



RIP Commands

Use the commands in this chapter to configure and monitor Routing Information Protocol (RIP). For RIP configuration information and examples, refer to the “Configuring RIP” chapter of the *Network Protocols Configuration Guide, Part 1*.

auto-summary (RIP)

To restore the default behavior of automatic summarization of subnet routes into network-level routes, use the **auto-summary** command in router configuration mode. To disable this function and transmit subprefix routing information across classful network boundaries, use the **no** form of this command.

auto-summary

no auto-summary

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled (the software summarizes subprefixes to the classful network boundary when crossing classful network boundaries).

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

Route summarization reduces the amount of routing information in the routing tables.

RIP Version 1 always uses automatic summarization. If you are using RIP Version 2, you can turn off automatic summarization by specifying **no auto-summary**. Disable automatic summarization if you must perform routing between disconnected subnets. When automatic summarization is off, subnets are advertised.

Examples

In the following example, network numbers are not summarized automatically:

```
router rip
 version 2
 no auto-summary
```

default-information originate

To generate a default route into RIP, use the **default-information originate** command in router configuration mode. To disable this feature, use the **no** form of this command.

default-information originate [*route-map mapname*]

no default-information originate

Syntax Description

route-map <i>mapname</i>	(Optional) Routing process will generate the default route if the route map is satisfied.
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Defaults

This command is disabled by default.

Command Modes

Router configuration

Command History

Release	Modification
11.2	This command was introduced.

Usage Guidelines

The route map referenced in the **default-information originate** command cannot use an extended access list; it can use a standard access list.

Examples

The following example originates a default route (0.0.0.0/0) over a certain interface when 172.68.0.0/16 is present. This is called “conditional default origination.”

```
router rip
  version 2
  network 172.68.16.0
  default-information originate route-map condition
!
  route-map condition permit 10
  match ip address 10
  set interface s1/0
!
access-list 10 permit 172.68.16.0 0.0.0.255
!
```

default-metric (RIP)

To set default metric values for RIP, use this form of the **default-metric** command in router configuration mode. To return to the default state, use the **no** form of this command.

default-metric *number*

no default-metric [*number*]

Syntax Description

<i>number</i>	Default metric value.
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Defaults

Built-in, automatic metric translations, as appropriate for each routing protocol. The metric of redistributed connected and static routes is set to 0.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

The **default-metric** command is used in conjunction with the **redistribute** router configuration command to cause the current routing protocol to use the same metric value for all redistributed routes. A default metric helps solve the problem of redistributing routes with incompatible metrics. Whenever metrics do not convert, using a default metric provides a reasonable substitute and enables the redistribution to proceed.



Note

When enabled, the **default-metric** command applies a metric value of 0 to redistributed connected routes. The **default-metric** command does not override metric values that are applied with the **redistribute** command.

Examples

The following example shows a router in autonomous system 109 using both the RIP and the OSPF routing protocols. The example advertises OSPF-derived routes using the RIP protocol and assigns the OSPF-derived routes a RIP metric of 10.

```
router rip
 default-metric 10
 redistribute ospf 109
```

Related Commands

Command	Description
redistribute	Redistributes routes from one routing domain into another routing domain.

flash-update-threshold

To suppress regularly scheduled flash updates, use the **flash-update-threshold** command in router configuration mode. To return to the default state, use the no form of this command.

flash-update-threshold *seconds*

no flash-update-threshold

Syntax Description	<i>seconds</i> The time interval in seconds for which the suppression of flash updates can be configured.					
Defaults	This command is disabled by default.					
Command Modes	Router configuration					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>12.0</td><td>This command was introduced.</td></tr></table>		Release	Modification	12.0	This command was introduced.
Release	Modification					
12.0	This command was introduced.					
Usage Guidelines	<p>This command suppresses flash updates when the arrival of a regularly scheduled update matches the number of seconds that is configured with the <i>seconds</i> argument. The range of seconds that can be configure is from 0 to 30 seconds. If the number of seconds matches the number of seconds or is less than the number seconds that is configured with the <i>seconds</i> argument, the flash update is suppressed. If the numbers seconds until the flash update arrives exceeds the number of seconds that is configured with the <i>seconds</i> argument, the flash update is not suppressed. The regular scheduled interval for flash updates and the configuration of the suppression of flash updates can be verified with the show ip protocol command.</p>					
Examples	<p>The following example configures a router to suppress a regularly scheduled flash update if the update is due in 10 seconds or less:</p> <pre>router rip flash-update-threshold 10</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show ip protocols</td><td>Displays the parameters and current state of the active routing protocol process.</td></tr></table>		Command	Description	show ip protocols	Displays the parameters and current state of the active routing protocol process.
Command	Description					
show ip protocols	Displays the parameters and current state of the active routing protocol process.					

input-queue

To adjust the depth of the Routing Information Protocol (RIP) input queue, use the **input-queue** command in router configuration mode. To remove the configured depth and restore the default depth, use the **no** version of this command.

input-queue *depth*

no input-queue [*depth*]

Syntax Description	<i>depth</i>	Numerical value associated with the depth of the RIP input queue. The larger the numerical value, the larger the depth of the queue. The range is 0 to 1024.
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Defaults	50
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Command Modes	Router configuration
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Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	Consider using the input-queue command if you have a high-end router sending at high speed to a low-speed router that might not be able to receive at the high speed. Configuring this command will help prevent the routing table from losing information.
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Examples	The following example sets the depth of the RIP input queue to 100: <code>input-queue 100</code>
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Related Commands	Command	Description
	output-delay	Changes interpacket delay for RIP updates sent.

ip rip authentication key-chain

To enable authentication for RIP Version 2 packets and to specify the set of keys that can be used on an interface, use the **ip rip authentication key-chain** command in interface configuration mode. Use the **no** form of this command to prevent authentication.

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

no ip rip authentication key-chain [*name-of-chain*]

Syntax Description

<i>name-of-chain</i>	Enables authentication and specifies the group of keys that are valid.
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Defaults

No authentication is provided for RIP packets.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

If no key chain is configured with the **key-chain** command, no authentication is performed on the interface (not even the default authentication).

Examples

The following example configures the interface to accept and send any key belonging to the key chain named *trees*:

```
ip rip authentication key-chain trees
```

Related Commands

Command	Description
key chain	Enables authentication for routing protocols by identifying a group of authentication keys.

ip rip authentication mode

To specify the type of authentication used in RIP Version 2 packets, use the `ip rip authentication mode` command in interface configuration mode. Use the **no** form of this command to restore clear text authentication.

ip rip authentication mode {text | md5}

no ip rip authentication mode

Syntax Description

text	Clears text authentication.
md5	Keyed MD5 authentication.

Defaults

Clear text authentication is provided for RIP packets.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

RIP Version 1 does not support authentication.

Examples

The following example configures the interface to use MD5 authentication:

```
ip rip authentication mode md5
```

Related Commands

Command	Description
input-queue	Enables authentication for RIP Version 2 packets and specifies the set of keys that can be used on an interface.
key chain	Enables authentication for routing protocols by identifying a group of authentication keys.

ip rip receive version

To specify a RIP version to receive on an interface basis, use the **ip rip receive version** command in interface configuration mode. Use the **no** form of this command to follow the global **version** rules.

ip rip receive version [1] [2]

no ip rip receive version

Syntax Description	1	(Optional) Accepts only RIP Version 1 packets on the interface.
	2	(Optional) Accepts only RIP Version 2 packets on the interface.

Defaults This command is disabled by default.

Command Modes Interface configuration

Command History	Release	Modification
	11.1	This command was introduced.

Usage Guidelines Use this command to override the default behavior of RIP as specified by the **version** command. This command applies only to the interface being configured. You can configure the interface to accept both RIP versions.

Examples The following example configures the interface to receive both RIP Version 1 and Version 2 packets:

```
ip rip receive version 1 2
```

The following example configures the interface to receive only RIP Version 1 packets:

```
ip rip receive version 1
```

Related Commands	Command	Description
	ip rip send version	Specifies a RIP version to send on an interface basis.
	version	Specifies a RIP version used globally by the router.
	input-queue	Enables authentication for RIP Version 2 packets and specifies the set of keys that can be used on an interface.
	key chain	Enables authentication for routing protocols by identifying a group of authentication keys.

ip rip send version

To specify a RIP version to send on an interface basis, use the **ip rip send version** command in interface configuration mode. Use the **no** form of this command to follow the global **version** rules.

ip rip send version [1] [2]

no ip rip send version

Syntax Description

1	(Optional) Sends only RIP Version 1 packets out the interface.
2	(Optional) Sends only RIP Version 2 packets out the interface.

Defaults

The software behaves according to the router **version** command.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

Use this command to override the default behavior of RIP as specified by the router **version** command. This command applies only to the interface being configured.

The following example configures the interface to send both RIP Version 1 and Version 2 packets out the interface:

```
ip rip send version 1 2
```

The following example configures the interface to send only RIP Version 2 packets out the interface:

```
ip rip send version 2
```

Related Commands

Command	Description
ip rip receive version	Specifies a RIP version to receive on an interface basis.
version	Specifies a RIP version used globally by the router.

ip split-horizon (RIP)

To enable the split horizon mechanism, use the **ip split-horizon** command in interface configuration mode. To disable the split horizon mechanism, use the **no** form of this command.

ip split-horizon

no ip split-horizon

Syntax Description

This command has no arguments or keywords.

Defaults

Default behavior varies with media type.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

For all interfaces except those for which either Frame Relay or SMDS encapsulation is enabled, the default condition for this command is **ip split-horizon**; in other words, the split horizon feature is active. If the interface configuration includes either the **encapsulation frame-relay** or **encapsulation smds** commands, then the default is for split horizon to be disabled. Split horizon is not disabled by default for interfaces using any of the X.25 encapsulations.



Note

For networks that include links over X.25 PSNs, the **neighbor** router configuration command can be used to defeat the split horizon feature. You can as an alternative *explicitly* specify the **no ip split-horizon** command in your configuration. However, if you do so you *must* similarly disable split horizon for all routers in any relevant multicast groups on that network.



Note

If split horizon has been disabled on an interface and you want to enable it, use the **ip split-horizon** command to restore the split horizon mechanism.



Note

In general, changing the state of the default for the **ip split-horizon** command is not recommended, unless you are certain that your application requires a change in order to properly advertise routes. If split horizon is disabled on a serial interface (and that interface is attached to a packet-switched network), you *must* disable split horizon for all routers and access servers in any relevant multicast groups on that network.

The following simple example disables split horizon on a serial link. The serial link is connected to an X.25 network:

```
interface serial 0
encapsulation x25
no ip split-horizon
```

Related Commands

Command	Description
neighbor (RIP)	Defines a neighboring router with which to exchange routing information.

neighbor (RIP)

To define a neighboring router with which to exchange routing information, use this form of the **neighbor** command in router configuration mode. To remove an entry, use the **no** form of this command.

neighbor *ip-address*

no neighbor *ip-address*

Syntax Description

<i>ip-address</i>	IP address of a peer router with which routing information will be exchanged.
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Defaults

No neighboring routers are defined.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

This command permits the point-to-point (nonbroadcast) exchange of routing information. When it is used in combination with the **passive-interface** router configuration command, routing information can be exchanged between a subset of routers and access servers on a LAN.

Multiple **neighbor** commands can be used to specify additional neighbors or peers.

Examples

In the following example, RIP updates are sent to all interfaces on network 10.108.0.0 except interface Ethernet 1. However, in this case a **neighbor** router configuration command is included. This command permits the sending of routing updates to specific neighbors. One copy of the routing update is generated per neighbor.

```
router rip
 network 10.108.0.0
 passive-interface ethernet 1
 neighbor 10.108.20.4
```

Related Commands

Command	Description
passive-interface	Disables sending routing updates on an interface.

network (RIP)

To specify a list of networks for the Routing Information Protocol (RIP) routing process, use this form of the **network** command in router configuration mode. To remove an entry, use the **no** form of this command.

network *network-number*

no network *network-number*

Syntax Description

<i>network-number</i>	IP address of the network of directly connected networks.
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Defaults

No networks are specified.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

The network number specified must not contain any subnet information. There is no limit to the number of **network** commands you can use on the router. RIP routing updates will be sent and received only through interfaces on this network.

RIP sends updates to the interfaces in the specified networks. Also, if an interface's network is not specified, it will not be advertised in any RIP update.

Examples

The following example defines RIP as the routing protocol to be used on all interfaces connected to networks 10.99.0.0 and 192.168.7.0:

```
router rip
 network 10.99.0.0
 network 192.168.7.0
```

Related Commands

Command	Description
router rip	Configures the Routing Information Protocol (RIP) process.

offset-list

To add an offset to incoming and outgoing metrics to routes learned via RIP, use the **offset-list** command in router configuration mode. To remove an offset list, use the **no** form of this command.

offset-list {*access-list-number* | *name*} {**in** | **out**} *offset* [*type number*]

no offset-list {*access-list-number* | *name*} {**in** | **out**} *offset* [*type number*]

Syntax Description

<i>access-list-number</i> <i>name</i>	Standard access list number or name to be applied. Access list number 0 indicates all access lists. If <i>offset</i> is 0, no action is taken. For IGRP, the offset is added to the delay component only.
in	Applies the access list to incoming metrics.
out	Applies the access list to outgoing metrics.
<i>offset</i>	Positive offset to be applied to metrics for networks matching the access list. If the offset is 0, no action is taken.
<i>type</i>	(Optional) Interface type to which the offset-list is applied.
<i>number</i>	(Optional) Interface number to which the offset-list is applied.

Defaults

This command is disabled by default.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
10.3	The <i>type</i> and <i>number</i> arguments were added.
11.2	The <i>name</i> argument was added.

Usage Guidelines

The offset value is added to the routing metric. An offset-list with an interface type and interface number is considered extended and takes precedence over an offset-list that is not extended. Therefore, if an entry passes the extended offset-list and the normal offset-list, the extended offset-list's offset is added to the metric.

Examples

In the following example, the router applies an offset of 10 to the router's delay component only to access list 21:

```
offset-list 21 out 10
```

In the following example, the router applies an offset of 10 to routes learned from Ethernet interface 0:

```
offset-list 21 in 10 ethernet 0
```

output-delay

To change the interpacket delay for RIP updates sent, use the **output-delay** command in router configuration mode. To remove the delay, use the **no** form of this command.

```
output-delay delay
no output-delay [delay]
```

Syntax Description	delay	Delay, in milliseconds, between packets in a multiple-packet RIP update. The range is 8 to 50 milliseconds. The default is no delay.
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Defaults	0 milliseconds
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Command Modes	Router configuration
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Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines	Consider using this command if you have a high-end router sending at high speed to a low-speed router that might not be able to receive at the high speed. Configuring this command will help prevent the routing table from losing information.
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Examples	The following example sets the interpacket delay to 10 milliseconds: output-delay 10
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router rip

To configure the Routing Information Protocol (RIP) routing process, use the **router rip** command in global configuration mode. To turn off the RIP routing process, use the **no** form of this command.

router rip

no router rip

Syntax Description

This command has no arguments or keywords.

Defaults

No RIP routing process is defined.

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following example shows how to begin the RIP routing process:

```
router rip
```

Related Commands

Command	Description
network (RIP)	Specifies a list of networks for the Routing Information Protocol (RIP) process.

timers basic

To adjust RIP network timers, use the **timers basic** command in router configuration mode. To restore the default timers, use the **no** form of this command.

timers basic *update invalid holddown flush*

no timers basic

Syntax Description	<i>update</i>	Rate in seconds at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.
	<i>invalid</i>	Interval of time (in seconds) after which a route is declared invalid. The interval should be at least three times the value of <i>update</i> time. The interval is measured from the last update received for the route. The route becomes invalid when there is an absence of updates during the <i>invalid</i> time that refresh the route. The route is marked inaccessible and advertised as unreachable. However, the route still forwards packets until the <i>flush</i> interval expires. The default is 180 seconds.
	<i>holddown</i>	Interval (in seconds) during which routing information regarding better paths is suppressed. The interval should be at least three times the value of <i>update</i> time. A route enters into a holddown state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route continues to forward packets until an update is received with a better metric or until the holddown time expires. When the holddown expires, routes advertised by other sources are accepted and the route is no longer inaccessible. The default is 180 seconds.
	<i>flush</i>	Amount of time (in seconds) that must pass before the route is removed from the routing table. The interval is measured from the last update received for the route. The interval should be longer than the larger of the <i>invalid</i> and <i>holddown</i> values. If the interval is less than the sum of the <i>update</i> and <i>holddown</i> values, the proper holddown interval cannot elapse, which results in a new route being accepted before the holddown interval expires. The default is 240 seconds.

Defaults

update is 30 seconds
invalid is 180 seconds
holddown is 180 seconds
flush is 240 seconds

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

The basic timing parameters for RIP are adjustable. Since RIP is executing a distributed, asynchronous routing algorithm, it is important that these timers be the same for all routers and access servers in the network.

**Note**

The current and default timer values can be seen by inspecting the output of the **show ip protocols EXEC** command. The relationships of the various timers should be preserved as described previously.

The following example sets updates to be broadcast every 5 seconds. If a router is not heard from in 15 seconds, the route is declared unusable. Further information is suppressed for an additional 15 seconds. At the end of the suppression period, the route is flushed from the routing table.

```
router rip
 timers basic 5 15 15 30
```

**Note**

By setting a short update period, you run the risk of congesting slow-speed serial lines; however, this is not a big concern on faster-speed Ethernets and T1-rate serial lines. Also, if you have many routes in your updates, you can cause the routers to spend an excessive amount of time processing updates.

validate-update-source

To have the Cisco IOS software validate the source IP address of incoming routing updates for RIP and IGRP routing protocols, use the **validate-update-source** command in router configuration mode. To disable this function, use the **no** form of this command.

validate-update-source

no validate-update-source

Syntax Description

This command has no arguments or keywords.

Defaults

The behavior of this command is enabled by default.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

This command is applicable only to RIP and IGRP. The software ensures that the source IP address of incoming routing updates is on the same IP network as one of the addresses defined for the receiving interface.

Disabling split horizon on the incoming interface will also cause the system to perform this validation check.

For unnumbered IP interfaces (interfaces configured as **ip unnumbered**), no checking is performed.

Examples

The following example configures a router not to perform validation checks on the source IP address of incoming RIP updates:

```
router rip
network 10.105.0.0
no validate-update-source
```

version

To specify a RIP version used globally by the router, use the **version** command in router configuration mode. Use the **no** form of this command to restore the default value.

version {1 | 2}

no version

Syntax Description	1	Specifies RIP Version 1.
	2	Specifies RIP Version 2.

Defaults The software receives RIP Version 1 and Version 2 packets, but sends only Version 1 packets.

Command Modes Router configuration

Command History	Release	Modification
	11.1	This command was introduced.

Usage Guidelines To specify RIP versions used on an interface basis, use the **ip rip receive version** and **ip rip send version** commands.

Examples The following example enables the software to send and receive RIP Version 2 packets:

```
version 2
```

Related Commands	Command	Description
	ip rip receive version	Specifies a RIP version to receive on an interface basis.
	ip rip send version	Specifies a RIP version to send on an interface basis.
	show ip protocols	Displays the parameters and current state of the active routing protocol process..

version