1 RIPng Commands

Command	Function
clear ipv6 rip	Delete Routing Information Protocol next generation (RIPng) routes.
default-metric	Define the default metric of RIPng when routes are redistributed using other routing protocols.
distance	Configure the management distance of RIPng routes.
distribute-list	Configure and use a prefix list to filter the inbound/outbound update routes.
graceful-restart	Configure the RIPng graceful restart (GR) function of a device.
ipv6 rip default-information	Configure and generate a default IPv6 path to RIPng.
ipv6 rip enable	Enable RIPng on an interface.
ipv6 rip metric-offset	Configure the metric on an interface.
ipv6 rip subvlan	Enable the RIPng function on a super VLAN.
ipv6 router rip	Create a RIPng routing process and enter routing process configuration mode.
passive-interface	Prohibit an interface from sending RIPng update packets.
redistribute	Configure to redistribute the paths of other routing domains to RIPng.
show ipv6 rip	Display the parameters and all the statistics of a RIPng routing protocol process.
show ipv6 rip database	Display the entry information of a RIPng routing table.
split-horizon	Enable the split horizon function of RIPng.
timers	Configure and adjust the timers of RIPng.

1.1 clear ipv6 rip

Function

Run the **clear ipv6 rip** command to delete Routing Information Protocol next generation (RIPng) routes.

Syntax

clear ipv6 rip

Parameter Description

N/A

Command Modes

Privileged EXEC mode

Default Level

14

Usage Guidelines

Running this command deletes all the routes sent by RIPng, which may cause service interruption.

Examples

The following command deletes RIPng routes.

```
Hostname> enable
Hostname# clear ipv6 rip
```

Notifications

N/A

Platform Description

N/A

1.2 default-metric

Function

Run the **default-metric** command to define the default metric of RIPng when routes are redistributed using other routing protocols.

Run the **no** form of this command to restore the default configuration.

By default, the metric for route redistribution is 1.

Syntax

default-metric *metric*

no default-metric

Parameter Description

metric-value: Default metric value. The value range is from 1 to 16. If the value of *metric-value* is equal to or greater than 16, the device determines that this route is unreachable.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

This command must be used together with the **redistribute** command. When a route is redistributed from another routing protocol process to the RIP route process, the route metric cannot be converted because the metric calculating mechanism is different for each routing protocol. Therefore, in the process of transformation, you need to define the metric of redistributed route in the RIP routing domain. If the metric is not specified during redistribution of a routing protocol process, RIP uses the metric defined by the **default-metric** command. If the metric is specified, the metric defined by the **default-metric** command is overwritten by the specified metric. If this command is not configured, the metric value is **1** by default.

Examples

The following example sets the default metric value of RIPng to **3** when OSPF 100 is redistributed.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config-router)# default-metric 3
Hostname(config-router)# redistribute ospf 100
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip database**

1.3 distance

Function

Run the **distance** command to configure the management distance of RIPng routes.

Run the **no** form of this command to restore the default configuration.

The management distance is **120** by default.

Syntax

distance *distance*

no distance

Parameter Description

distance: Management distance of RIPng routes. The value range is from 1 to 255.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

This function is used to set the management distance of RIP routes and change the priority of a device in routing.

Examples

The following example sets the management distance of RIPng routes to **160**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config)# ipv6 router rip
Hostname(config-router)# distance 160
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.4 distribute-list

Function

Run the **distribute-list** command to configure and use a prefix list to filter the inbound/outbound update routes.

Run the **no** form of this command to cancel the corresponding filtering process.

By default, the distribution list is disabled.

Syntax

distribute-list prefix-list *prefix-list-name* { **in** | **out** } [*interface-type interface-number*]

no distribute-list prefix-list *prefix-list-name* { **in** | **out** } [*interface-type interface-number*]

Parameter Description

prefix-list *prefix-list-name*: Specifies the name of the prefix list, which is used to filter routes.

in | **out**: Specifies update routes (received or sent routes) that are filtered.

interface-type interface-number: Interface for which the distribution list will be used.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

To refuse receiving or sending some specified routes, you can configure a route distribution control list to filter all the route update packets. If no interface is specified, route update packets on all interfaces will be filtered.

Examples

The following example configures and uses the prefix list allowpre to filter the update routes received by the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config)# ipv6 router rip
Hostname(config-router)# distribute-list prefix-list allowpre in GigabitEthernet
0/1
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.5 graceful-restart

Function

Run the **graceful-restart** command to configure the RIPng graceful restart (GR) function of a device.

Run the **no** form of this command to restore the default configuration.

The GR function is enabled by default.

Syntax

graceful-restart [**grace-period** *grace-period*]

no graceful-restart [**grace-period**]

Parameter Description

graceful-restart: Enables the GR function.

grace-period *grace-period*: Specifies the GR period, in seconds. The value range is 1 to 1800. The default value is twice the update time or 60s, whichever is the smaller.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

The GR function is configured based on RIPng instances. You can configure different parameters for different RIPng instances based on the actual conditions.

The GR period is the maximum time from restart of the RIPng process to completion of GR. During this period, the forwarding table before the restart is retained, and the RIPng route is restored so as to restore the RIPng state before the restart. After the restart period expires, RIPng exits the GR state and performs common RIPng operations.

The **graceful-restart grace-period** command allows you to explicitly modify the GR period. Note that GR must be completed before the invalid timer of the RIPng route expires. An inappropriate GR period cannot ensure uninterrupted data forwarding during the GR process. A typical case is as follows: If the GR period is longer than the duration of the invalid timer, GR is not completed when the invalid timer expires. The route is not re-advertised to the neighbor, and forwarding of the route of the neighbor stops after the invalid timer expires, causing interruption of data forwarding on the network. Unless otherwise required, you are not advised to adjust the GR period. If it is necessary to adjust the GR period, ensure that the GR period is longer than the duration of the update timer but shorter than the duration of the invalid timer based on the configuration of the **timers** command.

During the RIPng GR process, ensure that the network environment is stable.

Examples

The following example configures the RIPng GR function of a device, and sets the GR period to 90s.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config-router)# graceful-restart grace-period 90
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.6 ipv6 rip default-information

Function

Run the **ipv6 rip default-information** command to configure and generate a default IPv6 path to RIPng.

Run the **no** form of this command to delete the default IPv6 path.

By default, default route advertisement is disabled on an interface.

Syntax

ipv6 rip default-information { **only** | **originate** } [**metric** *metric-value*]

no ipv6 rip default-information

Parameter Description

only: Advertises only the IPv6 default route.

originate: Advertises the IPv6 default route and other routes.

metric *metric-value*: Specifies the metric of the default route. The value range is from 1 to 15, and the default value is **1**.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

This command is used to introduce the default route to an autonomous system (AS) edge device so that other devices in the RIPng domain access other AS domains through this AS edge device by default. In the routing table, a route to the destination network ::/0 is called default route. The default route can be learned from a neighbor device, or sent to a neighbor device. Please configure and distribute the default route according to the actual situation of networking, or specify the cost of the distributed default route.

After this command is configured on the interface, an IPv6 default route is advertised to the external devices through this interface, but the route itself is not added to the route forwarding table or the device and the RIPng route database.

To prevent occurrence of a route loop, once this command is configured on an interface, RIPng refuses to receive the default route updates advertised by neighbors.

Examples

The following example configures to generate a default IPv6 route to RIPng on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ipv6 rip default-information only
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.7 ipv6 rip enable

Function

Run the **ipv6 rip enable** command to enable RIPng on an interface.

Run the **no** form of this command to disable RIPng on a specified interface.

By default, an interface is not added to the RIPng process.

Syntax

ipv6 rip enable

no ipv6 rip enable

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

This command is used to set an interface participating in the running of RIPng. If RIPng is not running before the command is configured, configuring the command automatically runs the RIPng routing protocol.

Examples

The following example enables RIPng on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ipv6 rip enable
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.8 ipv6 rip metric-offset

Function

Run the **ipv6 rip metric-offset** command to configure the metric on an interface.

Run the **no** form of this command to cancel the corresponding configuration.

By default, the metric on an interface is **1**.

Syntax

ipv6 rip metric-offset *metric*

no ipv6 rip metric-offset

Parameter Description

metric: Metric on an interface. The value range is from 1 to 16.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

Before a route is added to the routing table, the metric of the route must be added with the metric offset set on the interface. You can control the use of a route by setting the interface metric offset.

Examples

The following example sets the metric on the GigabitEthernet 0/1 interface to **5**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ipv6 rip metric-offset 5
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.9 ipv6 rip subvlan

Function

Run the **ipv6 rip subvlan** command to enable the RIPng function on a super VLAN.

Run the **no** form of this command to restore the default configuration.

By default, the RIPng function is disabled on a super VLAN.

Syntax

ipv6 rip subvlan [**all** | *vid*]

no ipv6 rip subvlan

Parameter Description

all: Allows sending packets to all sub VLANs.

vid: Sub VLAN ID. The value range is from 1 to 4094.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

In normal cases, a super VLAN contains multiple sub VLANs. Multicast packets of a super VLAN are also sent to its sub VLANs. In this case, when RIP multicast packets are sent over a super VLAN containing multiple sub VLANs, the RIP multicast packets are replicated multiple times, and the device processing capability is insufficient. As a result, a large number of packets are discarded, causing protocol flapping.

In most scenarios, the RIPng function does not need to be enabled on a super VLAN, and it is disabled by default. However, in some scenarios, the RIPng function must be run on the super VLAN, but packets need to

be sent to only one sub VLAN. In this case, you can decide to send multicast packets to a certain sub VLAN or to all sub VLANs as actually needed. You can run this command to specify a particular sub VLAN. You must be cautious when configuring packet transmission to all sub VLANs, as the large number of sub VLANs may cause a device processing bottleneck, which will lead to the neighbor flapping.

Examples

The following example enables the RIPng function on Super VLAN 300 and allows sending packets to Sub VLAN 1024.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface vlan 300
Hostname(config-if-VLAN 300)# ipv6 rip subvlan 1024
```

Notifications

N/A

Common Errors

The function is configured on a non-super VLAN.

The specified sub VLAN on the super VLAN cannot implement interworking with its neighbors.

Platform Description

N/A

Related Commands

N/A

1.10 ipv6 router rip

Function

Run the **ipv6 router rip** command to create a RIPng routing process and enter routing process configuration mode.

Run the **no** form of this command to delete the RIPng routing process.

The RIPng routing process is disabled by default.

Syntax

ipv6 router rip

no ipv6 router rip

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

This command is used to create a RIPng routing process and enter routing process configuration mode.

Examples

The following example creates a RIPng routing process and enters routing process configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
```

Notifications

When the IPv6 unicast function is not enabled and you cannot configure this command, the following notification will be displayed:

```
IPv6 unicast-routing not enabled, RIPng process can't configure
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.11 passive-interface

Function

Run the **passive-interface** command to prohibit an interface from sending RIPng update packets.

Run the **no** form of this command to re-enable the function of sending RIPng update packets.

By default, a RIPng-enabled interface is allowed to send and receive RIPng update packets normally.

Syntax

passive-interface { **default** | *interface-type interface-num* }

no passive-interface { **default** | *interface-type interface-num* }

Parameter Description

default: Sets all the interfaces to passive mode.

interface-type interface-num: Interface type and interface number.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

A passive interface is set with the boundary of RIPng routing domain. The network segment of the passive interface belongs to the RIPng routing domain, but RIPng packets cannot be sent over the passive interface.

The interface set to a passive interface suppresses RIP update packets. A passive interface defines the boundary of RIP routing domain to avoid unwanted flooding of RIP packets. If the interface connection device does not run the RIP routing protocol (such as a PC and a device running other routing protocols), you are advised to configure this interface as a passive interface.

If RIPng routes need to be exchanged on an interface (such as the device interconnection interface) in the RIPng routing domain, this interface cannot be configured as a passive interface.

Examples

The following example sets all interfaces to passive mode, and enables the function of sending update packets on the Gigabit Ethernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config-router)# passive-interface default
Hostname(config-router)# no passive-interface GigabitEthernet 0/1
```

Notifications

When the configured interface is invalid or does not exist, the following notification will be displayed:

```
% Interface is invalid.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.12 redistribute

Function

Run the **redistribute** command to configure to redistribute the paths of other routing domains to RIPng.

Run the **no** form of this command to cancel the corresponding redistribution configuration.

The redistribution function is not configured by default. This function redistributes the routes of all subtypes of the specified routing process.

Syntax

redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **static** } [**metric** *metric-value* | **route-map** *route-map-name*] *

no redistribute { **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **static** } [**metric** | **route-map**] *

Parameter Description

bgp: Indicates redistribution from BGP.

connected: Indicates redistribution from direct routes.

isis [*area-tag*]: Indicates redistribution from IS-IS. *area-tag* indicates the IS-IS process ID.

ospf *process-id*: Indicates redistribution from OSPF. *process-id* indicates the OSPF process ID. The value range is from 1 to 65535.

static: Indicates redistribution from static routes.

metric *metric-value*: Sets the metric of the route redistributed to the RIPng domain. The value range is from 1 to 16, and the default value is **1**.

route-map *route-map-name*: Indicates the associated route map, which is used to set the redistribution filtering rules.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

RIPng can distribute the routes of other routing protocols in the local routing domain so that the devices in the routing domain can access other routing domains.

During route redistribution, different routing protocols use different metric measurement methods. For example, RIPng measures the metric based on the hop count, and OSPF measures the metric based on the bandwidth. Therefore, the computed metrics cannot be compared with each other. During route redistribution, however, it is necessary to configure a symbolic metric; otherwise, route redistribution fails.

Examples

The following example configures redistributing the static routes satisfying the route map mymap into RIPng.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config-router)# redistribute static route-map mymap metric 8
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- show ipv6 rip database

1.13 show ipv6 rip

Function

Run the **show ipv6 rip** command to display the parameters and all the statistics of a RIPng routing protocol process.

Syntax

show ipv6 rip

Parameter Description

N/A

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

The command can be used to quickly display the three timers, route distribution, route redistribution status, RIPng version of interface, RIPng interface, network scope, metric, management distance, and other information of a RIPng routing protocol process.

Examples

The following example displays the parameters and all the statistics of a RIPng routing protocol process.

```
Hostname> enable
Hostname# show ipv6 rip
Routing Protocol is "RIPng"
  Sending updates every 10 seconds with +/-50%, next due in 8 seconds
  Timeout after 30 seconds, garbage collect after 60 seconds
  Outgoing update filter list for all interface is:
    distribute-list prefix aa out
  Incoming update filter list for all interface is: not set
  Default redistribution metric is 1
  Distance: 120 (default is 120)  Redistribution:
      Redistributing protocol connected route-map rm
      Redistributing protocol static
      Redistributing protocol ospf 1
  Default version control:  send version 1, receive version 1
  Interface                 Send   Recv
```

```
    VLAN 1                1       1
    Loopback 1            1       1
Routing Information Sources:
    None
```

Table 1-1Output Fields of the show ipv6 rip Command

Field	Description
Sending update	Indicates the interval for sending update packets.
Sending update	Indicates the failure time.
garbage	Indicates the recovery time.
Outgoing update filter list	Indicates the configured filter table of sent packets.
Incoming update filter	Indicates the configured filter table of received packets.
Default redistribution metric	Indicates the default redistribution metric.
distance	Indicates the management distance.
Redistribution	Indicates the redistribution routing protocol.
Default version control	Indicates the default RIPng version No. received/sent.
Interface	Indicates the interface that joins the RIPng process.
Routing Information Sources:	Routing Info

Notifications

N/A

Platform Description

N/A

1.14 show ipv6 rip database

Function

Run the **show ipv6 rip database** command to display the entry information of a RIPng routing table.

Syntax

show ipv6 rip database

Parameter Description

N/A

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

This command is used to display the information of each entry in the RIPng routing table.

Examples

The following example displays the information of each entry in the RIPng routing table.

```
Hostname# show ipv6 rip database
Codes: R - RIPng,C - Connected,S - Static,O - OSPF,B - BGP
sub-codes:n - normal,s - static,d - default,r - redistribute,
          i - interface, a/s - aggregated/suppressed
S(r)   2001:db8:1::/64, metric 1, tag 0
          Loopback 0/::
S(r)   2001:db8:2::/64, metric 1, tag 0
          Loopback 0/::
C(r)   2001:db8:3::/64, metric 1, tag 0
          VLAN 1/::
S(r)   2001:db8:4::/64, metric 1, tag 0
          Null 0/::
C(i)   2001:db8:5::/64, metric 1, tag 0
          Loopback 1/::
S(r)   2001:db8:6::/64, metric 1, tag 0
          Null 0/::
```

Table 1-1Output Fields of the show ipv6 rip database Command

Field	Description
codes	Indicates the route type and corresponding abbreviation description.
2001:db8:1::	Indicates the corresponding prefix of the route.
metric 1	Indicates the corresponding metric of the route.
VLAN 1/::	Indicates the route interface.

Notifications

N/A

Platform Description

N/A

1.15 split-horizon

Function

Run the **split-horizon** command to enable the split horizon function of RIPng.

Run the **split-horizon poisoned-reverse** command to enable split horizon with poison reverse.

Run the **no** form of this command to disable split horizon with poison reverse.

By default, the split horizon function without poison reverse is enabled on an interface.

Syntax

split-horizon

split-horizon poisoned-reverse

no split-horizon poisoned-reverse

Parameter Description

poisoned-reverse: Enables split horizon with poison reverse.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

In update packets, the split horizon function can prevent a device from advertising some routing information from the interface that has learned the routing information. The split horizon with poison reverse advertises some routing information from the interface that has learned the routing information, but sets the corresponding metric value to **16**.

The RIPng routing protocol falls into distance vector routing protocols, so the problem of split horizon must be noted in the actual application. If you cannot determine whether split horizon has been enabled for RIPng, you can run the **show ipv6 rip** command to make judgment.

Examples

The following example disables split horizon of RIPng.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config-router)# no split-horizon
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ipv6 rip**

1.16 timers

Function

Run the **timers** command to configure and adjust the timers of RIPng.

Run the **no** form of this command to restore the default configuration.

By default, the update timer is 30s, the invalid timer is 180s, and the flush timer is 120s.

Syntax

timers *update invalid flush*

no timers

Parameter Description

update: Route update time, in seconds. The parameter defines the interval at which a device sends route update packets. Each time an update packet is received, the invalid timer and flush timer are reset. The value range is from 0 to 2147483647.

invalid: Route invalid time, in seconds, counted from the last time when a valid update packet is received. The *invalid* parameter defines the time after which a route in the routing table becomes invalid because the route is not updated. The duration of the invalid timer must be at least three times the duration of the update timer. If no update packet is received before the invalid timer expires, the corresponding route enters the invalid state. If a route update packet is received within the time of *invalid*, the timer is reset. The value range is from 0 to 2147483647.

flush: Route flushing time, in seconds, counted from the time when the RIPng route enters the invalid state. When the flush timer expires, the route in the invalid state will be deleted from the routing table. The value range is from 0 to 2147483647.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

Adjusting the above timers may reduce the convergence time and failback time of the routing protocol. For devices connected to the same network, values of the three RIPng timers must be the same. Generally, you are not advised to modify the RIP timers unless otherwise required.

You can run the **show ipv6 rip** command to display the current parameter settings of RIPng timers.

Note

Setting timers to small values on a low-speed link brings risks because a lot of Update packets consume the bandwidth. You can set timers to small values generally on the Ethernet or a 2 Mbps (or above) link to reduce the convergence time of network routes.

Examples

The following example configures to send RIP update packets every 10s. If no update packet is received within 30s, the corresponding route will become invalid and enter the invalid state. After entering the invalid state for more than 90s, the route will be deleted from the routing table.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ipv6 router rip
Hostname(config-router)# timers 10 30 90
```

Notifications

N/A

Common Errors

Different RIPng timers are configured on different devices. Consequently, routes cannot be learned properly.

Platform Description

N/A

Related Commands

- **show ipv6 rip**