1 | meticulous-keyed-md5 |
                  meticulous-keyed-sha-1 | simple-password);
                loose-check;
              }
              detection-time {
                threshold milliseconds;
              }
              minimum-interval milliseconds;
              minimum-receive-interval milliseconds;
              multiplier number;
              no-adaptation;
              transmit-interval {
                minimum-interval milliseconds;
                threshold milliseconds;
              }
              version (1 | automatic);
            }
            (check-zero | no-check-zero);
            import [ policy-names ];
            message-size number;
            metric-in metric;
            receive (both | none | version-1 | version-2);
            route-timeout seconds;
            send (broadcast | multicast | none | version-1);
            update-interval seconds;
          }
          preference preference;
          route-timeout seconds;
          update-interval seconds;
        }
        graceful-restart {
          disable;
          restart-time seconds;
        }
        holddown seconds;
        import [ policy-names ];
        message-size number;
        metric-in metric;
        receive (both | none | version-1 | version-2);
        rib-group group-name;
        route-timeout seconds;
        send (broadcast | multicast | none | version-1);
        traceoptions {
          file filename <files number> <size maximum-file-size> <world-readable |
            no-world-readable>;
          flag flag <flag-modifier> <disable>;
        }
        update-interval seconds;
      }
    }
```

Unsupported Statements in the [edit protocols rip] Hierarchy Level

All statements in the **[edit protocols rip]** hierarchy level that are displayed in the command-line interface (CLI) on the switch are supported on the switch and operate as documented with the following exceptions:

Table 7: Unsupported [edit protocols-rip] Configuration Statements on EX Series Switches

Statement	Hierarchy
NOTE: Variables, such as *group-name*, are not shown in the statements or hierarchies.	
demand-circuit	**[edit protocols rip group]** **[edit protocols rip group neighbor]**
key-chain	**[edit protocols rip group bfd-liveness-detection authentication]** **[edit protocols rip group neighbor bfd-liveness-detection authentication]**
max-retrans-time	**[edit protocols rip group]** **[edit protocols rip group neighbor]**

Related Documentation

- *RIP Feature Guide for Routing Devices*
- *[edit protocols] Configuration Statement Hierarchy on EX Series Switches*

any-sender

Syntax any-sender;

Hierarchy Level [edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*]

Release Information Statement introduced in Junos OS Release 8.0.
Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Disable strict sender address checks.

If the sender of a RIP message does not belong to the subnet of the interface, the message is discarded. This situation might cause problems with dropped packets when RIP is running on point-to-point interfaces, or when the addresses on the interfaces do not fall in the same subnet. You can resolve this by disabling strict address checks on the RIP traffic.

NOTE: The **any-sender** statement is supported only for peer-to-peer interfaces.

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

Related Documentation

- *Example: Configuring RIP*

authentication-key (Protocols RIP)

Syntax authentication-key *password*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description Require authentication for RIP route queries received on an interface.

Options ***password***—Authentication password. If the password does not match, the packet is rejected. The password can be from 1 through 16 contiguous characters long and can include any ASCII strings.

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

Related Documentation
- *Example: Configuring Route Authentication for RIP*

authentication-type (Protocols RIP)

Syntax authentication-type *type*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description Configure the type of authentication for RIP route queries received on an interface.

Default If you do not include this statement and the **authentication-key** statement, RIP authentication is disabled.

Options *type*—Authentication type:

- **md5**—Use the MD5 algorithm to create an encoded checksum of the packet. The encoded checksum is included in the transmitted packet. The receiving routing device uses the authentication key to verify the packet, discarding it if the digest does not match. This algorithm provides a more secure authentication scheme.
- **none**—Disable authentication. If **none** is configured, the configured authentication key is ignored.
- **simple**—Use a simple password. The password is included in the transmitted packet, which makes this method of authentication relatively insecure. The password can be from 1 through 16 contiguous letters or digits long.

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

Related Documentation
- *Example: Configuring Route Authentication for RIP*
- authentication-key on page 18

bfd-liveness-detection (Protocols RIP)

Syntax

```
bfd-liveness-detection {
  authentication {
    algorithm algorithm-name;
    key-chain key-chain-name;
    loose-check;
  }
  detection-time {
    threshold milliseconds;
  }
  minimum-interval milliseconds;
  minimum-receive-interval milliseconds;
  multiplier number;
  no-adaptation;
  transmit-interval {
    minimum-interval milliseconds;
    threshold milliseconds;
  }
  version (1 | automatic);
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip group *group-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*]

Release Information

Statement introduced in Junos OS Release 8.0.
Options **detection-time threshold** and **transmit-interval threshold** introduced in Junos OS Release 8.2.
Support for logical systems introduced in Junos OS Release 8.3.
Option **no-adaptation** introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Options **authentication algorithm**, **authentication key-chain**, and **authentication loose-check** introduced in Junos OS Release 9.6.
Options **authentication algorithm**, **authentication key-chain**, and **authentication loose-check** introduced in Junos OS Release 9.6 for EX Series switches.
Statement introduced in Junos OS Release 12.1 for the QFX Series.

Description

Configure bidirectional failure detection timers and authentication.

Options

authentication algorithm *algorithm-name* —Configure the algorithm used to authenticate the specified BFD session: **simple-password**, **keyed-md5**, **keyed-sha-1**, **meticulous-keyed-md5**, or **meticulous-keyed-sha-1**.

authentication key-chain *key-chain-name*—Associate a security key with the specified BFD session using the name of the security keychain. The name you specify must match one of the keychains configured in the **authentication-key-chains key-chain** statement at the **[edit security]** hierarchy level.

authentication loose-check—(Optional) Configure loose authentication checking on the BFD session. Use only for transitional periods when authentication is not configured at both ends of the BFD session.

detection-time threshold *milliseconds*—Configure a threshold for the adaptation of the BFD session detection time. When the detection time adapts to a value equal to or greater than the threshold, a single trap and a single system log message are sent.

minimum-interval *milliseconds*—Configure the minimum interval after which the local routing device transmits a hello packet and then expects to receive a reply from the 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 minimum-interval** and **minimum-receive-interval** statements.

Range: 1 through 255,000 milliseconds

minimum-receive-interval *milliseconds*—Configure the minimum interval after which the local 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 configure the minimum receive interval using the **minimum-interval** statement.

Range: 1 through 255,000 milliseconds

multiplier *number*—Configure the number of hello packets not received by a neighbor that causes the originating interface to be declared down.

Range: 1 through 255

Default: 3

no-adaptation—Configure BFD sessions not to adapt to changing network conditions. We recommend that you not disable BFD adaptation unless it is preferable not to have BFD adaptation enabled in your network.

transmit-interval threshold *milliseconds*—Configure the threshold for the adaptation of the BFD session transmit interval. When the transmit interval adapts to a value greater than the threshold, a single trap and a single system message are sent. The interval threshold must be greater than the minimum transmit interval.

Range: 0 through 4,294,967,295 ($2^{32} - 1$)

transmit-interval minimum-interval *milliseconds*—Configure a minimum interval after which the local routing device transmits hello packets to a neighbor. Optionally, instead of using this statement, you can configure the minimum transmit interval using the **minimum-interval** statement.

Range: 1 through 255,000

version—Configure the BFD version to detect: **1** (BFD version 1) or **automatic** (autodetect the BFD 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 BFD for RIP*
- *Example: Configuring BFD Authentication for RIP*

check-zero

Syntax (check-zero | no-check-zero);

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description Some of the reserved fields in RIP version 1 packets must be zero, whereas in RIP version 2 packets, most of these reserved fields can contain nonzero values. By default, RIP discards version 1 packets that have nonzero values in the reserved fields and version 2 packets that have nonzero values in the fields that must be zero. This default behavior implements the RIP version 1 and version 2 specifications.

If you find that you are receiving RIP version 1 packets with nonzero values in the reserved fields or RIP version 2 packets with nonzero values in the fields that must be zero, you can configure RIP to receive these packets even though they are being sent in violation of the specifications in RFC 1058 and RFC 2453.

Check whether the reserved fields in a RIP packet are zero:

- **check-zero**—Discard version 1 packets that have nonzero values in the reserved fields and version 2 packets that have nonzero values in the fields that must be zero. This default behavior implements the RIP version 1 and version 2 specifications.
- **no-check-zero**—Receive RIP version 1 packets with nonzero values in the reserved fields or RIP version 2 packets with nonzero values in the fields that must be zero. This is in spite of the fact that they are being sent in violation of the specifications in RFC 1058 and RFC 2453.

Default check-zero

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

Related Documentation
- *Example: Configuring RIP*

export (Protocols RIP)

Syntax export [*policy-names*];

Hierarchy Level [edit logical-systems *logical-system-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit protocols rip group *group-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name*]

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

Description Apply a policy to routes being exported to the neighbors.

By default, RIP does not export routes it has learned to its neighbors. To enable RIP to export routes, apply one or more export policies.

If no routes match the policies, the local routing device does not export any routes to its neighbors. Export policies override any metric values determined through calculations involving the values configured with the metric-in and metric-out statements.

NOTE: The export policy on RIP does not support manipulating routing information of the next hop.

Options ***policy-names***—Name of one or more policies.

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

Related Documentation

- *Example: Configuring RIP*
- import on page 29

graceful-restart (Protocols RIP)

Syntax

```
graceful-restart {
  disable;
  restart-time seconds;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols rip],
[edit protocols rip]

Release Information

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

Description

Configure graceful restart for RIP.

Options

disable—Disables graceful restart for RIP.

The remaining statement is explained separately.

Required Privilege Level

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

Related Documentation

- *Junos OS High Availability Library for Routing Devices*

group (Protocols RIP)

Syntax

```
group group-name {
  bfd-liveness-detection {
    authentication {
      algorithm algorithm-name;
      key-chain key-chain-name;
      loose-check;
    }
    detection-time {
      threshold milliseconds;
    }
    minimum-interval milliseconds;
    minimum-receive-interval milliseconds;
    transmit-interval {
      threshold milliseconds;
      minimum-interval milliseconds;
    }
    multiplier number;
    version (0 | 1 | automatic);
  }
  demand-circuit;
  export policy;
  max-retrans-time  seconds;
  metric-out metric;
  preference number;
  route-timeout seconds;
  update-interval seconds;
  neighbor neighbor-name {
    authentication-key password;
    authentication-type type;
    bfd-liveness-detection {
      authentication {
        algorithm algorithm-name;
        key-chain key-chain-name;
        loose-check;
      }
      detection-time {
        threshold milliseconds;
      }
      minimum-interval milliseconds;
      minimum-receive-interval milliseconds;
      transmit-interval {
        threshold milliseconds;
        minimum-interval milliseconds;
      }
      multiplier number;
      version (0 | 1 | automatic);
    }
    (check-zero | no-check-zero);
    demand-circuit;
    import policy-name;
    max-retrans-time seconds;
    message-size number;
```

```
        metric-in metric;
        metric-out metric;
        receive receive-options;
        route-timeout seconds;
        send send-options;
        update-interval seconds;
    }
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit protocols rip],
[edit routing-instances *routing-instance-name* protocols rip]

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 12.1 for the QFX Series.

Description

Configure a set of RIP neighbors that share an export policy and metric. The export policy and metric govern what routes to advertise to neighbors in a given group. Each group must contain at least one neighbor. You should create a group for every export policy.

Options

group-name—Name of a group, up to 16 characters long.

The remaining statements are explained separately.

Required Privilege Level

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

Related Documentation

- *Example: Configuring RIP*

holddown (Protocols RIP)

Syntax holddown *seconds*;

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

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 12.1 for the QFX Series.

Description Configure how long the expired route is retained in the routing table before being removed.

When the hold-down timer runs on RIP demand circuits, routes are advertised as unreachable on other interfaces. When the hold-down timer expires, the route is removed from the routing table if all destinations detect that the route is unreachable or the remaining destinations are down.

Options ***seconds***—Estimated time to wait before making updates to the routing table.

Range: 10 through 180 seconds

Default: 120 seconds

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

Related Documentation
- *Example: Configuring RIP Timers*
- *RIP Demand Circuits Overview*

import (Protocols RIP)

Syntax

import [*policy-names*];

Hierarchy Level

[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description

Apply one or more policies to routes being imported by the local routing device from neighbors.

Options

policy-names—Name of one or more policies.

Required Privilege Level

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

Related Documentation

- *Example: Applying Policies to RIP Routes Imported from Neighbors*
- *Routing Policies, Firewall Filters, and Traffic Policers Feature Guide for Routing Devices*
- export on page 24

message-size

Syntax message-size *number*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*]

Release Information
Statement introduced before Junos OS Release 7.4.
Statement for SRX Series devices introduced in Junos OS Release 9.5.
Statement for J Series platform introduced in Junos OS Release 8.5.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 12.1 for the QFX Series.

Description Specify the number of route entries to be included in every RIP update message.

TIP: To ensure interoperability with other vendors' equipment, use the standard of 25 route entries per message. Do not change the default number of route entries in a RIP update message.

Options *number*—Number of route entries per update message.

Range: 25 through 255 entries

Default: 25 entries

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

Related Documentation
- *Example: Configuring RIP*

metric-in (Protocols RIP)

Syntax metric-in *metric*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description Specify the metric to add to incoming routes when the routing device advertises into RIP routes that were learned from other protocols. Use this statement to configure the routing device to prefer RIP routes learned through a specific neighbor.

Options ***metric***—Metric value.

Range: 1 through 16

Default: 1

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

Related Documentation
- *Example: Configuring the Metric Value Added to Imported RIP Routes*

metric-out (Protocols RIP)

Syntax metric-out *metric*;

Hierarchy Level [edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*]

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

Description Specify the metric value to add to routes transmitted to the neighbor. Use this statement to control how other routing devices prefer RIP routes sent from this neighbor.

If you have included the **export** statement, RIP exports routes it has learned to the neighbors configured by including the **neighbor** statement.

The metric associated with a RIP route (unless modified by an export policy) is the normal RIP metric. For example, a RIP route with a metric of 5 learned from a neighbor configured with a **metric-in** value of 2 is advertised with a combined metric of 7 when advertised to RIP neighbors in the same group. However, if this route was learned from a RIP neighbor in a different group or from a different protocol, the route is advertised with the metric value configured for that group with the **metric-out** statement.

The metric for a route can be modified with an export policy. That metric is seen when the route is exported to the next hop.

To increase the metric for routes advertised outside a group, include the **metric-out** statement.

Options ***metric***—Metric value.
Range: 1 through 16
Default: 1

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

Related Documentation
- *Examples: Controlling Traffic with Metrics in a RIP Network*50

neighbor (Protocols RIP)

Syntax

```
neighbor neighbor-name {
  authentication-key password;
  authentication-type type;
  bfd-liveness-detection {
    authentication {
      algorithm algorithm-name;
      key-chain key-chain-name;
      loose-check;
    }
    detection-time {
      threshold milliseconds;
    }
    minimum-interval milliseconds;
    minimum-receive-interval milliseconds;
    transmit-interval {
      threshold milliseconds;
      minimum-interval milliseconds;
    }
    multiplier number;
    version (0 | 1 | automatic);
  }
  (check-zero | no-check-zero);
  demand-circuit;
  import policy-name;
  max-retrans-time seconds;
  message-size number;
  metric-in metric;
  metric-out metric;
  receive receive-options;
  route-timeout seconds;
  send send-options;
  update-interval seconds;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit protocols rip group *group-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name*]

Release Information

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

Description

Configure neighbor-specific RIP parameters, thereby overriding the defaults set for the routing device.

Options

neighbor-name—Name of an interface over which a routing device communicates to its neighbors.

The remaining statements are explained separately.

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

Related Documentation
- *Example: Configuring RIP*

preference (Protocols RIP)

Syntax
preference *preference*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit protocols rip group *group-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name*]

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

Description
Specify the preference of external routes learned by RIP as compared to those learned from other routing protocols.

By default, Junos OS assigns a preference of 100 to routes that originate from RIP. When Junos OS determines a route's preference to become the active route, the software selects the route with the lowest preference and installs this route into the forwarding table.

Options
preference—Preference value. A lower value indicates a more preferred route.
Range: 0 through 4,294,967,295 ($2^{32} - 1$)
Default: 100

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

Related Documentation
- *Route Preferences Overview*

receive (Protocols RIP)

Syntax receive *receive-options*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description Configure RIP receive options.

Options ***receive-options***—One of the following:

- **both**—Accept both RIP version 1 and version 2 packets.
- **none**—Do not receive RIP packets.
- **version-1**—Accept only RIP version 1 packets.
- **version-2**—Accept only RIP version 2 packets.

Default: both

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

Related Documentation
- *Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets*
- send on page 38

rib-group (Protocols RIP)

Syntax rib-group *group-name*;

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

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 12.1 for the QFX Series.

Description Install RIP routes into multiple routing tables by configuring a routing table group.

Options ***group-name***—Name of the routing table group.

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

Related Documentation
- *Example: Redistributing Routes Between Two RIP Instances*

rip

Syntax rip {...}

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

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 12.1 for the QFX Series.

Description Enable RIP routing on the routing device.

Default RIP is disabled on the routing device.

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

Related Documentation
- *Example: Configuring RIP*

route-timeout (Protocols RIP)

Syntax route-timeout *seconds*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name*],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*]

Release Information
Statement introduced in Junos OS Release 7.6.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 12.1 for the QFX Series.

Description Configure the route timeout interval for RIP. If a route is not refreshed after being installed in the routing table by the specified timeout interval, the route is marked as invalid and is removed from the routing table after the hold-down period expires.

Options ***seconds***—Estimated time to wait before making updates to the routing table.

Range: 30 through 360 seconds

Default: 180 seconds

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

Related Documentation
- *Example: Configuring RIP Timers*
- *RIP Demand Circuits Overview*

send (Protocols RIP)

Syntax send *send-options*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-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 12.1 for the QFX Series.

Description Configure RIP send options.

Options ***send-options***—One of the following:

- **broadcast**—Broadcast RIP version 2 packets (RIP version 1 compatible).
- **multicast**—Multicast RIP version 2 packets. This is the default.
- **none**—Do not send RIP updates.
- **version-1**—Broadcast RIP version 1 packets.

Default: multicast

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

Related Documentation
- *Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets*
- receive on page 35

traceoptions (Protocols RIP)

Syntax

```
traceoptions {
    file filename <files number> <size size> <world-readable | no-world-readable>;
    flag flag <flag-modifier> <disable>;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit protocols rip],
[edit routing-instances *routing-instance-name* protocols rip]

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 12.1 for the QFX Series.

Description

Set RIP protocol-level tracing options.

NOTE: The **traceoptions** statement is not supported on QFabric systems.

Default

The default RIP protocol-level trace options are inherited from the global **traceoptions** statement.

Options

disable—(Optional) Disable the tracing operation. One use of this option is to disable a single operation when you have defined a broad group of tracing operations, such as **all**.

file *filename*—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks. We recommend that you place RIP tracing output in the file **/var/log/rip-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 must also specify a maximum file size with the **size** option.

Range: 2 through 1000 files

Default: 10 files

flag *flag*—Tracing operation to perform. To specify more than one tracing operation, include multiple **flag** statements.

RIP Tracing Options

- **auth**—RIP authentication
- **error**—RIP error packets

- **expiration**—RIP route expiration processing
- **holddown**—RIP hold-down processing
- **nsr-synchronization**—Nonstop routing synchronization events
- **packets**—All RIP packets
- **request**—RIP information packets such as request, poll, and poll entry packets
- **trigger**—RIP triggered updates
- **update**—RIP update packets

Global Tracing Options

- **all**—All tracing operations
- **general**—A combination of the **normal** and **route** trace operations
- **normal**—All normal operations

Default: If you do not specify this option, only unusual or abnormal operations are traced.

- **policy**—Policy operations and actions
- **route**—Routing table changes
- **state**—State transitions
- **task**—Routing protocol task processing
- **timer**—Routing protocol timer processing

flag-modifier—(Optional) Modifier for the tracing flag. You can specify one or more of these modifiers:

- **detail**—Provide detailed trace information.
- **receive**—Trace the packets being received.
- **receive-detail**—Provide detailed trace information for packets being received.
- **send**—Trace the packets being transmitted.
- **send-detail**—Provide detailed trace information for packets being transmitted.

no-world-readable—(Optional) Prevent any user from reading the log file.

size *size*—(Optional) Maximum size of each trace file, in kilobytes (KB) or megabytes (MB). 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 must also specify a maximum number of trace files with the **files** option.

Syntax: ***x*k** to specify KB, ***x*m** to specify MB, or ***x*g** to specify GB

Range: 10 KB through the maximum file size supported on your system

Default: 128 KB

world-readable—(Optional) Allow any user to read the log file.

Required Privilege Level

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

Related Documentation

- *Example: Tracing RIP Protocol Traffic*

update-interval (Protocols RIP)

Syntax update-interval *seconds*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols rip],
[edit logical-systems *logical-system-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*],
[edit protocols rip],
[edit protocols rip group *group-name*],
[edit protocols rip group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols rip],
[edit routing-instances *routing-instance-name* protocols rip group *group-name*],
[edit routing-instances *routing-instance-name* protocols rip group *group-name* neighbor *neighbor-name*]

Release Information
Statement introduced in Junos OS Release 7.6.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 12.1 for the QFX Series.

Description Configure the interval at which routes learned by RIP are sent to neighbors. This timer controls the interval between routing updates. This timer is set to 30 seconds, by default, with a small random amount of time added when the timer is reset. This added time prevents congestion that can happen if all routing devices update their neighbors simultaneously.

Options ***seconds***—Estimated time to wait before making updates to the routing table.

Range: 10 through 60 seconds

Default: 30 seconds

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

Related Documentation
- *Example: Configuring RIP Timers*

CHAPTER 4

Configuration Statements: RIPng

[edit protocols ripng] Configuration Statement Hierarchy on EX Series Switches

This topic lists supported and unsupported configuration statements in the **[edit protocols ripng]** hierarchy level on EX Series switches.

- *Supported* statements are those that you can use to configure some aspect of a software feature on the switch.
- *Unsupported* statements are those that appear in the command-line interface (CLI) on the switch, but that have no effect on switch operation if you configure them.
- Not all features are supported on all switch platforms. For detailed information about feature support on specific EX Series switch platforms, see *EX Series Switch Software Features Overview*.

This topic lists:

Supported Statements in the [edit protocols ripng] Hierarchy Level

The following hierarchy shows the **[edit protocols ripng]** configuration statements supported on EX Series switches:

```
protocols {
  ripng {
    graceful-restart {
      disable;
      restart-time seconds;
    }
    group group-name {
      export [ policy-names ];
      import [ policy-names ];
      metric-out metric;
      neighbor neighbor-name {
        import [ policy-names ];
        metric-in metric;
        receive <none>;
        route-timeout seconds;
        send <none>;
        update-interval seconds;
      }
      preference number;
      route-timeout seconds;
      update-interval seconds;
    }
    holddown seconds;
    import [ policy-names ];
    metric-in metric;
    receive <none>;
    route-timeout seconds;
    send <none>;
    traceoptions {
      file filename <files number> <size maximum-file-size> <world-readable |
        no-world-readable>;
      flag flag <flag-modifier> <disable>;
    }
    update-interval seconds;
  }
}
```

Unsupported Statements in the [edit protocols ripng] Hierarchy Level

All statements in the **[edit protocols ripng]** hierarchy level that are displayed in the command-line interface (CLI) on the switch are supported on the switch and operate as documented.

Related Documentation

- *RIPng Feature Guide for Routing Devices*

- *[edit protocols] Configuration Statement Hierarchy on EX Series Switches*

export (Protocols RIPng)

Syntax export [*policy-names*];

Hierarchy Level [edit logical-systems *logical-system-name* protocols ripng group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name*],
[edit protocols ripng group *group-name*],
[edit routing-instances *routing-instance-name* protocols ripng group *group-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 routing instances introduced in Junos OS Release 9.0.

Description Apply a policy or list of policies to routes being exported to the neighbors.

By default, RIPng does not export routes it has learned to its neighbors. To have RIPng export routes, apply one or more export policies. To apply export policies and to filter routes being exported from the local routing device to its neighbors, include the **export** statement and list the name of the policy to be evaluated.

You can define one or more export policies. If no routes match the policies, the local routing device does not export any routes to its neighbors. Export policies override any metric values determined through calculations involving the values configured with the **metric-in** and **metric-out** statements.

Options ***policy-names***—Name of one or more policies.

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

Related Documentation

- *Example: Configuring RIPng*
- import on page 49

graceful-restart (Protocols RIPng)

Syntax

```
graceful-restart {
  disable;
  restart-time seconds;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng],
[edit protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng]

Release Information

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

Description

Configure graceful restart for RIPng.

Options

disable—Disables graceful restart for RIPng.

The remaining statement is explained separately.

Required Privilege Level

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

Related Documentation

- *Junos OS High Availability Library for Routing Devices*

group (Protocols RIPng)

Syntax

```
group group-name {
  export [ policy-names ];
  metric-out metric;
  neighbor neighbor-name {
    import policy-name;
    metric-in metric;
    receive <none>;
    route-timeout seconds;
    send <none>;
    update-interval seconds;
  }
  preference number;
  route-timeout seconds;
  update-interval seconds;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng],
[edit protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng]

Release Information

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

Description

Configure a set of RIPng neighbors that share an export policy and metric. The export policy and metric govern what routes to advertise to neighbors in a given group.

Each group must contain at least one neighbor. You should create a group for each export policy that you have.

Options

group-name—Name of a group, up to 16 characters long.

The remaining statements are explained separately.

Required Privilege Level

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

Related Documentation

- *Example: Configuring RIPng*

holddown (Protocols RIPng)

Syntax holddown *seconds*;

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

Release Information
Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Support for routing instances introduced in Junos OS Release 9.0.

Description Configure how long the expired route is retained in the routing table before being removed.

Options ***seconds***—Estimated time to wait before removing expired routes from the routing table.

Default: 180 seconds

Range: 10 through 180 seconds

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

Related Documentation
- *Example: Configuring RIPng Timers*

import (Protocols RIPng)

Syntax

import [*policy-names*];

Hierarchy Level

[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit protocols ripng],
[edit protocols ripng group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-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 routing instances introduced in Junos OS Release 9.0.

Description

Apply one or more policies to routes being imported into the local routing device from its neighbors.

Options

policy-names—Name of one or more policies.

Required Privilege Level

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

Related Documentation

- *Example: Applying Policies to RIPng Routes Imported from Neighbors*
- export on page 45

metric-in (Protocols RIPng)

Syntax metric-in *metric*;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit protocols ripng],
[edit protocols ripng group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-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 routing instances introduced in Junos OS Release 9.0.

Description Specify the metric to add to incoming routes when advertising into RIPng routes that were learned from other protocols. Use this statement to configure the routing device to prefer RIPng routes learned through a specific neighbor.

Options ***metric***—Metric value.

Range: 1 through 16

Default: 1

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

Related Documentation
- *Example: Configuring the Metric Value Added to Imported RIPng Routes*

metric-out (Protocols RIPng)

Syntax metric-out *metric*;

Hierarchy Level [edit logical-systems *logical-system-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit protocols ripng group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-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 routing instances introduced in Junos OS Release 9.0.

Description Specify the metric value to add to routes transmitted to the neighbor. Use this statement to control how other routing devices prefer RIPng routes sent from this neighbor.

When an export policy is configured, RIPng exports all learned routes to neighbors configured with the **neighbor** statement.

If a route being exported was learned from a member of the same RIPng group, the metric associated with that route (unless modified by an export policy) is the normal RIPng metric. For example, a RIPng route with a metric of 5 learned from a neighbor configured with a **metric-in** value of 2 is advertised with a combined metric of 7 when advertised to RIPng neighbors in the same group. However, if this route was learned from a RIPng neighbor in a different group or from a different protocol, the route is advertised with the metric value configured for that group with the **metric-out** statement. The default value for **metric-out** is 1.

To modify the metric for routes advertised outside a group, include the **metric-out** statement.

Options ***metric***—Metric value.
Range: 1 through 16
Default: 1

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

Related Documentation
- *Example: Configuring the Metric Value Added to Imported RIPng Routes*

neighbor (Protocols RIPng)

Syntax

```
neighbor neighbor-name {
  import [ policy-names ];
  metric-in metric;
  receive <none>;
  route-timeout seconds;
  send <none>;
  update-interval seconds;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols ripng group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name*],
[edit protocols ripng group *group-name*],
[edit routing-instances *routing-instance-name* protocols ripng group *group-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 routing instances introduced in Junos OS Release 9.0.

Description

Configure neighbor-specific RIPng parameters, thereby overriding the defaults set for the routing device.

Options

neighbor-name—Name of an interface over which a routing device communicates to its neighbors.

The remaining statements are explained separately.

Required Privilege Level

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

Related Documentation

- *Example: Configuring RIPng*

preference (Protocols RIPng)

Syntax preference *preference*;

Hierarchy Level [edit logical-systems *logical-system-name* protocols ripng group *group-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name*],
[edit protocols ripng group *group-name*],
[edit routing-instances *routing-instance-name* protocols ripng group *group-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 routing instances introduced in Junos OS Release 9.0.

Description Specify the preference of external routes learned by RIPng as compared to those learned from other routing protocols.

By default, Junos OS assigns a preference of 100 to routes that originate from RIPng. When Junos OS determines that a route is to become the active route, the software selects the route with the lowest preference and installs this route into the forwarding table.

To modify the default RIPng preference value, include the **preference** statement.

Options ***preference***—Preference value. A lower value indicates a more preferred route.

Range: 0 through 4,294,967,295 ($2^{32} - 1$)

Default: 100

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

Related Documentation

- *Example: Configuring RIPng*

receive (Protocols RIPng)

Syntax receive <none>;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit protocols ripng],
[edit protocols ripng group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-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 routing instances introduced in Junos OS Release 9.0.

Description Enable or disable receiving of update messages.

Options **none**—(Optional) Disable receiving update messages.
Default: Enabled

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

Related Documentation
- send on page 56
- *Example: Configuring RIPng*

ripng

Syntax ripng {...}

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

Release Information
Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Support for routing instances introduced in Junos OS Release 9.0.

Description Enable RIPng routing on the routing device.

Default RIPng is disabled on the routing device.

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

Related Documentation
- *Example: Configuring RIPng*

route-timeout (Protocols RIPng)

Syntax route-timeout *seconds*;

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

Release Information
Statement introduced in Junos OS Release 7.6.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Support for routing instances introduced in Junos OS Release 9.0.

Description Configure the route timeout interval for RIPng.

Options ***seconds***—Estimated time to wait before making updates to the routing table.

Range: 30 through 360 seconds

Default: 180 seconds

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

Related Documentation
- *Example: Configuring RIPng Timers*

send (Protocols RIPng)

Syntax send <none>;

Hierarchy Level
[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit logical-systems *logical-system-name* routing-instances *routing-instances-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-name*],
[edit protocols ripng],
[edit protocols ripng group *group-name* neighbor *neighbor-name*],
[edit routing-instances *routing-instance-name* protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng group *group-name* neighbor *neighbor-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 routing instances introduced in Junos OS Release 9.0.

Description Enable or disable sending of update messages.

Options **none**—(Optional) Disable sending of update messages.

Default: Enabled

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

Related Documentation
- receive on page 54

traceoptions (Protocols RIPng)

Syntax

```
traceoptions {
    file filename <files number> <size size> <world-readable | no-world-readable>;
    flag flag <flag-modifier> <disable>;
}
```

Hierarchy Level

[edit logical-systems *logical-system-name* protocols ripng],
[edit logical-systems *logical-system-name* routing-instances *routing-instance-name* protocols ripng],
[edit protocols ripng],
[edit routing-instances *routing-instance-name* protocols ripng]

Release Information

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

Description

Set RIPng protocol-level tracing options.

Default

The default RIPng protocol-level trace options are inherited from the global **traceoptions** statement.

Options

disable—(Optional) Disable the tracing operation. One use of this option is to disable a single operation when you have defined a broad group of tracing operations, such as **all**.

file *filename*—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks. We recommend that you place RIPng tracing output in the file **/var/log/ripng-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 must also specify a maximum file size with the **size** option.

Range: 2 through 1000 files

Default: 10 files

flag *flag*—Tracing operation to perform. To specify more than one tracing operation, include multiple **flag** statements.

RIPng Tracing Options

- **error**—RIPng error packets
- **expiration**—RIPng route expiration processing
- **holddown**—RIPng hold-down processing
- **nsr-synchronization**—Nonstop routing synchronization events
- **packets**—All RIPng packets

- **request**—RIPng information packets such as request, poll, and poll entry packets
- **trigger**—RIPng triggered updates
- **update**—RIPng update packets

Global Tracing Options

- **all**—All tracing operations
- **general**—A combination of the **normal** and **route** trace operations
- **normal**—All normal operations

Default: If you do not specify this option, only unusual or abnormal operations are traced.

- **policy**—Policy operations and actions
- **route**—Routing table changes
- **state**—State transitions
- **task**—Routing protocol task processing
- **timer**—Routing protocol timer processing

flag-modifier—(Optional) Modifier for the tracing flag. You can specify one or more of these modifiers:

- **detail**—Provide detailed trace information.
- **receive**—Trace the packets being received.
- **receive-detail**—Provide detailed trace information for packets being received.
- **send**—Trace the packets being transmitted.
- **send-detail**—Provide detailed trace information for packets being transmitted.

no-world-readable—(Optional) Do not allow any user to read the log file.

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 must also specify a maximum number of trace files with the **files** option.

Syntax: ***x*k** to specify KB, ***x*m** to specify MB, or ***x*g** to specify GB

Range: 10 KB through the maximum file size supported on your system

Default: 128 KB

world-readable—(Optional) Allow any user to read the log file.

Required Privilege Level

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

Related Documentation
- *Example: Tracing RIPng Protocol Traffic*

update-interval (Protocols RIPng)

Syntax update-interval *seconds*;

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

Release Information
Statement introduced in Junos OS Release 7.6.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Support for routing instances introduced in Junos OS Release 9.0.

Description Configure the interval at which routes learned by RIPng are sent to neighbors.

Options ***seconds***—Estimated time to wait before making updates to the routing table.

Range: 10 through 60 seconds

Default: 30 seconds

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

Related Documentation
- *Example: Configuring RIP Timers*

PART 3

Administration

CHAPTER 5

Routine Monitoring

Monitoring RIP Routing Information

Purpose

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

Use the monitoring functionality to monitor RIP routing on routing devices.

Action To view RIP routing information in the J-Web interface, select **Monitor** > **Routing** > **RIP Information**.

To view RIP routing information in the CLI, enter the following CLI commands:

- **show rip statistics**
- **show rip neighbor**

Meaning Table 8 on page 63 summarizes key output fields in the RIP routing display in the J-Web interface.

Table 8: Summary of Key RIP Routing Output Fields

Field	Values	Additional Information
RIP Statistics		
Protocol Name	The RIP protocol name.	
Port number	The port on which RIP is enabled.	
Hold down time	The interval during which routes are neither advertised nor updated.	
Global routes learned	Number of RIP routes learned on the logical interface.	
Global routes held down	Number of RIP routes that are not advertised or updated during the hold-down interval.	

Table 8: Summary of Key RIP Routing Output Fields *(continued)*

Field	Values	Additional Information
Global request dropped	Number of requests dropped.	
Global responses dropped	Number of responses dropped.	
RIP Neighbors		
Neighbor	Name of the RIP neighbor.	This value is the name of the interface on which RIP is enabled. Click the name to see the details for this neighbor.
State	State of the RIP connection: **Up** or **Dn** (Down).	
Source Address	Local source address.	This value is the configured address of the interface on which RIP is enabled.
Destination Address	Destination address.	This value is the configured address of the immediate RIP adjacency.
Send Mode	The mode of sending RIP messages.	
Receive Mode	The mode in which messages are received.	
In Metric	Value of the incoming metric configured for the RIP neighbor.	

Related Documentation

- Layer 3 Protocols Supported on EX Series Switches on page 3

CHAPTER 6

Operational Commands: RIP

- clear rip general-statistics
- clear rip statistics
- show rip general-statistics
- show rip neighbor
- show rip statistics

clear rip general-statistics

List of Syntax
Syntax on page 66
Syntax (EX Series Switches and QFX Series) on page 66

Syntax
clear rip general-statistics
<logical-system (all | *logical-system-name*)>

Syntax (EX Series Switches and QFX Series)
clear rip general-statistics

Release Information
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 12.1 for the QFX Series.

Description
Clear RIP general statistics.

Options
none—Clear RIP general statistics.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level
clear

Related Documentation
- show rip general-statistics on page 68

List of Sample Output
clear rip general-statistics on page 66

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

Sample Output

clear rip general-statistics

```
user@host> clear rip general-statistics
```

clear rip statistics

List of Syntax
Syntax on page 67
Syntax (EX Series Switches and QFX Series) on page 67

Syntax
clear rip statistics
<instance (all | *instance-name*)>
<logical-system (all | *logical-system-name*)>
<*neighbor*>
<peer (all | *address*)>

Syntax (EX Series Switches and QFX Series)
clear rip statistics
<instance (all | *instance-name*)>
<*neighbor*>

Release Information
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 12.1 for the QFX Series.

Description
Clear RIP statistics.

Options
none—Reset RIP counters for all neighbors for all routing instances.

instance (all | *instance-name*)—(Optional) Clear RIP statistics for all instances or for the specified routing instance only.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

neighbor—(Optional) Clear RIP statistics for the specified neighbor only.

peer (all | *address*)—(Optional) Clear RIP statistics for a single peer or all peers.

Required Privilege Level
clear

Related Documentation
- show rip statistics on page 72

List of Sample Output
clear rip statistics on page 67

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

Sample Output

clear rip statistics

```
user@host> clear rip statistics
```

show rip general-statistics

List of Syntax
Syntax on page 68
Syntax (EX Series Switches and QFX Series) on page 68

Syntax
show rip general-statistics
<logical-system (all | *logical-system-name*)>

Syntax (EX Series Switches and QFX Series)
show rip general-statistics

Release Information
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 12.1 for the QFX Series.

Description
Display brief RIP statistics.

Options
none—Display brief RIP statistics.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level
view

Related Documentation
- clear rip general-statistics on page 66

List of Sample Output
show rip general-statistics on page 68

Output Fields
Table 9 on page 68 lists the output fields for the **show rip general-statistics** command. Output fields are listed in the approximate order in which they appear.

Table 9: show rip general-statistics Output Fields

Field Name	Field Description
bad msgs	Number of invalid messages received.
no recv intf	Number of packets received with no matching interface.
curr memory	Amount of memory currently used by RIP.
max memory	Most memory used by RIP.

Sample Output

show rip general-statistics

```
user@host> show rip general-statistics
```

```
RIPv2 I/O info:
     bad msgs       :         0
     no recv intf   :         0
     curr memory    :         0
     max memory     :         0
```

show rip neighbor

List of Syntax
Syntax on page 70
Syntax (EX Series Switches and QFX Series) on page 70

Syntax

```
show rip neighbor
<instance (all | instance-name)>
<logical-system (all | logical-system-name)>
<name>
```

Syntax (EX Series Switches and QFX Series)

```
show rip neighbor
<instance (all | instance-name)>
<name>
```

Release Information
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 12.1 for the QFX Series.

Description
Display information about RIP neighbors.

Options
none—Display information about all RIP neighbors for all instances.

instance (all | *instance-name*)—(Optional) Display RIP neighbor information for all instances or for only the specified routing instance.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Display detailed information about only the specified RIP neighbor.

Required Privilege Level
view

List of Sample Output
show rip neighbor on page 71
show rip neighbor (With Demand Circuits Configured) on page 71

Output Fields
Table 10 on page 71 lists the output fields for the **show rip neighbor** command. Output fields are listed in the approximate order in which they appear.

Table 10: show rip neighbor Output Fields

Field Name	Field Description
Neighbor	Name of the RIP neighbor. NOTE: Beginning with Junos OS Release 11.1, when you configure demand circuits, the output displays a demand circuit (DC) flag next to neighbor interfaces configured for demand circuits. If you configure demand circuits at the **[edit protocols rip group *group-name* neighbor *neighbor-name*]** hierarchy level, the output shows only the neighboring interface that you specifically configured as a demand circuit. If you configure demand circuits at the **[edit protocols rip group *group-name*]** hierarchy level, all of the interfaces in the group are configured as demand circuits. Therefore, the output shows all of the interfaces in that group as demand circuits.
State	State of the connection: **Up** or **Dn** (Down).
Source Address	Address of the port on the local router.
Destination Address	Address of the port on the remote router.
Send Mode	Send options: **broadcast**, **multicast**, **none**, or **version 1**.
Receive Mode	Type of packets to accept: **both**, **none**, **version 1**, or **version 2**.
In Met	Metric added to incoming routes when advertising into RIP routes that were learned from other protocols.

Sample Output

show rip neighbor

```
user@host> show rip neighbor
                    Local  Source          Destination     Send    Receive  In
Neighbor            State  Address         Address         Mode    Mode     Met
--------            -----  -------         -----------     ----    -------  ---
ge-2/3/0.0             Up  192.168.9.105   192.168.9.107   bcast   both       1
at-5/1/1.42            Dn  (null)          (null)          mcast   v2 only    3
at-5/1/0.42            Dn  (null)          (null)          mcast   both       3
at-5/1/0.0             Up  20.0.0.1        224.0.0.9       mcast   both       3
so-0/0/0.0             Up  192.168.9.97    224.0.0.9       mcast   both       3
```

show rip neighbor (With Demand Circuits Configured)

```
user@host> show rip neighbor
                    Local  Source          Destination     Send   Receive  In
Neighbor            State  Address         Address         Mode   Mode     Met
--------            -----  -------         -----------     ----   -------  ---
so-0/1/0.0(DC)         Up  10.10.10.2      224.0.0.9       mcast  both       1
so-0/2/0.0(DC)         Up  13.13.13.2      224.0.0.9       mcast  both       1
```

show rip statistics

List of Syntax
Syntax on page 72
Syntax (EX Series Switches and QFX Series) on page 72

Syntax

```
show rip statistics
<instance (all | instance-name)>
<logical-system (all | logical-system-name)>
<name>
<peer (all | address)>
```

Syntax (EX Series Switches and QFX Series)

```
show rip statistics
<instance (all | instance-name)>
<name>
```

Release Information
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 12.1 for the QFX Series.

Description
Display RIP statistics about messages sent and received on an interface, as well as information received from advertisements from other routing devices.

Options
none—Display RIP statistics for all routing instances.

instance (all | *instance-name*)—(Optional) Display RIP statistics for all instances or for only the specified routing instance.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Display detailed information about only the specified RIP neighbor.

peer (all | *address*)—(Optional) Display RIP statistics for a single peer or all peers.

Required Privilege Level
view

Related Documentation
- clear rip statistics on page 67

List of Sample Output
show rip statistics on page 73

Output Fields
Table 11 on page 73 lists the output fields for the **show rip statistics** command. Output fields are listed in the approximate order in which they appear.

Table 11: show rip statistics Output Fields

Field Name	Field Description
RIP info	Information about RIP on the specified interface: • **port**—UDP port number used for RIP. • **update interval**—Interval between routing table updates, in seconds. • **holddown**—Hold-down interval, in seconds. • **timeout**—Timeout interval, in seconds. • **restart in progress**—Graceful restart status. Displayed when RIP is or has been in the process of graceful restart. • **restart time**—Estimated time for the graceful restart to finish, in seconds. • **restart will complete in**—Remaining time for the graceful restart to finish, in seconds. • **rts learned**—Number of routes learned through RIP. • **rts held down**—Number of routes held down by RIP. • **rqsts dropped**—Number of received request packets that were dropped. • **resps dropped**—Number of received response packets that were dropped.
logical-interface	Name of the logical interface and its statistics: • **routes learned**—Number of routes learned on the logical interface. • **routes advertised**—Number of routes advertised by the logical interface.
Counter	List of counter types: • **Updates Sent**—Number of update messages sent. • **Triggered Updates Sent**—Number of triggered update messages sent. • **Responses Sent**—Number of response messages sent. • **Bad Messages**—Number of invalid messages received. • **RIPv1 Updates Received**—Number of RIPv1 update messages received. • **RIPv1 Bad Route Entries**—Number of RIPv1 invalid route entry messages received. • **RIPv1 Updates Ignored**—Number of RIPv1 update messages ignored. • **RIPv2 Updates Received**—Number of RIPv2 update messages received. • **RIPv2 Bad Route Entries**—Number of RIPv2 invalid route entry messages received. • **RIPv2 Updates Ignored**—Number of RIPv2 update messages ignored. • **Authentication Failures**—Number of received update messages that failed authentication. • **RIP Requests Received**—Number of RIP request messages received. • **RIP Requests Ignored**—Number of RIP request messages ignored.
Total	Total number of packets for the selected counter.
Last 5 min	Number of packets for the selected counter in the most recent 5-minute period.
Last minute	Number of packets for the selected counter in the most recent 1-minute period.

Sample Output

show rip statistics

```
user@host> show rip statistics so-0/0/0.0
```

```
RIP info: port 520; update interval: 30s; holddown 180s; timeout 120s
restart in progress: restart time 60s; restart will complete in 55s
    rts learned  rts held down  rqsts dropped  resps dropped
              0              0               0              0
so-0/0/0.0:  0 routes learned; 501 routes advertised
Counter                         Total   Last 5 min  Last minute
-------                     -----------  -----------  -----------
Updates Sent                          0            0            0
Triggered Updates Sent                0            0            0
Responses Sent                        0            0            0
Bad Messages                          0            0            0
RIPv1 Updates Received                0            0            0
RIPv1 Bad Route Entries               0            0            0
RIPv1 Updates Ignored                 0            0            0
RIPv2 Updates Received                0            0            0
RIPv2 Bad Route Entries               0            0            0
RIPv2 Updates Ignored                 0            0            0
Authentication Failures               0            0            0
RIP Requests Received                 0            0            0
RIP Requests Ignored                  0            0            0
```

CHAPTER 7

Operational Commands: RIPng

- clear ripng general-statistics
- clear ripng statistics
- show ripng general-statistics
- show ripng neighbor
- show ripng statistics

clear ripng general-statistics

List of Syntax Syntax on page 76
Syntax (EX Series Switches) on page 76

Syntax

```
clear ripng general-statistics
<logical-system (all | logical-system-name)>
```

Syntax (EX Series Switches)

```
clear ripng general-statistics
```

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

Description Clear RIP next generation (RIPng) general statistics.

Options

none—Clear RIPng general statistics.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level clear

Related Documentation

- show ripng general-statistics on page 78

List of Sample Output clear ripng general-statistics on page 76

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

Sample Output

clear ripng general-statistics

```
user@host> clear ripng general-statistics
```

clear ripng statistics

List of Syntax
Syntax on page 77
Syntax (EX Series Switch) on page 77

Syntax
clear ripng statistics
<*instance* | *name*>
<logical-system (all | *logical-system-name*)>

Syntax (EX Series Switch)
clear ripng statistics
<*instance* | *name*>

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

Description
Clear RIP next-generation (RIPng) statistics.

Options
none—Reset RIPng counters for all neighbors for all routing instances.

instance—(Optional) Reset RIPng counters for the specified instance.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Reset RIPng counters for the specified neighbor.

Required Privilege Level
clear

Related Documentation
- show ripng statistics on page 82

List of Sample Output
clear ripng statistics on page 77

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

Sample Output

clear ripng statistics

```
user@host> clear ripng statistics
```

show ripng general-statistics

List of Syntax Syntax on page 78
Syntax (EX Series Switch) on page 78

Syntax

```
show ripng general-statistics
<logical-system (all | logical-system-name)>
```

Syntax (EX Series Switch)

```
show ripng general-statistics
```

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

Description Display general RIP next-generation (RIPng) statistics.

Options **none**—Display general RIPng statistics.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level view

Related Documentation

- clear ripng general-statistics on page 76

List of Sample Output show ripng general-statistics on page 78

Output Fields Table 12 on page 78 lists the output fields for the **show ripng general-statistics** command. Output fields are listed in the approximate order in which they appear.

Table 12: show ripng general-statistics Output Fields

Field Name	Field Description
bad msgs	Number of invalid messages received.
no recv intf	Number of packets received with no matching interface.
curr memory	Amount of memory currently used by RIPng.
max memory	Most memory used by RIPng.

Sample Output

show ripng general-statistics

```
user@host> show ripng general-statistics
RIPng I/O info:
     bad msgs       :         0
     no recv intf   :         0
```

```
curr memory     :          0
max memory      :          0
```

show ripng neighbor

List of Syntax Syntax on page 80
Syntax (EX Series Switch) on page 80

Syntax

```
show ripng neighbor
<logical-system (all | logical-system-name)>
<name>
```

Syntax (EX Series Switch)

```
show ripng neighbor
<name>
```

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

Description Display information about RIP next-generation (RIPng) neighbors.

Options **none**—Display information about all RIPng neighbors.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Display detailed information about a specific RIPng neighbor.

Required Privilege Level view

List of Sample Output show ripng neighbor on page 81

Output Fields Table 13 on page 80 lists the output fields for the **show ripng neighbor** command. Output fields are listed in the approximate order in which they appear.

Table 13: show ripng neighbor Output Fields

Field Name	Field Description
Neighbor	Name of RIPng neighbor.
State	State of the connection: **Up** or **Dn** (Down).
Source Address	Source address.
Destination Address	Destination address.
Send	Send options: **broadcast**, **multicast**, **none**, **version 1**, or **yes.**
Recv	Type of packets to accept: **both**, **none**, **version 1**, or **yes.**
In Met	Metric added to incoming routes when advertising into RIPng routes that were learned from other protocols.

Sample Output

show ripng neighbor

```
user@host> show ripng neighbor
                    Source                          Dest              In
Neighbor     State  Address                         Address  Send Recv Met
--------     -----  -------                         -------  ---- ---- ---
fe-0/0/2.0      Up  fe80::290:69ff:fe68:b002        ff02::9  yes  yes    1
```

show ripng statistics

List of Syntax Syntax on page 82
Syntax (EX Series Switch) on page 82

Syntax

```
show ripng statistics
<logical-system (all | logical-system-name)>
<name>
```

Syntax (EX Series Switch)

```
show ripng statistics
<name>
```

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

Description Display RIP next generation (RIPng) statistics about messages sent and received on an interface, as well as information received from advertisements from other routing devices.

Options

none—Display RIPng statistics for all neighbors.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Display detailed information about a specific RIPng neighbor.

Required Privilege Level view

Related Documentation

- clear ripng statistics on page 77

List of Sample Output show ripng statistics on page 83

Output Fields Table 14 on page 82 lists the output fields for the **show ripng statistics** command. Output fields are listed in the approximate order in which they appear.

Table 14: show ripng statistics Output Fields

Field Name	Field Description
RIPng info	Information about RIPng on the specified interface: • **port**—UDP port number used for RIPng. • **holddown**—Hold-down interval, in seconds. • **rts learned**—Number of routes learned through RIPng. • **rts held down**—Number of routes held down by RIPng. • **rqsts dropped**—Number of received request packets that were dropped. • **resps dropped**—Number of received response packets that were dropped. • **restart**—Graceful restart status. Displayed when RIPng is or has been in the process of graceful restart.

Table 14: show ripng statistics Output Fields *(continued)*

Field Name	Field Description
logical-interface	Name of the logical interface and its statistics: • **routes learned**—Number of routes learned on the logical interface. • **routes advertised**—Number of routes advertised by the logical interface. • **timeout**—Timeout interval, in seconds. • **update interval**—Interval between routing table updates, in seconds.
Counter	List of counter types: • **Updates Sent**—Number of update messages sent. • **Triggered Updates Sent**—Number of triggered update messages sent. • **Responses Sent**—Number of response messages sent. • **Bad Messages**—Number of invalid messages received. • **Updates Received**—Number of RIPng update messages received. • **Bad Route Entries**—Number of RIPng invalid route entry messages received. • **Updates Ignored**—Number of RIPng update messages ignored. • **RIPng Requests Received**—Number of RIPng request messages received. • **RIPng Requests Ignored**—Number of RIPng request messages ignored.
Total	Total number of packets for the selected counter.
Last 5 min	Number of packets for the selected counter in the most recent 5-minute period.
Last minute	Number of packets for the selected counter in the most recent 1-minute period.

Sample Output

show ripng statistics

```
user@host> show ripng statistics
RIPng info: port 521; holddown 120s;
    rts learned  rts held down  rqsts dropped  resps dropped
              0              0              0              0

so-0/1/3.0:  0 routes learned; 1 routes advertised; timeout 180s; update interval
 20s
Counter                         Total   Last 5 min  Last minute
-------                   -----------  -----------  -----------
Updates Sent                      934           16            4
Triggered Updates Sent              1            0            0
Responses Sent                      0            0            0
Bad Messages                        0            0            0
Updates Received                    0            0            0
Bad Route Entries                   0            0            0
Updates Ignored                     0            0            0
RIPng Requests Received             0            0            0
RIPng Requests Ignored              0            0            0
```