

1 RIP Commands

Command	Function
address-family	Enter address family submode to configure the Routing Information Protocol (RIP).
auto-summary	Enable the automatic summarization function of RIP routes.
bfd all-interfaces	Configure link detection through bidirectional forwarding detection (BFD) for all the interfaces of RIP.
default-information originate	Generate a default route in the RIP process.
default-metric	Configure the default metric for RIP.
distance	Configure the management distance of a RIP route.
distribute-list in	Configure and control route update processing to implement route filtering.
distribute-list out	Configure and control route update advertisement to implement route filtering.
enable mib-binding	Bind the management information base (MIB) with a specified RIP instance.
exit-address-family	Exit the address family configuration mode.
fast-reroute	Configure the RIP fast reroute function of a device.
graceful-restart	Configure the graceful restart (GR) function of a device.
ip rip authentication key-chain	Enable RIP authentication and specify the key chain to be used for RIP authentication.
ip rip authentication mode	Configure the mode of RIP authentication.
ip rip authentication text-password	Enable RIP authentication and set the character string of plain text authentication.
ip rip bfd	Configure BFD for link detection on the specified interface.
ip rip default-information	Configure default route advertisement on a RIP interface.

ip rip receive enable	Allow RIP to receive RIP packets on the specified interface.
ip rip receive version	Define the version of RIP packets to be received by RIP on the specified interface.
ip rip send enable	Allow RIP to send RIP packets on the specified interface.
ip rip send supernet-routes	Allow RIP to send supernetting routes on the specified interface.
ip rip send version	Define the version of RIP packets to be sent by RIP on the specified interface.
ip rip split-horizon	Enable the split horizon function of RIP.
ip rip subvlan	Enable the RIP function on a super VLAN.
ip rip summary-address	Configure the RIP route summarization on an interface.
ip rip triggered	Enable the RIP triggered updates function of demand circuits, and configure the retransmission time and retransmission times of the RIP triggered updates.
ip rip v2-broadcast	Allow RIPv2 packets to be broadcast on the specified interface.
neighbor	Configure the IP address of a RIP neighbor.
network	Configure the list of networks to be advertised by the RIP routing process.
offset-list	Increase the metric of a received or sent RIP route.
output-delay	Set the sending delay between RIP update packets.
passive-interface	Prohibit an interface from sending RIP update packets.
redistribute	Redistribute the external routing information.
router rip	Create a RIP routing process and enter routing process configuration mode.
show ip rip	Display the basic information of a RIP routing protocol process.
show ip rip database	Display the route summary in a RIP route database.
show ip rip external	Display the information about external routes

	redistributed by RIP.
show ip rip interface	Display the information about a RIP interface.
show ip rip peer	Display the information about a RIP neighbor.
timers basic	Adjust the clock of RIP.
validate-update-source	Validate the source address of a received RIP route update packet.
version	Configure the RIP version No. of the entire device.

1.1 address-family

Function

Run the **address-family** command to enter address family submode to configure the Routing Information Protocol (RIP).

Run the **no** form of this command to delete the address family configured with a routing protocol.

The address family of RIP is disabled by default.

Syntax

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

Parameter Description

vrf *vrf-name*: Specifies the name of the VRF associated with address family configuration submode.

Command Modes

Routing configuration mode

Default Level

14

Usage Guidelines

You can run the **address-family** command to enter address family configuration submode. When the VRF associated with the address family configuration submode is specified for the first time, a RIP instance corresponding to the VRF will be created. In this submode, you can configure the RIP routing information for the related VRF.

To exit address family configuration submode and return to routing process configuration mode, you can run the **exit-address-family** or **exit** command.

Examples

The following example enters the VPN1 address family submode to configure the RIP routing protocol, and create a corresponding RIP instance for the VRF.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf vpn1
Hostname(config-vrf)# exit
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip vrf forwarding vpn1
Hostname(config-if-GigabitEthernet 0/1)# ip address 192.168.1.1 255.255.255.0
Hostname(config)# router rip
Hostname(config-router)# address-family ipv4 vrf vpn1
Hostname(config-router-af)# network 192.168.1.0
Hostname(config-router-af)# exit-address-family
```

Notifications

When the VRF associated with the address family does not exist, the following notification will be displayed:

```
% VRF vpn1 doesn't exist
```

Common Errors

N/A

Platform Description

N/A

Related Commands

[router rip](#)

1.2 auto-summary

Function

Run the **auto-summary** command to enable the automatic summarization function of RIP routes.

Run the **no** form of this command to disable the automatic summarization function of RIP routes.

The automatic summarization function of RIP routes is enabled by default.

Syntax

auto-summary

no auto-summary

Parameter Description

N/A

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

Automatic summarization of RIP routes means that multiple subnet routes are automatically summarized into a classful network route when they cross the boundary of a classful network. For RIPv1 and RIPv2, routes are automatically summarized by default.

If a summarized route exists, subroutes included in the summarized route cannot be seen in the routing table, which reduces the size of the routing table.

Advertising a summarized route is more efficient than advertising individual routes because:

- A summarized route is processed preferentially when RIP looks through the database.
- All subroutes are ignored when RIP looks through the database, which reduces the processing time required.

To learn specific subnet routes, you can disable automatic route summarization. Automatic route summarization can only be disabled using RIPv2. The range of supernetting routes is larger than that of the classful network. Therefore, this command is invalid for supernetting routes.

Examples

The following example disables automatic route summarization of RIPv2.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# version 2
Hostname(config-router)# no auto-summary
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.3 bfd all-interfaces

Function

Run the **bfd all-interfaces** command to configure link detection through bidirectional forwarding detection (BFD) for all the interfaces of RIP.

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

The BFD function is disabled by default.

Syntax

bfd all-interfaces

no bfd all-interfaces

Parameter Description

N/A

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

After BFD is enabled on RIP, a BFD session will be set up for the RIP routing information source (that is, the source address of RIP route update packets). Once the BFD neighbor fails, the corresponding RIP route information directly enters the invalid state and is not forwarded.

You can also run the **ip rip bfd [disable]** command in interface configuration mode to enable or disable the BFD function on a specified interface, and this configuration takes precedence over the **bfd all-interfaces** command used in routing process configuration mode.

Examples

The following example configures all interfaces running RIP to conduct BFD link detection.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# bfd all-interfaces
```

Notifications

When your peer device also needs to be configured with BFD to prevent route learning from being affected, the following notification will be displayed:

```
% Warning: The BFD for RIP peer shall be enabled, or it would affect the route learning.
```

Common Errors

BFD is not enabled on the interconnected devices at the same time.

Platform Description

N/A

Related Commands

- [show ip rip](#)

1.4 default-information originate

Function

Run the **default-information originate** command to generate a default route in the RIP process.

Run the **no** form of this command to cancel the generated default route.

There is no default route in the RIP process by default.

Syntax

```
default-information originate [ always ] [ metric metric-value ] [ route-map route-map-name ]
```

```
no default-information originate [ always ] [ metric ] [ route-map route-map-name ]
```

Parameter Description

always: Enables RIP to generate a default route no matter whether the local router has a default route.

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

route-map *route-map-name*: Specifies the name of the associated route map. No route map is associated by default.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

If a default route exists in the routing table of a device, RIP does not advertise the default route to external entities by default. You need to run the configuration command **default-information originate** to advertise the default route to neighbors.

If the RIP process can generate a default route using this command, RIP does not learn the default route advertised by the neighbor.

You still need to run the **default-information originate** command to introduce the default route generated by **ip default-network** to RIP.

The parameters are used as follows:

- If the **always** parameter is configured, the RIP routing process advertises a default route to neighbors no matter whether the default route exists, but this default route is not displayed in the local routing table. To check whether the default route is generated, run the **show ip rip database** command to check the RIP routing information database.
- To further control the behavior of advertising the RIP default route, use the **route-map** parameter. For example, run the **set metric** rule to set the metric of the default route.
- You can use the **metric** parameter to set the metric of the advertised default value, but the priority of this configuration is lower than that of the **set metric** rule of the route map. If the **metric** parameter is not configured, the default route uses the default metric configured for RIP.

Examples

The following example generates a default route in the RIP process.

```
Hostname> enable
Hostname# configure terminal
Hostname(config-router)# default-information originate always
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip database](#)

1.5 default-metric

Function

Run the **default-metric** command to configure the default metric for RIP.

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

By default, the metric of a redistributed route is 1.

Syntax

default-metric *metric-value*

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 value of metric is 1 by default.

Examples

The following example uses the RIP to redistribute the route learned by the Open Shortest Path First (OSPF) routing protocol, and sets the initial RIP metric to 3.

```
Hostname(config)# 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 ip rip database](#)
- [redistribute](#)

1.6 distance

Function

Run the **distance** command to configure the management distance of a RIP route.

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

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

Syntax

distance *distance* [*ipv4-address wildcard*]

no distance [*distance ipv4-address wildcard*]

Parameter Description

distance: Management distance of a RIP route. The value range is an integer from 1 to 255.

ipv4-address: Prefix of the source IP address of the route.

wildcard: IP address comparison bit. Value 0 indicates accurate matching, and 1 indicates that no comparison is performed.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

This command is used to configure the management distance of a RIP route.

You can run this command to create multiple management distances with source address prefixes. When the source address of a RIP route is within the range of these prefixes, the corresponding management distance will be used; otherwise, the management distance set by RIP will be used for the route.

Examples

The following example configures the management distance of RIP route as 160, and specifies the management distance of the route learned from 192.168.12.1 as **123**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# distance 160
Hostname(config-router)# distance 123 192.168.12.1 0.0.0.0
```

Notifications

When the configured mask is incorrect, the following notification will be displayed:

```
% Invalid mask value
```

Common Errors

The configured mask is incorrect.

Platform Description

N/A

Related Commands

- [show ip rip](#)

1.7 distribute-list in

Function

Run the **distribute-list in** command to configure and control route update processing to implement route filtering.

Run the **no** form of this command to delete the configured inbound distribution list.

There is no inbound distribution list by default.

Syntax

```
distribute-list { [ acl-number | acl-name ] | prefix prefix-list-name [ gateway prefix-list-name ] | [ gateway prefix-list-name ] } in [ interface-type interface-number ]
```

```
no distribute-list { [ acl-number | acl-name ] | prefix prefix-list-name [ gateway prefix-list-name ] | [ gateway prefix-list-name ] } in [ interface-type interface-number ]
```

Parameter Description

acl-number: ACL No. Only routes permitted by the access list can be received. The following value ranges are supported.

The value range of IP standard ACL is 1 to 99 or 1300 to 1999; the value range of IP extended ACL is 100 to 199 or 2000 to 2699.

acl-name: ACL name. The value is a case-sensitive string of 1 to 99 characters. Only routes permitted by the access list can be received.

prefix *prefix-list-name*: Uses the prefix list to filter routes.

gateway *prefix-list-name*: Uses the prefix list to filter the route sources.

interface-type interface-number: Specified interface only on which the distribution list is used.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

To refuse receiving some specified routes, you can configure the route distribution control list to process all the received route update packets. If no interface is specified, route update packets received on all interfaces will be processed.

Examples

The following example configures the RIP routing process to control route update processing over the GigabitEthernet 0/1 interface and allows receiving only routes of the 172.16.0.0/16 address segment of ACL 10.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# network 200.168.23.0
Hostname(config-router)# distribute-list 10 in GigabitEthernet 0/1
Hostname(config-router)# no auto-summary
Hostname(config)# access-list 10 permit 172.16.0.0 0.0.255.255
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ip route** (IP Routing Basic)

1.8 distribute-list out

Function

Run the **distribute-list out** command to configure and control route update advertisement to implement route filtering.

Run the **no** form of this command to delete route update advertisement control to implement route filtering.

There is no outbound distribution list by default.

Syntax

```
distribute-list { [ acl-name | acl-number ] | prefix prefix-list-name } out [ interface-type interface-number | bgp | connected | isis [ area-tag ] | ospf process-id | rip | static ]
```

```
no distribute-list { acl-name | acl-number | prefix prefix-list-name } out [ interface-type interface-number | bgp | connected | isis [ area-tag ] | ospf process-id | rip | static ]
```

Parameter Description

acl-number: ACL No. Only routes permitted by the access list can be sent. The following value ranges are supported.

The value range of IP standard ACL is 1 to 99 or 1300 to 1999; the value range of IP extended ACL is 100 to 199 or 2000 to 2699.

acl-name: ACL name. The value is a case-sensitive string of 1 to 99 characters. Only routes permitted by the access list can be sent.

prefix *prefix-list-name*: Uses the prefix list to filter routes.

interface-type interface-number: Specified interface only to which the route update advertisement control is applicable.

bgp: Applies route update advertisement control only to the routes introduced from Border Gateway Protocol (BGP).

connected: Applies route update advertisement control only to the routes introduced through direct connection.

isis [*area-tag*]: Applies route update advertisement control only to the routes introduced from Intermediate System to Intermediate System (IS-IS). Here, *area-tag* specifies an IS-IS instance.

ospf *process-id*: Applies route update advertisement control only to the routes introduced from OSPF. Here, *process-id* specifies an OSPF instance.

rip: Applies route update advertisement control only to RIP routes.

static: Applies route update advertisement control only to static routes.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

- If this command is configured without any optional parameters, route update advertisement control takes effect on all the interfaces.
- If any interface option is configured, route update advertisement control takes effect on the specified interface only.
- If other routing process parameters are configured, route update advertisement control takes effect on the specified routing processes only.

Examples

The following example configures the RIP routing process to control route update advertisement processing and allows externally advertising only routes of the 192.168.12.0/24 address segment of ACL 10.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# network 200.4.4.0
```

```
Hostname(config-router)# network 192.168.12.0
Hostname(config-router)# distribute-list 10 out
Hostname(config-router)# version 2
Hostname(config)# access-list 10 permit 192.168.12.0 0.0.0.255
```

Notifications

When gateway filtering cannot be used for **out** configuration by default, the following notification will be displayed:

```
% Gateway not allowed with OUT in distribute-list cmd
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show ip route rip** (IP Routing Basic)

1.9 enable mib-binding

Function

Run the **enable mib-binding** command to bind the management information base (MIB) with a specified RIP instance.

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

By default, the MIB is bound with the RIP instance of the default VRF.

Syntax

enable mib-binding

no enable mib-binding

Parameter Description

N/A

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

The RIP MIB does not have RIP instance information. Therefore, you must perform operations only on one instance through SNMP. By default, the RIP MIB is bound with the RIP instance of the default VRF, and all user operations take effect on this instance.

If you wish to perform operations on a specified RIP instance through SNMP, run this command to bind the MIB with the instance.

Examples

The following example configures to bind MIB to the specified RIP instance, and operate the RIP instance with VRF as VPN 1 through SNMP.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# address-family ipv4 vrf vpn1
Hostname(config-router-af)# enable mib-binding
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.10 exit-address-family

Function

Run the **exit-address-family** command to exit the address family configuration mode.

This command has no default behavior or value.

Syntax

exit-address-family

Parameter Description

N/A

Command Modes

Address family configuration mode

Default Level

14

Usage Guidelines

This command is used in address family configuration mode to exit this configuration mode. This command can be abbreviated as **exit**.

Examples

The following example configures to enter and exit the address family configuration submode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config-router)# address-family ipv4 vrf vpn1
Hostname(config-router-af)# exit-address-family
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.11 fast-reroute

Function

Run the **fast-reroute** command to configure the RIP fast reroute function of a device.

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

The fast reroute function is disabled by default.

Syntax

fast-reroute route-map *route-map-name*

no fast-reroute

Parameter Description

route-map-name: Route map through which the backup path is specified.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

When the RIP fast reroute function is used, it is recommended that BFD be enabled at the same time so that the device can quickly detect any link failure and therefore shorten the forwarding interruption time. If the interface switches Up/Down, to shorten the forwarding interruption time during RIP fast reroute, you can configure **carrier-delay 0** in interface configuration mode to achieve the fastest switchover speed. If the route map is configured, a backup path can be specified for a matched route through the route map.

Currently, the RIP fast reroute function is subject to the following constraints:

- Only one backup next hop can be generated for one route.
- No backup next hop can be generated for equal-cost multi-path routing (ECMP).

Examples

The following example configures the RIP FRR function of a device and associates it with route map fast-reroute. It configures route map fast-reroute, matches the interface Gigabit Ethernet 0/2, and sets the FRR backup interface to Gigabit Ethernet 0/1 and the backup next hop to 192.168.1.1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# route-map fast-reroute
Hostname(config-route-map)# match interface gigabitEthernet 0/2
Hostname(config-route-map)# set fast-reroute backup-interface GigabitEthernet 0/1
backup-nexthop 192.168.1.1
Hostname(config)# router rip
Hostname(config-router)# fast-reroute route-map fast-reroute
```

Notifications

When the name length of the configured route map exceeds the maximum value, the following notification will be displayed:

```
% Route-map name string length can not exceed 32
```

When the configured route map does not exist, the following notification will be displayed:

```
% route-map name not exist
```

Common Errors

The name length of the configured route map is too long.

The configured route map does not exist.

Platform Description

N/A

Related Commands

N/A

1.12 graceful-restart

Function

Run the **graceful-restart** command to configure the 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 the RIP process. You can configure different parameters for different RIP processes based on the actual conditions.

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

The **graceful-restart grace-period** command allows you to explicitly modify the GR period. Note that GR must be completed after the update timer of the RIP route expires and before the invalid timer of the RIP 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 invalidity timer based on the configuration of the **timers basic** command.

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

Examples

The following example configures the RIP GR function of a device, and sets the GR period parameter to 80s:

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

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip](#)

1.13 ip rip authentication key-chain

Function

Run the **ip rip authentication key-chain** command to enable RIP authentication and specify the key chain to be used for RIP authentication.

Run the **no** form of this command to delete the specified key chain.

No key chain is set by default.

Syntax

ip rip authentication key-chain *name-of-keychain*

no ip rip authentication key-chain

Parameter Description

name-of-keychain: Name of the key chain used for RIP authentication.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

If a key chain is already specified in the interface configuration, you need to run the **key chain** command in global configuration mode to define the key chain; otherwise, authentication of RIP packets may fail.

If this command and the **ip rip authentication mode md5** command are configured, message digest 5 (MD5) mode authentication is adopted. If the **ip rip authentication mode** command is not configured, authentication is performed according to the authentication mode specified by the configured **key chain**. MD5 authentication and SM3 authentication are supported at present. Only RIPv2 supports authentication of RIP packets, and RIPv1 does not.

Examples

The following example enables RIP authentication on the GigabitEthernet 0/1 interface and specifies the key chain used for RIP authentication as **ripchainf**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip authentication key-chain ripchain
```

The following example configures the key chain as **ripchain** and the key 1 string as **Hello**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# key chain ripchain
```

```
Hostname (config-keychain) # key 1
Hostname (config-keychain-key) # key-string Hello
```

Notifications

N/A

Common Errors

When MD5 authentication is configured, **key-chain** is not configured first.

Platform Description

N/A

Related Commands

- [ip rip authentication mode](#)
- [show ip rip interface](#)

1.14 ip rip authentication mode

Function

Run the **ip rip authentication mode** command to configure the mode of RIP authentication.

Run the **no** form of this command to restore the default RIP authentication mode.

Plain text authentication mode is used by default.

Syntax

```
ip rip authentication mode { text | md5 }
```

```
no ip rip authentication mode
```

Parameter Description

text: Indicates that the RIP authentication mode is plain text authentication.

md5: Indicates that the RIP authentication mode is MD5 authentication.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

Only RIPv2 supports authentication of RIP packets, and RIPv1 does not.

The RIP authentication modes configured on all devices that need to directly exchange RIP routing information must be the same; otherwise, exchange of RIP packets may fail.

Use plain text or MD5 authentication as instructed below:

- If plain text authentication is used, but the key chain for plain text authentication is not configured or associated, authentication is not performed.

- If MD5 authentication is used, but the key chain is not configured or associated, authentication is not performed either.

Examples

The following example configures the RIP authentication mode of GigabitEthernet 0/1 interface as **MD5**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip authentication mode md5
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)
- [ip rip authentication key-chain](#)
- [ip rip authentication text-password](#)

1.15 ip rip authentication text-password

Function

Run the **ip rip authentication text-password** command to enable RIP authentication and set the character string of plain text authentication.

Run the **no** form of this command to delete the character string of plain text authentication.

No character string of plain text authentication is set by default.

Syntax

```
ip rip authentication text-password [ 0 | 7 ] password-string
```

```
no ip rip authentication text-password
```

Parameter Description

0: Indicates that the key is displayed in plain text.

7: Indicates that the key is displayed in cipher text.

password-string: Character string used for plain text authentication. The length range is 1 to 16 bytes.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

This command takes effect only in plain text authentication mode. If RIP plain text authentication should be enabled, run this command to configure the key chain for plain text authentication. Alternatively, you can obtain the key chain for plain text authentication by associating the key chain. The key chain obtained using the second method takes precedence over that obtained using the first method.

Only RIPv2 supports authentication of RIP packets, and RIPv1 does not.

Examples

The following example configures the RIP authentication mode of GigabitEthernet 0/1 interface as plain text authentication and sets the character string of plain text authentication to **hello**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip authentication text-password
hello
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip rip authentication mode](#)
- [show ip rip interface](#)

1.16 ip rip bfd

Function

Run the **ip rip bfd** command to configure BFD for link detection on the specified interface.

Run the **no** form of this command to delete the BFD configured on the interface.

By default, BFD link detection on an interface is disabled by default.

Syntax

```
ip rip bfd [ disable ]
```

```
no ip rip bfd
```

Parameter Description

disable: Disables BFD for link detection on a specified interface.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The BFD configured on an interface takes precedence over the **bfd all-interfaces** command used in process configuration mode.

In light of the actual environment, you can run the **ip rip bfd** command to configure BFD for link detection on the specified interface, or run the **bfd all-interfaces** command to configure BFD for link detection on all the interfaces. You can run the **ip rip bfd disable** command to disable BFD for link detection on the specified interface.

Examples

The following example enables BFD for link detection on the GigabitEthernet 0/1 interface.

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

Notifications

When your peer device also needs to be configured with BFD to prevent route learning from being affected, the following notification will be displayed:

```
% Warning: The BFD for RIP peer shall be enabled, or it would affect the route learning.
```

Common Errors

BFD is not enabled on the interconnected devices at the same time.

Platform Description

N/A

Related Commands

- [show ip rip](#)

1.17 ip rip default-information

Function

Run the **ip rip default-information** command to configure default route advertisement on a RIP interface.

Run the **no** form of this command to cancel default route advertisement on the specified interface.

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

Syntax

```
ip rip default-information { only | originate } [ metric metric-value ]
```

no ip rip default-information

Parameter Description

only: Indicates that only the default route is advertised.

originate: Indicates that the default route and other routes are advertised.

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

After this command is configured on an interface, a default route is generated and advertised through this interface. If you configure the **ip rip default-information** command for the interface, and the **default-information originate** command for the RIP process, only the default route configured for the interface is advertised.

So far as the **ip rip default-information** command is configured for an interface, RIP does not learn the default route advertised by the neighbor.

Examples

The following example configures default route advertisement on RIP ethernet0/1.

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

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)

1.18 ip rip receive enable

Function

Run the **ip rip receive enable** command to allow RIP to receive RIP packets on the specified interface.

Run the **no** form of this command to forbid RIP from receiving RIP packets on the specified interface.

By default, the RIP packet receiving function is enabled on an interface.

Syntax

ip rip receive enable

no ip rip receive enable

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

To prohibit receiving RIP packets on a specified interface, you can run the **no** form of this command in interface configuration mode. This command takes effect only on the current interface. You can run the **default** form of this command to restore the default setting, that is, allowing the interface to receive RIP packets.

Examples

The following example prohibits receiving of RIP packets on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# no ip rip receive enable
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)

1.19 ip rip receive version

Function

Run the **ip rip receive version** command to define the version of RIP packets to be received by RIP on the specified interface.

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

By default, the default behavior depends on the configuration of the **version** command.

Syntax

```
ip rip receive version [ 1 ] [ 2 ]
```

```
no ip rip receive version
```

Parameter Description

version 1: Indicates that only RIPv1 packets are received.

version 2: Indicates that only RIPv2 packets are received.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The configuration result of this command can overwrite the default configuration of the **version** command. This command affects the behavior of receiving RIP packets on the current interface, and the interface is allowed to receive RIPv1 and RIPv2 packets simultaneously. If this command does not contain any parameter, the behavior of receiving RIP packets depends on the configuration of the **version** command.

Examples

The following example allows receiving RIPv1 and RIPv2 packets on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip receive version 1 2
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)
- [show ip rip](#)

1.20 ip rip send enable

Function

Run the **ip rip send enable** command to allow RIP to send RIP packets on the specified interface.

Run the **no** form of this command to forbid RIP from sending RIP packets on the specified interface.

By default, the RIP packet sending function is enabled on an interface.

Syntax

ip rip send enable

no ip rip send enable

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

To prohibit sending of RIP packets on a specified interface, you can run the **no** form of this command in interface configuration mode. This command takes effect only on the current interface. You can run the **default** form of this command to restore the default setting, that is, allowing the interface to send RIP packets.

Examples

The following example prohibits RIP from sending RIP packets on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# no ip rip send enable
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)

1.21 ip rip send supernet-routes

Function

Run the **ip rip send supernet-routes** command to allow RIP to send supernetting routes on the specified interface.

Run the **no** form of this command to forbid RIP from sending supernetting routes on the specified interface.

By default, the supernetting route sending function is enabled on an interface.

Syntax

ip rip send supernet-routes

no ip rip send supernet-routes

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

If a supernetting route is detected when a RIPv1-enabled router monitors RIPv2 route response packets, the router will learn an incorrect route because RIPv1 ignores the subnet mask in the routing information of the packet. In this case, the **no** form of the command must be used to prohibit advertisement of supernetting routes on the related interface. This command takes effect only on the current interface.

The command is effective only when RIPv2 packets are sent on the interface, and is used to control the sending of supernetting routes.

Examples

The following example prohibits RIP from sending RIP supernetting routes on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# no ip rip send supernet-routes
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.22 ip rip send version

Function

Run the **ip rip send version** command to define the version of RIP packets to be sent by RIP on the specified interface.

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

By default, the default behavior depends on the configuration of the **version** command.

Syntax

```
ip rip send version [ 1 ] [ 2 ]
```

```
no ip rip send version
```

Parameter Description

1: Indicates that only RIPv1 packets are sent.

2: Indicates that only RIPv2 packets are sent.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The configuration result of this command can overwrite the default configuration of the **version** command. This command affects the behavior of sending RIP packets on the current interface, and the interface can receive RIPv1 and RIPv2 packets simultaneously. If this command does not contain any parameter, the behavior of sending RIP packets depends on the configuration of the version command.

Examples

The following example configures the specific version of RIP packets to be sent by RIP on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip send version 1 2
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)
- [show ip rip](#)

1.23 ip rip split-horizon

Function

Run the **ip rip split-horizon** command to enable the split horizon function of RIP.

Run the **no** form of this command to disable the split horizon function of RIP.

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

Syntax

```
ip rip split-horizon [ poisoned-reverse ]
```

```
no ip rip split-horizon [ poisoned-reverse ]
```

Parameter Description

poisoned-reverse: Enables split horizon with poison reverse.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

When multiple devices are connected to an IP broadcast-type network and run the distance vector routing protocols at the same time, you must adopt the split horizon mechanism to avoid the formation of route loop.

For a non-broadcast multi-access network such as frame relay and X.25 network, split horizon may prevent some devices from learning the complete routing information. In this case, you may need to disable split horizon. If an interface is configured with a secondary IP address, the problem of split horizon also needs to be noted.

If the **poisoned-reverse** parameter is configured, the split horizon with poison reverse will be enabled, and the device will still advertise the routing information from the interface that has learned the routing information, but set the metric of the routing information to a value unreachable.

The RIP 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 on an interface, you can run the **show ip rip** command to make judgment. In addition, the neighbors defined using the **neighbor** command will not be affected by RIP split horizon.

Examples

The following example disables RIP split horizon on the GigabitEthernet 0/1 interface.

```
Hostname> enable
Hostname# configure terminal
```

```
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# no ip rip split-horizon
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)
- [show ip rip](#)

1.24 ip rip subvlan

Function

Run the **ip rip subvlan** command to enable the RIP function on a super VLAN.

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

By default, RIP is disabled on a super VLAN.

Syntax

```
ip rip subvlan [ all | vid ]
```

```
no ip 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 replicated once and sent to all of 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 RIP function does not need to be enabled on a super VLAN. However, in some scenarios, the RIP function is required on the super VLAN. In this case, you can decide to send multicast

packets to a certain sub VLAN or to all sub VLANs as actually needed. Usually, packets need to be sent to only one sub VLAN. In this case, run this command to specify a particular sub VLAN. You must be cautious in 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 RIP function on Super VLAN 300 and allows sending RIP multicast packets to Sub VLAN 2014.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface vlan 300
Hostname(config-if-VLAN 300)# ip 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 interwork with its neighbors.

Platform Description

N/A

Related Commands

N/A

1.25 ip rip summary-address

Function

Run the **ip rip summary-address** command to configure the RIP route summarization on an interface.

Run the **no** form of this command to disable RIP route summarization for the specified address or subnet.

By default, RIP route summarization is not configured on an interface.

Syntax

```
ip rip summary-address ipv4-address mask
```

```
no ip rip summary-address ipv4-address mask
```

Parameter Description

ipv4-address: IP address to be summarized.

Mask: Subnet mask of the IP address to be summarized.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

This command is used to manually summarize an address or a subnet under a specified interface. The summary range configured by this command cannot cover supernetting routes, that is, the configured subnet mask length cannot be smaller than the natural mask length of the network.

Examples

The following example disables automatic route summarization of RIPv2. Summarization is configured on the GigabitEthernet 0/1 Interface, and GigabitEthernet 0/1 will advertise the route 172.16.0.0/16 after summarization.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# network 172.16.0.0
Hostname(config-router)# version 2
Hostname(config-router)# no auto-summary
Hostname(config-router)# exit
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip address 172.16.1.1 255.255.255.0
```

Hostname(config-if-GigabitEthernet 0/1)# ip rip summary-address 172.16.0.0 255.255.0.0 Notifications

When the entered mask is wrong and you need to use the correct mask, the following notification will be displayed:

```
RIP: Invalid mask input
```

When the address to be summarized is wrong, for example, 0 address, the following notification will be displayed:

```
% Invalid summary-address value.
```

When the mask to be summarized is not longer than the mask of the main network, the following notification will be displayed:

```
% Summary mask must be greater or equal to major net.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.26 ip rip triggered

Function

Run the **ip rip triggered** command to enable the RIP triggered updates function of demand circuits, and configure the retransmission time and retransmission times of the RIP triggered updates.

Run the **no** form of this command to disable the RIP triggered updates function of demand circuits, and cancel the configured retransmission time and retransmission times of the RIP triggered updates.

The RIP triggered updates function is disabled by default.

Syntax

```
ip rip triggered [ retransmit-timer timer | retransmit-count count ]
```

```
no ip rip triggered [ retransmit-timer timer | retransmit-count count ]
```

Parameter Description

retransmit-timer *timer*: Configures the interval at which the Update Request or Update Response packet is retransmitted, in seconds. The value range is 1 to 3600, and the default value is **5**.

retransmit-count *count*: Configures the maximum retransmission times of the Update Request or Update Response packet. The default value is **36** times. The value range is from 1 to 3600, and the default value is **36**.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The RIP triggered updates function is the extension of RIP on the wide area network (WAN), and mainly used for demand circuits.

After the RIP triggered updates function is enabled, RIP does not periodically send the route update packets. RIP sends the route update packets to the WAN interface only in one of the following cases:

- A route request packet is received.
- The RIP routing information changes.
- The interface state changes.
- The router is started.

Since the RIP periodical update function is disabled, the acknowledgment and retransmission mechanisms must be used to ensure that the update packets are successfully sent or received on the WAN. You can use the **retransmit-timer** and **retransmit-count** parameters to specify the retransmission interval and maximum retransmission times of the request and update packets.

The triggered updates function can be enabled in either of the following cases:

- The interface has only one neighbor.
- The interface has multiple neighbors but the device interacts with these neighbors in unicast mode.

You are advised to enable this function on the PPP, frame relay, or X.25 link layer protocol.

Precautions for using the triggered updates function:

- It is recommended that split horizon with poison reverse be enabled on the interface configured with the triggered updates function; otherwise, invalid routing information may exist.
- Ensure that this function is enabled on all the routers on the same link; otherwise, this function fails and the routing information cannot be exchanged properly.
- This function cannot be enabled together with the function of correlating RIP with BFD.
- To enable the triggered updates function, make sure that the RIP configurations at both ends of the link are consistent, such as RIP authentication and the RIP protocol version supported by the interface.
- If the triggered updates function is enabled on an interface, source address verification is performed on the packets of this interface no matter whether the source address verification function is enabled using the **validate-update-source** command.

Examples

The following example enables the RIP triggered updates function of demand circuits, and configures the retransmission time as 10s and retransmission times as 18

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip triggered
Hostname(config-if-GigabitEthernet 0/1)# ip rip triggered retransmit-timer 10
Hostname(config-if-GigabitEthernet 0/1)# ip rip triggered retransmit-count 18
```

Notifications

When enabling the RIP triggered updates function may affect route learning, the following notification will be displayed:

```
% Warning: The configurations for Triggered RIP peer shall be same, or it would
affect the route learning.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.27 ip rip v2-broadcast

Function

Run the **ip rip v2-broadcast** command to allow RIPv2 packets to be broadcast on the specified interface.

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

By default, RIPv2 packets are multicast on an interface.

Syntax

ip rip v2-broadcast

no ip rip v2-broadcast

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

When the link or neighbor does not support multicasting, you can configure to broadcast RIPv2 packets.

Examples

The following example allows broadcasting RIPv2 packets on the interface, instead of multicasting.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface GigabitEthernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip rip v2-broadcast
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)

1.28 neighbor

Function

Run the **neighbor** command to configure the IP address of a RIP neighbor.

Run the **no** form of this command to delete a neighbor.

No RIP neighbor is configured by default.

Syntax

neighbor *ipv4-address*

no neighbor *ipv4-address*

Parameter Description

ipv4-address: IP address of the neighbor. It should be the address of the network directly connected to the local device.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

By default, RIPv1 uses the IP broadcast address (255.255.255.255) to advertise the routing information, whereas RIPv2 uses the multicast address (224.0.0.9) to advertise the routing information. If you do not want all devices on the broadcast network or non-broadcast multiple access (NBMA) network to receive routing information, configure the related interface as the passive interface using the **passive-interface** command, and specify the neighbors that can receive the routing information. This command does not affect the receiving of RIP packets. After an interface is configured as a passive interface, the interface does not send a request packet even after the device is restarted.

Examples

The following example configures the IP address of a RIP neighbor as 192.168.1.2, and the interface of RIP as passive interface.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# passive-interface default
Hostname(config-router)# neighbor 192.168.1.2
```

Notifications

When the same configuration already exists, the following notification will be displayed:

```
% Static neighbor configuration exists
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- [passive-interface](#)

1.29 network

Function

Run the **network** command to configure the list of networks to be advertised by the RIP routing process.

Run the **no** form of this command to delete the configured network.

No local network is advertised by default.

Syntax

```
network network-number [ wildcard ]
```

```
no network network-number [ wildcard ]
```

Parameter Description

network-number: No. of the direct network. This is a natural network No., and all the interfaces with an IP address belonging to the natural network can send and receive RIP packets.

wildcard: IP address comparison bit. Value 0 indicates accurate matching, and 1 indicates that no comparison is performed.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

You can configure the *network-number* and *wildcard* parameters at the same time to enable the interface addresses in the address range to participate in RIP running.

If *wildcard* is not configured, the classful address range is used by default, that is, the device will allow the interfaces whose addresses fall into the classful address range to participate in RIP running.

Only when the interface address is in the network list defined by RIP, can the interface send and receive RIP route update packets.

Examples

The following example configures the networks to be notified by the RIP routing process as 192.168.12.0/24 and 172.16.0.0/24.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# network 192.168.12.0
Hostname(config-router)# network 172.16.0.0 0.0.0.255
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip interface](#)

1.30 offset-list

Function

Run the **offset-list** command to increase the metric of a received or sent RIP route.

Run the **no** form of this command to delete the specified offset list.

No offset list is configured by default.

Syntax

```
offset-list { acl-number | acl-name } { in | out } offset [ interface-type interface-number ]
```

```
no offset-list { acl-number | acl-name } { in | out } offset [ interface-type interface-number ]
```

Parameter Description

acl-number: ACL No. The following value ranges are supported.

The value range of IP standard ACL is 1 to 99 or 1300 to 1999; the value range of IP extended ACL is 100 to 199 or 2000 to 2699.

acl-name: ACL name. The value is a case-sensitive string of 1 to 99 characters.

in: Uses the ACL to modify the metric of a received route.

out: Uses the ACL to modify the metric of a sent route.

offset: Offset of the modified metric. The value range is from 0 to 16.

interface-type: Specified interface where the ACL is used.

Interface-number: *-number*: Interface number.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

You can use this function to increase the metric of a received or sent RIP route. If a RIP route satisfies both the offset-list of the specified interface and the global offset-list without a specified interface, this RIP route will be increased by the metric of the offset-list of the specified interface.

Examples

The following example increases the metric of the sent RIP route matched with ACL 7 by 7.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# offset-list 7 out 7
```

The following example increases the metric of the RIP route that is matched with ACL 7 and received on GigabitEthernet0/1 by 7.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# offset-list 8 in 7 GigabitEthernet 0/1
```

Notifications

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

```
% Interface is invalid.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip database](#)

1.31 output-delay

Function

Run the **output-delay** command to set the sending delay between RIP update packets.

Run the **no** form of this command to cancel the sending delay between RIP update packets.

The sending delay between RIP update packets is 0 by default.

Syntax

```
output-delay delay
```

```
no output-delay
```

Parameter Description

delay: Sending delay between packets, in milliseconds. The value range is from 8 to 50.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

Normally, a RIP route update packet is 512 bytes long and can contain 25 routes. If the number of routes to be updated exceeds 25, more than one update packet will be sent as fast as possible.

When a high-speed device sends a lot of update packets to a low-speed device, the low-speed device may not be able to process all update packets in time, causing loss of routing information. In this case, you need to run

the **output-delay** command to increase the sending delay between packets on a high-speed device so that a low-speed device can receive and process all update packets.

Examples

The following example changes the sending delay between RIP update packets to 30 ms.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# output-delay 30
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.32 passive-interface

Function

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

Run the **no** form of this command to enable an interface to send RIP update packets.

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

Syntax

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

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

Parameter Description

default: Indicates that all interfaces will be configured as passive interfaces.

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

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

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 Layer-3 device running other routing protocols), you are advised to configure this interface as a passive interface. You can run the **passive-interface default** command to configure all interfaces as passive interfaces, and run the **no passive-interface interface-type interface-num** command to configure the specified interface as a non-passive interface.

The passive interface no longer sends RIP route update packets, but can still receive RIP route update packets. In this case, you can run the **neighbor** command on the interface to send route update packets to the specified neighbor.

To fully control whether an interface can send and receive route update packets, you can run the **ip rip send enable** and **ip rip receive enable** commands.

Examples

The following example configures all interfaces as the passive mode, and then sets GigabitEthernet 0/1 to non-passive mode.

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

Notifications

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

```
% Interface is invalid.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip](#)
- [show ip rip interface](#)

1.33 redistribute

Function

Run the **redistribute** command to redistribute the external routing information.

Run the **no** form of this command to cancel redistribution of external routes.

The external routing information is not redistributed to RIP by default.

If OSPF redistribution is configured, the routes of all sub-types of the instance will be redistributed.

If IS-IS redistribution is configured, the routes of Level-2 sub-type of the instance will be redistributed.

In other cases, all routes of this type are redistributed.

Syntax

```
redistribute { bgp | connected | isis [ area-tag ] [ level-1 | level-1-2 | level-2 ] | ospf process-id [ match { external [ 1 | 2 ] | internal | nssa-external [ 1 | 2 ] } * ] | static } [ metric metric-value | route-map route-map-name ] *
```

```
no redistribute { bgp | connected | isis [ area-tag ] [ level-1 | level-1-2 | level-2 ] | ospf process-id [ match { external [ 1 | 2 ] | internal | nssa-external [ 1 | 2 ] } * ] | static } [ metric | route-map ] *
```

Parameter Description

bgp: Redistributes from BGP.

connected: Redistributes from direct routes.

isis *area-tag*: Redistributes from IS-IS. *area-tag* indicates the IS-IS process ID.

level-1 | **level-2** | **level-1-2**: Redistributes IS-IS routes at the specified level.

static: Redistributes from static routes. **match**: Redistributes specific OSPF routes that match the filtering conditions.

external [**1** | **2**]: Redistributes E1, E2, or all external routes.

internal: Redistributes internal routes and inter-area routes.

nssa-external [**1** | **2**]: Redistributes N1, N2, or all external routes of all NSSAs.

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

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

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

This command is used to redistribute external routing information to RIP.

During route redistribution, different routing protocols use different metric measurement methods. For example, RIP 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.

If you configure redistribution of IS-IS routes without specifying the level parameter, only level-2 routes can be redistributed by default. If you specify the **level** parameter during initial configuration of redistribution, routes of the specified level can be redistributed. If both **level 1** and **level 2** are configured, the two levels are combined and saved as **level-1-2**.

If you configure redistribution of OSPF routes without specifying the **match** parameter, OSPF routes of all sub-types can be redistributed by default. The latest setting of the **match** parameter is used as the initial **match** parameter. Only routes that match the sub-types can be redistributed. You can run the **no** form of the command to restore the default value of **match**.

The configuration rules for the **no** form of the **redistribute** command are as follows:

- If some parameters are specified in the **no** form of this command, default values of these parameters will be restored.
- If no parameter is specified in the **no** form of this command, the entire command will be deleted.

For example, if **redistribute isis 112 level-2** is configured, you can run the **no redistribute isis 112 level-2** command to restore the default value of level-2. As **level-2** itself is the default value of the parameter, the configuration saved is still **redistribute isis 112 level-2** after the preceding **no** form of the command is executed.

To delete the entire command, run the **no redistribute isis 112** command.

Note

The route redistribution command cannot introduce default routes of other protocols to the RIP routing domain. To introduce default routes to the RIP routing domain, run the **default-information originate** command.

Examples

The following example configures static route redistribution to the RIP routing domain.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# redistribute static
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip database](#)

1.34 router rip

Function

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

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

The RIP routing process is disabled by default.

Syntax

router rip

no router rip

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

To create a RIP routing process, you need to define a network No. If a dynamic routing protocol runs on an asynchronous line, **async default routing** needs to be configured on the asynchronous interface.

Examples

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

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

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [show ip rip](#)

1.35 show ip rip

Function

Run the **show ip rip** command to display the basic information of a RIP routing protocol process.

Syntax

```
show ip rip [ vrf vrf-name ]
```

Parameter Description

vrf *vrf-name*: Specifies the RIP information of the specified VRF.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

This command can be used to quickly display the three timers, route distribution, route redistribution status, RIP version of interface, RIP interface, network scope, metric, management distance, and other information of a RIP routing protocol process. If VRF is specified, the VRF name and VRF-ID will also be displayed.

Examples

The following example displays the basic information of a RIP routing protocol process.

```
Hostname> enable
Hostname# show ip rip
Routing Protocol is "rip"
Sending updates every 10 seconds
Invalid after 20 seconds, flushed after 10 seconds
Outgoing update filter list for all interface is: not set
Incoming update filter list for all interface is: not set
Default redistribution metric is 2
Redistributing: connected
Default version control: send version 2, receive version 2
Interface          Send  Recv
GigabitEthernet 0/1      2     2
GigabitEthernet 0/2      2     2
Routing for Networks:
192.168.26.0 255.255.255.0
192.168.64.0 255.255.255.0
Distance: (default is 50)
Graceful-restart enabled
  Restart grace period 60 secs
  Current Restart remaining time 16 secs
```

The following example displays the basic information of the corresponding RIP instance of VRF 1.

```
Hostname> enable
Hostname# show ip rip vrf 1
VRF 1 VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds
Invalid after 180 seconds, flushed after 120 seconds
Outgoing update filter list for all interface is: not set
Incoming update filter list for all interface is: not set
Default redistribution metric is 1
Redistributing:
Default version control: send version 1, receive any version
Routing for Networks:
Distance: (default is 120)
Graceful-restart disabled
```

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

Field	Description
Sending updates	Indicates the packet update time.
Invalid	Indicates the failure time.
flushed	Indicates the refreshing time.
Outgoing update filter list for all interface	Filters all the output routes.
Incoming update filter list for all interface	Filters all the received routes.
Default redistribution metric	Indicates the default redistribution metric configured.
Redistributing	Indicates the redistributing protocol.
Default version control	Indicates the default RIP protocol version running for the instance.
Routing for Networks:	Indicates the routing network segment externally advertised by RIP.
Distance	Indicates the management distance of an instance.
Graceful-restart	Indicates whether the GR function is enabled.
Restart grace period	Indicates the GR time.
Current Restart remaining time	Indicates the remaining GR time.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.36 show ip rip database

Function

Run the **show ip rip database** command to display the route summary in a RIP route database.

Syntax

```
show ip rip database [ vrf vrf-name ] [ network-number network-mask ] [ count ]
```

Parameter Description

vrf *vrf-name*: Specifies the VRF whose RIP routing information is displayed.

network-number: Subnet No. of routing information.

network-mask: Subnet mask. If a network number has been set, you must specify a subnet mask.

count: Displays the routing statistics summary in a RIP database.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

Only when the related subroutes are summarized, will the summarized address item information be displayed in the RIP route database. When the information of the last subroute of the summarized address item information becomes invalid, the summarized address item information will also be deleted from the database.

Examples

The following example displays the route summary in a RIP route database.

```

Hostname> enable
Hostname# show ip rip database
192.168.1.0/24      auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30    directly connected, GigabitEthernet 0/1
192.168.121.0/24  auto-summary
192.168.121.0/24  redistributed
[1] via 192.168.2.22, GigabitEthernet 0/2
192.168.122.0/24  auto-summary
192.168.122.0/24
[1] via 192.168.4.22, GigabitEthernet 0/1 00:28 permanent

```

The following example displays the summarized address item information of 192.168.121.0/24 in a RIP route database.

```

Hostname> enable
Hostname# show ip rip database 192.168.121.0 255.255.255.0
192.168.121.0/24  redistributed
[1] via 192.168.2.22, GigabitEthernet 0/1

```

The following example displays the statistics summary of each route type in a RIP route database.

```

Hostname> enable
Hostname# show ip rip database count
          All      Valid  Invalid
database    5         5        0
auto-summary 5         5        0
connected   1         1        0
rip          4         4        0

```


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

Field	Description
auto-summary	Indicates the summarized route.
directly connected	Indicates the direct route.
redistributed	Indicates the redistributed route.
database	Indicates the route database of RIP.
All	Indicates the count of all routes.
Valid	Indicates the count of valid routes.
Invalid	Indicates the count of invalid routes.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.37 show ip rip external

Function

Run the **show ip rip external** command to display the information about external routes redistributed by RIP.

Syntax

```
show ip rip external [ bgp | connected | isis [ process-id ] | ospf process-id | static ] [ vrf vrf-name ]
```

Parameter Description

bgp: Displays the redistributed BGP route.

connected: Displays the redistributed direct route.

isis *process-id*: Displays the redistributed IS-IS route. Here, *process-id* indicates the IS-IS process ID.

ospf *process-id*: Displays the redistributed OSPF route. Here, *process-id* indicates the OSPF process ID. The value range is from 1 to 65535.

static: Displays the redistributed static route.

vrf *vrf-name*: Specifies a VRF.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example displays the information about external routes redistributed by RIP.

```

Hostname> enable
Hostname# show ip rip external
Protocol connected route:
[connected] 192.100.3.0/24 metric=0
      nhop=0.0.0.0, if=2
[connected] 192.101.1.0/24 metric=0
      nhop=0.0.0.0, if=3
Protocol static route:
[static] 10.1.1.1/32 metric=0
      nhop=0.0.0.0, if=4096
[static] 10.1.2.1/32 metric=0
      nhop=0.0.0.0, if=4096
Protocol ospf 1 route:
[ospf] 1.1.1.1/32 metric=2
      nhop=192.100.3.2, if=2
[ospf] 90.1.1.1/32 metric=2
      nhop=192.100.3.2, if=2

```

Table 1-1 Output Fields of the show ip rip external Command

Field	Description
Protocol connected route	Indicates the type of the redistributed route.
connected	Indicates the redistributed route.
metric	Indicates the metric of the redistributed route.
nhop	Indicates the next hop of the redistributed route.
if	Indicates the outbound interface of the redistributed route.

Notifications

14

Platform Description

N/A

Related Commands

N/A

1.38 show ip rip interface

Function

Run the **show ip rip interface** command to display the information about a RIP interface.

Syntax

```
show ip rip interface [ vrf vrf-name ] [ interface-type interface-number ]
```

Parameter Description

vrf vrf-name: Specifies the VRF whose RIP interface is to be displayed.

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

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

This command is used to display the information about a RIP interface. If there is no RIP interface, no information will be displayed.

Examples

The following example displays the information about a RIP interface.

```
Hostname> enable
Hostname# show ip rip interface
GigabitEthernet 0/1 is up, line protocol is up
Routing Protocol: RIP
Receive RIPv2 packets only
Send RIPv2 packets only
Recv RIP packet total: 0
Send RIP packet total: 3
Passive interface: Disabled
Split Horizon with Poisoned Reverse: Enabled
Triggered RIP Enabled:
Retransmit-timer: 5, Retransmit-count: 36
V2 Broadcast: Disabled
Multicast registe: Registered
Interface Summary Rip:
Not Configured
Authentication mode: Text
Authentication key-chain: ripk1
Authentication text-password: pswdtext
Default-information: only, metric 5
IP interface address:
192.168.64.100/24, next update due in 14 seconds
```

```

2.2.1.1/24, next update due in 24 seconds
  neighbor 2.2.1.6, next update due in 3 seconds
  neighbor 2.2.1.77, next update due in 13 seconds
2.2.2.57/24, next update due in 16 seconds

```

The following example displays the information about a RIP interface. If RIP correlation with BFD is enabled, BFD information will be also displayed.

```

Hostname> enable
Hostname#show ip rip interface
GigabitEthernet 0/1 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv1 and RIPv2 packets
    Send RIPv1 packets only
    Receive RIP packet: Enabled
    Send RIP packet: Enabled
    Send RIP supernet routes: Enabled
    Recv RIP packet total: 0
    Send RIP packet total: 3
    Passive interface: Disabled
Split Horizon: Enabled
Triggered RIP Disabled
BFD: Enabled
  V2 Broadcast: Disabled
  Multicast registe: Registered
  Interface Summary Rip:
    Not Configured
  IP interface address:
    2.2.2.111/24, next update due in 14 seconds

```

Table 1-1 Output Fields of the show ip rip interface Command

Field	Description
Receive RIPv1 and RIPv2 packets	Indicates the type of packets that can be received by an interface.
Send RIPv1 packets only	Indicates the type of packets that can be sent by an interface.
Receive RIP packet	Indicates whether an interface is allowed to receive packets.
Send RIP packet	Indicates whether an interface is allowed to send packets.
Passive interface	Indicates whether a passive interface is enabled.
Send RIP supernet routes	Indicates whether an interface is allowed to send supernetting routes.
Recv RIP packet total	Indicates the total of packets received by an interface.
Send RIP packet total	Indicates the total of packets sent by an interface.
Split Horizon with Poisoned Reverse	Indicates whether split horizon with poison reverse is enabled.

Field	Description
Triggered RIP	Indicates whether the Triggered function is enabled.
Retransmit-timer	Indicates the time of retransmission.
Retransmit-count	Indicates the retransmission count.
V2 Broadcast	Indicates the V2 broadcast packet.
Multicast register	Indicates whether multicast is registered.
Interface Summary Rip	Indicates whether summarization is enabled on an interface.
Authentication mode	Indicates the authorization mode.
Authentication key-chain	Indicates the key-chain used for authentication.
Authentication text-password	Indicates the authentication character string.
Default-information	Indicates the default metric, default route, and other information.
IP interface address	Indicates the IP address of an interface.
BFD	Indicates whether the BFD function is enabled.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.39 show ip rip peer

Function

Run the **show ip rip peer** command to display the information about a RIP neighbor.

Syntax

```
show ip rip peer [ ipv4-address ] [ vrf vrf-name ]
```

Parameter Description

ipv4-address: Address of the specified RIP neighbor.

vrf *vrf-name*: Specifies the VRF whose RIP interface is to be displayed.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

RIP records the summary information for the information source (the source address of the RIP route update packet) of the learned RIP route to realize convenient monitoring by users. These routing information sources are called RIP neighbor information.

This command is used to display the information about a RIP neighbor. If there is no RIP neighbor, no information will be displayed.

Examples

The following example displays the information about a RIP neighbor.

```

Hostname> enable
Hostname# show ip rip peer
Peer 192.168.3.2:
  Local address: 192.168.3.1
  Input interface: GigabitEthernet 0/2
  Peer version: RIPv1
  Received bad packets: 3
  Received bad routes: 0
  BFD session state up

```

Table 1-1 Output Fields of the show ip rip peer Command

Field	Description
Peer	Indicates the IP address of a neighbor.
Local address	Indicates the local address.
Input interface	Indicates the connected interface.
Peer version	Indicates the RIP version No. of a neighbor.
Received bad packets	Indicates the packets with errors received from a neighbor.
Received bad routes	Indicates the received routes with errors.
BFD session state	Indicates the BFD session state.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.40 timers basic

Function

Run the **timers basic** command to adjust the clock of RIP.

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

By default, the update timer is 30s, the invalid timer is 180s, the flush timer is 120s, and the holddown timer is 0s.

Syntax

```
timers basic update invalid flush [ holddown holddown ]
```

```
no timers basic
```

Parameter Description

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

invalid: Time after which a route in the routing table becomes invalid because the route is not updated, in seconds. 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 before the invalid timer expires, the timer is reset. The value range is from 0 to 2147483647.

flush: Route flushing time, in seconds, counted from the time when the RIP 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.

holddown *holddown*: Specifies the route holddown time, in seconds, counted from the time when the RIP route enters the invalid state. Within the holddown time, the RIP route can only be updated using the routes that come from the same neighbor and have a metric less than 16. 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 routers connected to the same network, values of the three RIP timers must be the same. Generally, you are not advised to modify the RIP timers unless otherwise required.

You can run the **show ip rip** command to display the current parameter settings of RIP 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)# router rip
Hostname(config-router)# timers basic 10 30 90
```

Notifications

N/A

Common Errors

The RIP process update time and other settings are inconsistent on different devices.

Platform Description

N/A

Related Commands

- [show ip rip](#)

1.41 validate-update-source

Function

Run the **validate-update-source** command to validate the source address of a received RIP route update packet.

Run the **no** form of this command to disable source address validation for update packets.

The source address validation function for update packets is enabled by default.

Syntax

validate-update-source

no validate-update-source

Parameter Description

N/A

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

You can run the command to validate the source address of a RIP route update packet. The purpose is to ensure that the RIP routing process receives only the route update packets coming from the same IP subnet neighbor. Two special cases are as follows:

- After split horizon is disabled on an interface, the RIP routing process will perform source address validation on the update packet no matter whether the **validate-update-source** command is executed in routing process configuration mode.
- For an interface not configured with an IP address, the RIP routing process does not perform source address validation for the update packet no matter whether the **validate-update-source** command is executed in routing process configuration mode.

Examples

The following example disables source address validation of update packets.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# no validate-update-source
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.42 version

Function

Run the **version** command to configure the RIP version No. of the entire device.

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

By default, route update packets of RIPv1 and RIPv2 can be received, but only route update packets of RIPv1 are sent.

Syntax

version { 1 | 2 }

no version

Parameter Description

1: Defines the RIP version No. as 1.

2: Defines the RIP version No. as 2.

Command Modes

Routing process configuration mode

Default Level

14

Usage Guidelines

You can run the **ip rip receive version** and **ip rip send version** commands to redefine the specific version of RIP packets to be processed by each interface.

Examples

The following example sets the RIP version No. of the entire device to **2**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# router rip
Hostname(config-router)# version 2
```

Notifications

N/A

Common Errors

The local RIP instance is set to version 1, while the peer sends packets of version 2, leading to a parsing failure.

Platform Description

N/A

Related Commands

- [show ip rip](#)