RSVP Infrastructure Commands on Cisco IOS XR Software

Note For the Cisco IOS XR Release 3.1 software, only the Cisco 12000 Series router is supported.

Resource Reservation Protocol (RSVP) is a signaling protocol that is used to set up, maintain, and control end-to-end Quality of Service (QoS) reservations over IP. RSVP is specified in Internet Engineering Task Force (IETF) RFC 2205 (ftp://ftp.isi.edu/in-notes/rfc2205.txt).

The protocol has been extended to signal Multiprotocol Label Switching traffic engineering (MPLS TE) tunnels, as specified in the IETF RFC 3209, *RSVP-TE: Extensions to RSVP for LSP Tunnels* and Optical UNI tunnels, as specified in the Optical Interworking Forum (OIF) document OIF2000.125.7, *User Network Interface (UNI) 1.0, Signalling Specification*. The RSVP implementation also supports Fault handling as specified in IETF RFC 3473, Generalized Multiprotocol Label Switching (GMPLS) Signaling RSVP-TE extensions.

bandwidth (RSVP)

To configure Resource Reservation Protocol (RSVP) bandwidth on an interface, use the **bandwidth** command in RSVP interface configuration mode. To reset the RSVP bandwidth on that interface to its default value, use the **no** form of this command.

bandwidth [*total-bandwidth max-flow*] [**sub-pool** *sub-pool-bw*]

no bandwidth

Syntax Description

total-bandwidth	(Optional) Total reservable bandwidth (in kbps) that RSVP will accept for reservations on this interface. The range is from 0 to 10000000.
max-flow	(Optional) Maximum size (in kbps) of a single reservation. The range is from 0 to 10000000.
sub-pool *sub-pool-bw*	(Optional) Subpool bandwidth (in kbps) on the interface. This is for Multiprotocol Label Switching (MPLS) DiffServ Traffic Engineering (TE). This value cannot be bigger than the total bandwidth.

Defaults

sub-pool-bw: 0

Note If the command is entered without the optional arguments, the RSVP total bandwidth is set to 75 percent of the intrinsic bandwidth of the interface. (If the interface has zero intrinsic bandwidth, then none can be reserved for RSVP. In the case of the Optical User Network Interface (O-UNI), 0 bandwidth is not an issue as it does not use bandwidth as a resource.

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

When RSVP is enabled on an interface, no bandwidth resources are specified for RSVP on that interface. This command is used to specify the RSVP bandwidth on an interface so that RSVP can make bandwidth reservations on behalf of applications (for instance, MPLS Traffic Engineering). If the RSVP bandwidth on an interface is 0, RSVP can only be used to signal for flows which do not require bandwidth.

The *max-flow* argument default equals the total RSVP bandwidth on the interface (that is, the *total-bandwidth* parameter value).

If RSVP reservation messages are received on an interface different from the one through which the corresponding path message was sent out, the interfaces are adjusted such that all resource reservations, such as bandwidth, are done on the outgoing interface of the path message.

Examples

The following example shows how to limit the total of all RSVP reservations on POS interface 0/3/0/0 to 7500 kbps, and allows each single flow to reserve no more than 1000 kbps:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# bandwidth 7500 1000
```

The following example limits the total of all RSVP reservations on POS interface 0/3/0/0 to 7500 kbps, allows each single flow to reserve no more than 1000 kbps, and limits the subpool bandwidth to 2000 kbps:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# bandwidth 7500 1000 sub-pool 2000
```

The following example limits the total of all RSVP reservations on POS interface 0/3/0/0 to 5000 kbps, but specifies no limit on single flow bandwidth. By default then, a single flow can use the entire RSVP bandwidth on the interface—in this example, 5000 kbps:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# bandwidth 5000
```

The following example specifies for POS interface 0/3/0/0 the default maximum reservable bandwidth and maximum flow bandwidth, namely 75 percent of the interface bandwidth, and the default sub-pool bandwidth (0):

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# bandwidth
```

The following example clears the RSVP bandwidth on POS interface 0/3/0/0:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# no bandwidth
```

Related Commands

Command	Description
interface (rsvp)	Configures RSVP on an interface.

clear rsvp counters all

To clear (set to zero) all Resource Reservation Protocol (RSVP) message and event counters that are being maintained by the router, use the **clear rsvp counters all** command in EXEC mode.

clear rsvp counters all *type number*

Syntax Description

type	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
number	(Optional) Either a physical interface number or a virtual interface number: • Physical interface number. Interface rack, slot, module, and port numbers in this notation: rack/slot/module/port. A slash mark between numbers is required as part of the notation. • Virtual interface number. Number range will vary depending on interface type. For more information about the numbering syntax for the router, use the question mark (**?**) online help function.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Examples

The following example shows how to clear all message and event counters:

```
RP/0/RP0/CPU0:router# clear rsvp counters all
```

Related Commands

Command	Description
clear rsvp counters events	Clears (sets to zero) all RSVP event counters that are being maintained by the router.
clear rsvp counters messages	Clears (sets to zero) all RSVP message counters that are being maintained by the router.
show rsvp counters	Shows all RSVP message/event counters that are being maintained by the router.

clear rsvp counters events

To clear (set to zero) all Resource Reservation Protocol (RSVP) event counters that are being maintained by the router, use the **clear rsvp counters events** command in EXEC mode.

clear rsvp counters events [*type number*]

Syntax Description

type	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
number	(Optional) Either a physical interface number or a virtual interface number: • Physical interface number. Interface rack, slot, module, and port numbers in this notation: rack/slot/module/port. A slash mark between numbers is required as part of the notation. • Virtual interface number. Number range will vary depending on interface type. For more information about the numbering syntax for the router, use the question mark (**?**) online help function.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use the **clear rsvp counters events** command to set all RSVP event counters to zero.

Examples

The following example shows how to clear all event counters:

```
RP/0/RP0/CPU0:router# clear rsvp counters events
```

Related Commands

Command	Description
clear rsvp counters messages	Clears (sets to zero) all RSVP message counters that are being maintained by the router.
show rsvp counters	Shows RSVP event counters that are being maintained by the router when the *events* option is specified.

clear rsvp counters messages

To clear (set to zero) all Resource Reservation Protocol (RSVP) message counters that are being maintained by the router, use the **clear rsvp counters messages** command in EXEC mode.

clear rsvp counters messages [*type number*]

Syntax Description

type	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
number	(Optional) Either a physical interface number or a virtual interface number: • Physical interface number. Interface rack, slot, module, and port numbers in this notation: rack/slot/module/port. A slash mark between numbers is required as part of the notation. • Virtual interface number. Number range will vary depending on interface type. For more information about the numbering syntax for the router, use the question mark (**?**) online help function.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use the **clear rsvp counters messages** command to set all RSVP message counters to zero.

Examples

The following example uses the **clear rsvp counters messages** command to set all RSVP message counters for POS interface 0/3/0/2 to zero:

```
RP/0/RP0/CPU0:router# clear rsvp counters messages pos0/3/0/2
```

Related Commands

Command	Description
show rsvp counters	Displays the number of RSVP messages that were sent and received.

rsvp

To enter Resource Reservation Protocol (RSVP) configuration submode, use the **rsvp** command in global configuration mode. From this submode, RSVP global and interface configuration commands can be entered.

rsvp

Syntax Description

This command has no keywords or arguments.

Command Modes

Global configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

This submode allows configuration of global RSVP parameters such as graceful restart (signaling) and interface-specific configuration.

Examples

The following example shows how to enable RSVP configuration submode:

```
RP/0/RP0/CPU0:router(config)# rsvp
RP/0/RP0/CPU0:router(config-rsvp)#
```

Related Commands

Command	Description
interface (rsvp)	Configures RSVP interface related parameters.
rsvp signalling graceful-restart	Configures RSVP graceful-restart parameters.
rsvp signalling hello graceful-restart refresh interval	Configures RSVP hello refresh interval for graceful-restart feature.
rsvp signalling hello graceful-restart refresh misses	Configures number of hello's which can be missed for graceful-restart feature.
rsvp signalling graceful-restart restart-time	Configures restart time to be advertised to neighbor as part of graceful-restart feature.

interface (rsvp)

To configure Resource Reservation Protocol (RSVP) on an interface, use the interface command in rsvp configuration mode. To disable RSVP on that interface, use the **no** form of this command.

interface *type number*

no interface *type number*

Syntax Description

type	Interface type. For more information, use the question mark (**?**) online help function.
number	Either a physical interface number or a virtual interface number: • Physical interface number. Interface rack, slot, module, and port numbers in this notation: rack/slot/module/port. A slash mark between numbers is required as part of the notation. • Virtual interface number. Number range will vary depending on interface type. For more information about the numbering syntax for the router, use the question mark (**?**) online help function.

Defaults

RSVP is enabled by default on an interface under the following conditions. (Enabling RSVP on an interface means that interface can be used by RSVP to send and receive RSVP messages).

- RSVP is configured on that interface using the **rsvp interface** command.
- MPLS is configured on that interface.
- Automatically enabled as in the case of out-of-band signaling for the Optical User Network Interface (O-UNI) application, where an RSVP message could be received on an interface which is not configured under RSVP or Multiprotocol Label Switching (MPLS).

Command Modes

RSVP configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

When RSVP is enabled on an interface by any of the three methods mentioned in the above section, the default bandwidth is 0. Use the **bandwidth** command in RSVP interface configuration mode to configure the bandwidth on an interface.

If the interface bandwidth is 0, RSVP can only be used to signal flows that do not require bandwidth on this interface. In the case of O-UNI, 0 bandwidth is not an issue, as O-UNI does not use bandwidth as a resource.

The **rsvp interface** command enables the RSVP interface configuration submode.

Examples

The following example shows how to enable the RSVP interface configuration submode and enables RSVP on this interface with 0 bandwidth:

```
RP/0/RP0/CPU0:router(config-rsvp)# interface pos 0/3/0/0
```

Related Commands

Command	Description
bandwidth (RSVP)	Configures RSVP bandwidth on an interface.

rsvp signalling graceful-restart

To enable or disable Resource Reservation Protocol (RSVP) signaling graceful restart, use the **rsvp signalling graceful-restart** command in RSVP configuration mode. To disable signaling graceful-restart, enter the **no** form of this command.

rsvp signalling graceful-restart

no rsvp signalling graceful-restart

Syntax Description

This command has no arguments or keywords.

Defaults

RSVP signalling graceful restart is disabled.

Command Modes

RSVP configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

The **rsvp signalling graceful-restart** command provides a mechanism that helps minimize the negative effects on Multiprotocol Label Switching (MPLS) and Optical User Network Interface (O-UNI) traffic for the following types of faults. This is an implementation of the fault handling section of the IETF standard RFC 3473:

- Control channel failure: disruption of communication channels between 2 nodes when the communication channels are separated from the data channels.
- Node failure: the control plane of a node fails, but the node preserves its data forwarding states.

The **rsvp signalling graceful-restart** command instigates the exchange of RSVP hello messages between the router and its neighbor nodes. Once the hello messages are established with a given neighbor, RSVP can then detect the above two types of faults when they occur with the neighbor in question.

Examples

The following example enables RSVP signalling graceful restart:

```
RP/0/RP0/CPU0:router(config)# rsvp signalling graceful-restart
```

The following example disables RSVP signalling graceful restart:

```
RP/0/RP0/CPU0:router(config)# no rsvp signalling graceful-restart
```

Related Commands

Command	Description
rsvp signalling graceful-restart restart-time	Configures the restart time that is advertised in the Restart Cap object in hello messages.

rsvp signalling hello graceful-restart refresh interval

To configure the interval at which Resource Reservation Protocol (RSVP) graceful-restart hello messages are sent to each neighbor, use the **rsvp signalling hello graceful-restart refresh interval** command in global configuration mode. To reset to the default value of 5000 milliseconds, use the **no** form of the command.

rsvp signalling hello graceful-restart refresh interval *refresh-interval*

no rsvp signalling hello graceful-restart refresh interval

Syntax Description

refresh-interval	Interval at which RSVP Graceful-Restart hello messages are sent to each neighbor (3000 to 30000 milliseconds).

Defaults

refresh interval: 5000 milliseconds

Command Modes

Global configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

This command determines how often hello messages are sent to each neighbor. If the interval is made short, the hello messages are sent more frequently. While a short interval may help detect failures quickly, it also results in increased network traffic. Optimizations in the RSVP hello mechanism exist to reduce the number of hello messages traveling over the network.

When an RSVP hello message is received, the receiving node acknowledges the hello and restarts its hello timer to the neighbor. By doing this, a hello is transmitted to the neighbor only if a hello is not received before the hello refresh interval has expired.

If two neighboring nodes do not have the same hello interval, the node with the larger hello interval has to acknowledge its neighbor's (more frequent) hellos. For instance, if node A has a hello interval of 5 seconds, and node B has a hello interval of 10 seconds, node B still has to send hello messages every 5 seconds.

The hello back-off mechanism is an optimization that is tailored to minimize the number of hello messages from a neighbor that either does not have graceful restart enabled, or fails to come back up during the restart interval. The restart interval is provided by the neighbor in the restart cap object.

Examples

The following example sets the hello graceful-restart refresh interval to 4000 msecs:

```
RP/0/RP0/CPU0:router(config)# rsvp signalling hello graceful-restart refresh interval 4000
```

Related Commands

Command	Description
rsvp signalling hello graceful-restart refresh misses	Configures the number of consecutive missed RSVP hello messages before a neighbor is declared down or unreachable.

rsvp signalling hello graceful-restart refresh misses

To configure the number of consecutive missed Resource Reservation Protocol (RSVP) hello messages before a neighbor is declared down or unreachable, use the **rsvp signalling hello graceful-restart refresh misses** command in global configuration mode. To reset to the default value of 3, use the **no** form of the command.

rsvp signalling hello graceful-restart refresh misses *refresh-misses*

no rsvp signalling hello graceful-restart refresh misses

Syntax Description

refresh-misses	The number of misses for hello messages (3 to 10) before a neighbor is declared down or unreachable. The default is 3.

Defaults

refresh-misses: 3

Command Modes

Global configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

If no hello messages (request or ACK) are received from a neighbor within the configured number of refresh misses, then the node assumes that communication with the neighbor has been lost.

Examples

The following example sets hello graceful-restart refresh misses to 4:

```
RP/0/RP0/CPU0:router(config)# rsvp signalling hello graceful-restart refresh misses 4
```

Related Commands

Command	Description
rsvp signalling hello graceful-restart refresh interval	Configures the interval at which RSVP graceful restart hello messages are sent per neighbor.

rsvp signalling graceful-restart restart-time

To configure the restart time that is advertised in the Restart Cap object in hello messages, use the **rsvp signalling graceful-restart restart-time** command in global configuration mode. To reset the restart-time to the default value, enter the **no** form of this command.

rsvp signalling graceful-restart restart-time *restart-time*

no rsvp signalling graceful-restart restart-time

Syntax Description

restart-time	The amount of time after a control-plane restart that RSVP can start exchanging hello messages (60 to 3600 seconds). The default value is 120 seconds.

Defaults

restart-time: 120 seconds

Command Modes

Global configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

If no hello messages are received from a neighbor within a certain number of hello intervals, then a node assumes that communication with the neighbor has been lost. The node waits the amount of time advertised by the last restart time communicated by the neighbor, before invoking procedures for recovery from communication loss.

The configured Restart Time is important in case of recovery from failure. The configured value should accurately reflect the amount of time within which, after a control-plane restart, RSVP can start exchanging hello messages.

Examples

The following example shows how to set the restart-time:

```
RP/0/RP0/CPU0:router(config)# rsvp signalling graceful-restart restart-time 200
```

The following example shows how to resets the restart-time to the default of 120 seconds:

```
RP/0/RP0/CPU0:router(config)# no rsvp signalling graceful-restart restart-time
```

Related Commands

Command	Description
rsvp signalling graceful-restart	Enables or disables graceful restart.

show rsvp counters

To display internal Resource Reservation Protocol (RSVP) counters, use the **show rsvp counters** command in EXEC mode.

show rsvp counters [**messages** *type number*] [**summary** | **events**]

Syntax Description

messages	(Optional) Displays a historical count of the number of messages RSVP has received and sent on each interface along with a summation.
type	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
number	(Optional) Either a physical interface number or a virtual interface number: • Physical interface number. Interface rack, slot, module, and port numbers in this notation: rack/slot/module/port. A slash mark between numbers is required as part of the notation. • Virtual interface number. Number range will vary depending on interface type. For more information about the numbering syntax for the router, use the question mark (**?**) online help function.
summary	(Optional) Displays a summation number of messages RSVP has received and sent on all interfaces.
events	(Optional) Displays the number of states expired for lack of refresh and also a count of NACKs received.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

In message counters, bundle messages are counted as single bundle messages. The component messages are not counted separately.

Examples

The following is sample output from the **show rsvp counters summary** command:

```
RP/0/RP0/CPU0:router# show rsvp counters messages summary

  All RSVP Interfaces    Recv     Xmit                        Recv     Xmit
     Path                  41        1    Resv                   0       40
     PathError              0        0    ResvError              0        0
     PathTear               7        1    ResvTear               0       16
     ResvConfirm            0        0    Ack                   34       16
     Bundle                 0             Hello                 25        0
     SRefresh           10119    10132    OutOfOrder             0
     Retransmit                     22    Rate Limited                    0
```

The following is sample output from the **show rsvp counters messages** command for POS interface 0/3/0/0:

```
RP/0/RP0/CPU0:router# show rsvp counters messages POS 0/3/0/0

  POS0/3/0/0             Recv     Xmit                        Recv     Xmit
     Path                  24        1    Resv                   0        0
     PathError              0        0    ResvError              0        0
     PathTear               5        1    ResvTear               0        0
     ResvConfirm            0        0    Ack                   34        0
     Bundle                 0             Hello                  0        0
     SRefresh           10118        0    OutOfOrder             0
     Retransmit                      0    Rate Limited                    0
```

Table 39 describes the significant fields shown in the display.

Table 39 show rsvp counters messages Field Descriptions

Field	Description
Path	Number of path messages sent downstream or received from an upstream node.
PathError	Number of path error messages received from a downstream neighbor or sent to an upstream neighbor.
PathTear	Number of path tear messages sent downstream, or messages received, from upstream neighbors.
ResvConfirm	Number of reservation confirmation messages received from an upstream neighbor or sent to a downstream neighbor.
Bundle	Number of bundle messages containing RSVP sub-messages sent and received by the neighbor.
SRefresh	Number of summary refresh messages sent to and received by a neighbor to refresh the path and reservation states.
Retransmit	Number of messages retransmitted to ensure reliable messaging (related to Refresh Reduction).
Resv	Number of reservation messages received from a downstream neighbor or sent to an upstream neighbor to reserve resources.
ResvError	Number of reservation error messages received from a upstream neighbor or sent to a downstream neighbor.
ResvTear	Number of reservation tear messages received from a downstream neighbor or sent to an upstream neighbor to tear down RSVP flows.
Ack	Number of acknowledgement messages sent and received by a neighbor acknowledging receipt of a message.

Table 39 show rsvp counters messages Field Descriptions (continued)

Field	Description
Hello	Number of hello messages sent to and received by a neighbor.
OutOfOrder	Number of path or reservation messages received that are found to be out of order.
Rate Limited	Number of RSVP packets affected by rate limiting.

The following is sample output from the **show rsvp counters events** command:

```
RP/0/RP0/CPU0:router# show rsvp counters events

Ethernet0/0/0/0                          tunnel1
 Expired Path states           0          Expired Path states           0
 Expired Resv states           0          Expired Resv states           0
 NACKs received                0          NACKs received                0
POS0/3/0/1                               POS0/3/0/2
 Expired Path states           0          Expired Path states           0
 Expired Resv states           0          Expired Resv states           0
 NACKs received                0          NACKs received                0
POS0/3/0/3                               All RSVP Interfaces
 Expired Path states           0          Expired Path states           0
 Expired Resv states           0          Expired Resv states           0
 NACKs received                0          NACKs received                0
```

Table 40 describes the significant fields shown in the display.

Table 40 show rsvp counters events Field Descriptions

Field	Description
Expired Path states	Number of Path states expired for lack of refresh.
Expired Reserve states	Number of Resv states expired for lack of refresh.
NACKS received	Number of NACKS received.

show rsvp graceful-restart

To display the local graceful restart information for Resource Reservation Protocol (RSVP), use the **show rsvp graceful-restart** command in EXEC mode.

show rsvp graceful-restart [**neighbors** *ip-address* | **detail**]

Syntax Description

neighbors	(Optional) Displays single-line status for each neighbor. If the neighbors keyword is not specified, only a multiline table entry is displayed showing the local graceful restart information.
ip-address	(Optional) Address of the neighbor you are displaying. Displays a specific neighbor with that destination address only. If no address is specified, all neighbors are displayed.
detail	(Optional) Displays multiline status for each neighbor. If the **detail** keyword is not specified, only a single-line table entry is displayed.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Graceful restart neighbors are displayed in ascending order of neighbor IP address.

Examples

The following is sample output from the **show rsvp graceful-restart** command:

```
RP/0/RP0/CPU0:router# show rsvp graceful-restart

Graceful restart: enabled  Number of global neighbors: 1
Local MPLS router id: 192.168.55.55
Restart time: 60 seconds  Recovery time: 120 seconds
Recovery timer: Not running
Hello interval: 5000 milliseconds  Maximum Hello miss-count: 4
```

Table 41 describes the significant fields shown in the display.

Table 41 show rsvp graceful-restart Field Descriptions

Field	Description
Graceful restart	Indicates whether graceful restart is configured locally.
Number of global neighbors	Number of neighbors identified by a unique router id.
Local router id	Local router id used for the MPLS or OUNI applications.
Restart time	Amount of time after a loss in Hello messages within which RSVP hello session can be reestablished. This setting is also manually configurable.
Recovery time	Local recovery time advertised to neighbors. This is dynamically-computed based on the number of LSPs established and is the time to be used by neighbors to refresh states in the event of a failure.
Recovery timer:	A countdown timer which, upon expiry, causes un-refreshed data forwarding states to be deleted (usually begining with a value which is equivalent to the sum of Restart time and Recovery time)
Hello interval	Interval at which hello messages are sent to neighbors. This can either be the default value or configured by the user.
Maximum hello miss-count	Number of hellos from a neighbor which can be missed before declaring hellos down.

The following is sample output from the **show rsvp graceful-restart neighbors** command, which displays information about graceful restart neighbors in the router:

```
RP/0/RP0/CPU0:router# show rsvp graceful-restart neighbors

Neighbor          App  State Recovery       Reason                Since  LostCnt
--------------- ----- ------ -------- ------------ -------------------- --------
192.168.77.77 MPLS     UP     DONE          N/A  19/12/2002 17:02:25        0
```

Table 42 describes the significant fields shown in the display.

Table 42 show rsvp graceful-restart neighbors Field Descriptions

Field	Description
Neighbor	Router id of a global neighbor.
App	Application type of a global neighbor (MPLS or OUNI).
State	State of the hello session to a global neighbor (UP, DOWN, or INIT).
Recovery	The state at which the local node is recovering a global neighbor.
Reason	The last reason for which communication has been lost for a global neighbor. If none has occurred, this field will be marked as N/A.
Since	The time at which the current hello state for a global neighbor has been established.
LostCnt	Number of times hello communication has been lost with a global neighbor.

The following is sample output from the **show rsvp graceful-restart neighbors detail** command, which displays detailed information about all graceful restart neighbors for the router:

```
RP/0/RP0/CPU0:router# show rsvp graceful-restart neighbors detail

Neighbor: 192.168.77.77 Source: 192.168.55.55 (MPLS)
  Hello instance for application MPLS
    Hello State: UP        (for 00:20:52)
    Number of times communications with neighbor lost: 0
    Reason: N/A
  Recovery State: DONE
  Number of Interface neighbors: 1
    address: 8.8.8.9
  Restart time: 120 seconds  Recovery time: 120 seconds
  Restart timer: Not running
  Recovery timer: Not running
  Hello interval: 5000 milliseconds  Maximum allowed missed Hello messages: 4
```

Table 43 describes the significant fields shown in the display.

Table 43 show rsvp graceful-restart neighbors detail Field Descriptions

Field	Description
Neighbor	Router id of a global neighbor.
Source	Local router id and application type.
Hello State	State of the hello instance for the global neighbor (UP, DOWN, or INIT) and duration of the current state.
Number of times communications with neighbor lost	Number of times hello communication has been lost with a global neighbor.
Reason	The last reason for which communication has been lost for a global neighbor. If none has occurred, this field will be marked as N/A.
Recovery State	The state at which the local node is recovering a global neighbor.
Number of Interface neighbors	The number of interfaces belonging to a global neighbor.
Address	The ip address of the interface neighbor.
Recovery time	Remote recovery time for a global neighbor.
Hello interval	Interval at which hello messages are to be sent by the remote global neighbor. This can either be the default value or configured by the user.
Maximum allowed missed Hello messages	Number of hellos which can be missed by the remote global neighbor before declaring hellos down.

show rsvp hello instance

To display the Resource Reservation Protocol (RSVP) hello instances, use the **show rsvp hello instance** command in EXEC mode.

show rsvp hello instance [*ip-address* | **detail**]

Syntax Description

ip-address	(Optional) Address of the neighbor you are displaying. Displays a specific neighbor with that destination address only. If no address/name is specified, all neighbors are displayed.
detail	(Optional) Displays multiline status for each hello instance. If the **detail** keyword is not specified, only a single-line table entry is displayed.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Hello instances are displayed in ascending order of neighbor IP address.

Examples

The following is sample output from the **show rsvp hello instance** command, which displays brief information about all hello instances in the router:

```
RP/0/RP0/CPU0:router# show rsvp hello instance

Neighbor         Type    State    Interface    LostCnt
---------------- ------  -------- ------------ --------
192.168.77.77    ACTIVE  UP       None         0
```

Table 44 describes the significant fields shown in the display.

Table 44 show rsvp hello instance Field Descriptions

Field	Description
Neighbor	Router id of a global neighbor hosting the hello instance.
Type	The hello instance type (ACTIVE or PASSIVE). ACTIVE type indicates that a node is sending hello requests and PASSIVE indicates that a node is sending hello acks.
State	State of the hello session to a global neighbor (UP, DOWN, or INIT).

Table 44 show rsvp hello instance Field Descriptions (continued)

Field	Description
Interface	The interface for interface bound hello's used for FRR. Hello instances bound to a global neighbor will show Interface as None. Hello's used for FRR are currently not supported.
LostCnt	Number of times hello communication has been lost with a global neighbor.

The following is sample output from the **show rsvp hello instance** command, which displays detailed information about all hello instances in the router:

```
RP/0/RP0/CPU0:router# show rsvp hello instance detail

Neighbor: 192.168.77.77 Source: 192.168.55.55 (MPLS)
  State: UP        (for 00:07:14)
  Type: ACTIVE   (sending requests)
  I/F: None
  Hello interval (msec) (used when ACTIVE)
  Configured: 5000
  Src_instance 0x484b01, Dst_instance 0x4d4247
  Counters:
  Communication with neighbor lost:
    Num of times: 0    Reasons:
      Missed acks:             0
      New Src_Inst received:   0
      New Dst_Inst received:   0
      I/f went down:           0
      Neighbor disabled Hello: 0
  Msgs Received:   93
    Sent:       92
    Suppressed: 87
```

Table 45 describes the significant fields shown in the display.

Table 45 show rsvp hello instance detail Field Descriptions

Field	Description
Neighbor	Router id of a global neighbor.
Source	Local router id and application type.
State	State of the hello instance for the global neighbor (UP, DOWN or INIT) and duration of the current state.
Type	The hello instance type (ACTIVE or PASSIVE). ACTIVE type indicates that a node is sending hello requests and PASSIVE indicates that a node is sending hello acks.
I/F	The interface for interface bound hello's. Hello instances for Graceful restart will show interface as None. Note that Hello's are not supported for Fast Reroute.

show rsvp interface

To display information about all interfaces with Resource Reservation Protocol (RSVP) enabled, use the **show rsvp interface** command in EXEC mode.

show rsvp interface *type number* [**detail**]

Syntax Description

type	Interface type. For more information, use the question mark (**?**) online help function.
number	Either a physical interface number or a virtual interface number: • Physical interface number. Interface rack, slot, module, and port numbers in this notation: rack/slot/module/port. A slash mark between numbers is required as part of the notation. • Virtual interface number. Number range will vary depending on interface type. For more information about the numbering syntax for the router, use the question mark (**?**) online help function.
detail	(Optional) Displays multiline status for each interface. If the **detail** keyword is not specified, only a single-line table entry is displayed.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use this command to display various configuration settings such as the list of neighbors and their refresh reduction capabilities.

Examples

The following is sample output from the **show rsvp interface** command, which displays brief information about all RSVP-configured interfaces on the router:

```
RP/0/RP0/CPU0:router# show rsvp interface

    Interface   MaxBW    MaxFlow  Allocated        MaxSub
    ---------- -------- -------- --------------- -------
    tu2000         0        0        0 (  0%)        0
    PO0/3/0/0  1000M    1000M     200K(  0%)        0
```

This following is sample output from the **show rsvp interfaces detail** command, which displays detailed information about all RSVP-configured interfaces on the router:

```
RP/0/RP0/CPU0:router# show rsvp interface detail

INTERFACE: tunnel2000 (ifh=0x1000980).
 BW (bits/sec): Max=0. MaxFlow=0. Allocated=0 (0%). MaxSub=0.
 Signalling: No DSCP marking. No rate limiting.
 States in: 0. Max missed msgs: 4.
 Expiry timer: Not running. Refresh interval: 45s.
 Normal Refresh timer: Not running. Summary refresh timer: Not running.
 Refresh reduction local: Enabled. Summary Refresh: Enabled (4096 bytes max).
 Reliable summary refresh: Disabled.
 Ack hold: 400 ms, Ack max size: 4096 bytes. Retransmit: 900ms.

INTERFACE: POS0/3/0/0 (ifh=0x4000100).
 Bandwidth (bits/sec): Max=1000M. MaxFlow=1000M. Allocated=200K (0%). MaxSub=0.
 Signalling: No DSCP marking. No rate limiting.
 States in: 1. Max missed msgs: 4.
 Expiry timer: Running (every 30s). Refresh interval: 45s.
 Normal Refresh timer: Not running. Summary refresh timer: Running.
 Refresh reduction local: Enabled. Summary Refresh: Enabled (4096 bytes max).
 Reliable summary refresh: Disabled.
 Ack hold: 400 ms, Ack max size: 4096 bytes. Retransmit: 900ms.
 Neighbor information:
    Neighbor-IP    Nbor-MsgIds   States-out  Refresh-Reduction Expiry(min::sec)
 -------------- --------------   ----------  ----------------- ----------------
     1.1.1.2           1             1       Enabled           14::50
```

Table 46 describes the significant fields shown in the display.

Table 46 show rsvp interface detail Field Descriptions

Field	Description
Bandwidth	Indicates the configured values on the interface and also the amount allocated currently.
Ack hold	Time in millisec before RSVP responds with an Ack.
Neighbor-IP	Address of the peer with whom RSVP is exchanging messages on that interface.
Nbor-msglds	Number of messages id's (corresponds to number of LSP's with reliable messaging) received from the neighbor.
States-out	Number of states (including paths or reservations) sent on this interface to the neighbor.
Refresh Reduction	This flag indicates the neighbor's Refresh Reduction capability.
Expiry	This is the time a nbor entry in the interfaces database will expire if there is no activity on this interface with the corresponding neighbor.

Related Commands

Commands	Description
show rsvp counters	Displays internal RSVP counters.

show rsvp request

To list all the requests that Resource Reservation Protocol (RSVP) knows about on a router, use the **show rsvp request** command in EXEC mode.

show rsvp request [**detail**] [**destination** *ip-address* | **dst-port** *port-num* | **source** *ip-address* | **src-port** *port-num*]

Syntax Description

detail	(Optional) Displays multiline status for each path. If the **detail** keyword is not specified, only a single-line table entry is displayed.
destination *ip-address*	(Optional) Destination address to filter on for the reservations to display.
dst-port *port-num*	(Optional) Destination port/tunnel ID to filter on for the reservations to display.
source *ip-address*	(Optional) Source address to filter on for the reservations to display.
src-port *port-num*	(Optional) Source port/lsp ID to filter on for the reservations to display.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

This command displays information about upstream reservations only; that is, reservations being sent to upstream hops. Information about downstream reservations (that is, incoming or locally created reservations) is available using the **show rsvp reservation** command.

Reservations are displayed in ascending order of destination IP address, destination port, source IP address, and source port.

Examples

The following example displays brief information about all requests in the router:

```
RP/0/RP0/CPU0:router# show rsvp request

       Dest Addr DPort      Source Addr SPort Pro   OutputIF Sty Serv Rate Burst
---------------- ----- ---------------- ----- --- ---------- --- ---- ---- -----
   192.168.40.40 2001     192.168.67.68     2   0  PO0/7/0/1  SE LOAD    0    1K
```

The following is sample output from the **show rsvp request detail** command, which displays detailed information about all requests in the router. Requests are reservation states for the reservation messages sent upstream:

```
RP/0/RP0/CPU0:router# show rsvp request detail

REQ:  IPv4-LSP Session addr: 192.168.40.40. TunID: 2001. LSPId: 2.
 Source addr: 192.168.67.68. ExtID: 192.168.67.68.
 Output interface: POS0/7/0/1. Next hop: 192.168.67.68 (lih: 0x19700001).
 Flags: Local Receiver.
 Style: Shared-Explicit. Service: Controlled-Load.
 Rate: 0 bits/sec. Burst: 1K bytes. Peak: 0 bits/sec.
 MTU min: 0, max: 500 bytes.
 Policy:  Forwarding. Policy source(s): MPLS/TE.
 Number of supporting PSBs: 1
 Destination Add DPort       Source Add SPort Pro     Input IF Rate Burst Prot
  192.168.40.40  2001        192.168.67.68 2   0    PO0/7/0/1    0   1K    Off
 Number of supporting RSBs: 1
 Destination Add DPort       Source Add SPort Pro   Input IF Sty Serv Rate Burst
   192.168.40.40  2001      65.66.67.68     2   0   None  SE LOAD     0    1K
```

Table 47 describes the significant fields shown in the display.

Table 47 show rsvp request detail Field Descriptions

Field	Description
Number of supporting PSBs	Number of senders for this session (typically, 1).
Number of supporting RSBs	Number of reservations per session (typically, 1).
Policy	Admission control status.
Policy source	Entity performing the admission control (MPLS-TE or COPS).

Related Commands

Commands	Description
show rsvp reservation	Displays internal RSVP reservation counters.

show rsvp reservation

To list all reservations that Resource Reservation Protocol (RSVP) knows about on a router, use the **show rsvp reservation** command in EXEC mode.

show rsvp reservation [**detail**] [**destination** *ip-address* | **dst-port** *port-num* | **source** *ip-address* | **src-port** *port-num*]

Syntax Description

detail	(Optional) Displays multi-line status for each reservation. If the **detail** keyword is not specified, only a single-line table entry is displayed.
destination *ip-address*	(Optional) Destination address to filter on for the reservations to display.
dst-port *port-num*	(Optional) Destination port/tunnel ID to filter on for the reservations to display.
source *ip-address*	(Optional)Source address to filter on for the reservations to display.
src-port *port-num*	(Optional) Source port/lsp ID to filter on for the reservations to display.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

This command displays information about downstream reservations only (that is, reservations received on this device or created by application program interface (API) calls). Upstream reservations or requests are displayed using the **show rsvp request** command.

Examples

The following example displays brief information about all reservations in the router:

```
RP/0/RP0/CPU0:router# show rsvp reservation

       Dest Addr DPort      Source Addr SPort Pro   Input IF Sty Serv Rate Burst
---------------- ----- ---------------- ----- --- ---------- --- ---- ---- -----
   192.168.40.40  2001   192.168.67.68     2   0       None  SE LOAD     0    1K
   192.168.67.68  2000     10.40.40.40    15   0  PO0/7/0/1  SE LOAD     0    1K
```

The following example displays detailed information about all reservations in the router:

```
RP/0/RP0/CPU0:router# show rsvp reservation detail

RESV: IPv4-LSP Session addr: 192.168.40.40. TunID: 2001. LSPId: 2.
 Source addr: 192.168.67.68. ExtID: 192.168.67.68.
 Input adjusted interface: None. Input physical interface: None.
 Next hop: 0.0.0.0 (lih: 0x0).
 Style: Shared-Explicit. Service: Controlled-Load.
 Rate: 0 bits/sec. Burst: 1K bytes. Peak: 0 bits/sec.
 MTU min: 40, max: 500 bytes.
 Flags: Local Receiver.
 State expires in 0.000 sec.
 Policy:  Accepted. Policy source(s): MPLS/TE.
 Header info: RSVP TTL=255. IP TTL=255. Flags: 0x0. TOS=0xff.
 Resource:
  Labels: Local downstream: 3.

RESV: IPv4-LSP Session addr: 192.168.67.68. TunID: 2000. LSPId: 15.
 Source addr: 192.168.40.40. ExtID: 10.10.40.40.
 Input adjusted interface: PO0/7/0/1. Input physical interface: PO0/7/0/1.
 Next hop: 10.66.67.68 (lih: 0x8DE00002).
 Style: Shared-Explicit. Service: Controlled-Load.
 Rate: 0 bits/sec. Burst: 1K bytes. Peak: 0 bits/sec.
 MTU min: 0, max: 500 bytes.
 Flags: None.
 State expires in 361.184 sec.
 Policy:  Accepted. Policy source(s): MPLS/TE.
 Header info: RSVP TTL=254. IP TTL=254. Flags: 0x1. TOS=0xff.
 Resource:
  Labels: Outgoing downstream: 3.
```

Table 48 describes the significant fields shown in the display.

Table 48 show rsvp reservation detail Field Descriptions

Field	Description
Input adjusted interface	Adjusted interface to reflect the Path's outgoing interface.
Input physical interface	Actual interface on which Reservation came in on.
Next hop	Downstream nodes address which sent the Reservation to this node.
Lih	Logical interface handle sent in the hop object of path returned to us in the reservation to figure out what interface the path was sent on.
Flags	May indicate if the Reservation terminates (see above) if it is the local receiver.
Policy	Indicates the admission control status.
Policy source	Entity doing the admission control on the LSP.
Header info	RSVP header information as described in RFC 2205.

Related Commands

Command	Description
show rsvp request	Lists all the requests that RSVP knows about on a router.

show rsvp sender

To list all path states that Resource Reservation Protocol (RSVP) knows about on this router, use the **show rsvp sender** command in EXEC mode.

show rsvp sender [**detail**] [**destination** *ip-address* | **dst-port** *port-num* | **source** *ip-address* | **src-port** *port-num*]

Syntax Description

detail	(Optional) Displays multiline status for each path. If the **detail** keyword is not specified, only a single-line table entry is displayed.
destination *ip-address*	(Optional) Destination address to filter on for the paths to display.
dst-port *port-num*	(Optional) Destination port/tunnel ID to filter on for the paths being displayed.
source *ip-address*	(Optional) Source address to filter on for the paths to display.
src-port *port-num*	(Optional) Source port/lsp ID to filter on for the paths to display.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

This command displays information about path states on the router.

Examples

The following example displays brief information about all paths in the router:

```
RP/0/RP0/CPU0:router# show rsvp sender

       Dest Addr DPort      Source Addr SPort Pro     Input IF Rate Burst Prot
---------------- ----- ---------------- ----- --- ------------ ---- ----- ----
     10.40.40.40  2001      10.66.67.68     2   0    PO0/7/0/1    0    1K  Off
     10.66.67.68  2000      10.40.40.40    15   0         None    0    1K  Off
```

Table 49 describes the significant fields shown in the display.

Table 49 show rsvp sender Field Descriptions

Field	Description
DProt	Destination port number/tunnel-id.
Dest Address	Destination/Session address of LSP.

Table 49 show rsvp sender Field Descriptions (continued)

Field	Description
SPort	Source port/LSP-Id.
Source Addr	Address of the ingress node of' the LSP.
Input IF	Interface on which Path message was received on.

The following example displays detailed information about all paths in the system:

```
RP/0/RP0/CPU0:router# show rsvp sender detail

PATH: IPv4-LSP Session addr: 10.10.40.40. TunID: 2001. LSPId: 2.
 Source addr: 10.66.67.68. ExtID: 10.66.67.68.
 Prot: Off. Backup tunnel: None.
 Rate: 0 bits/sec. Burst: 1K bytes. Peak: 0 bits/sec.
 Flags: None.
 State expires in 341.054 sec.
 Policy:  Accepted. Policy source(s): MPLS/TE.
 Header info: RSVP TTL=254. IP TTL=254. Flags: 0x1. TOS=0xff.
 Input interface: PO0/7/0/1. Previous hop: 10.66.67.68 (lih: 0x19700001).

PATH: IPv4-LSP Session addr: 10.66.67.68. TunID: 2000. LSPId: 15.
 Source addr: 10.40.40.40. ExtID: 10.40.40.40.
 Prot: Off. Backup tunnel: None.
 Rate: 0 bits/sec. Burst: 1K bytes. Peak: 0 bits/sec.
 Flags: Local Sender.
 State expires in 0.000 sec.
 Policy:  Accepted. Policy source(s): MPLS/TE.
 Header info: RSVP TTL=255. IP TTL=255. Flags: 0x0. TOS=0xff.
 Input interface: None. Previous hop: 0.0.0.0 (lih: 0x0).
 Output on PO0/7/0/1. Policy: Forwarding.
```

Table 50 describes the significant fields shown in the display.

Table 50 show rsvp sender detail Field Descriptions

Field	Description
Prot	Specifies if the LSP is configured as a protected tunnel.
Backup tunnel	Name of the backup tunnel assigned to protect this LSP.
Flags	Indicates path state, including as Local Repair, Local Sender (LSP ingress node), and others.
Policy	Admission control status for Path message in the incoming direction.
Policy source	Entity doing the admission control, such as COPS or MPLS-TE.
Header info	RSVP header info as described in RFC 2205.
Input interface	Interface on which the path was received on. At ingress node it will show up as None.
Previous hop	Address of the upstream peer who sent us the path message. May be the interface address or Node Id depending on LSP (Packet or optical).
Lih	Logical interface handle received in the hop object of the path.
Output interface	Interface on which the path was forwarded to the downstream Neighbor
Policy	Admission control status for the Path in the outgoing direction.

show rsvp session

To list all sessions that Resource Reservation Protocol (RSVP) knows about on this router, use the **show rsvp session** command in EXEC mode.

show rsvp session [**detail**] [**destination** *ip-address* | **dst-port** *port-num* | **tunnel-name** *tunnel-name*]

Syntax Description

detail	(Optional) Displays multiline status for each path. If the **detail** keyword is not specified, only a single-line table entry is displayed.
destination *ip-address*	(Optional) Destination address to filter on for the sessions to display.
dst-port *port-num*	(Optional) Destination port/tunnel ID to filter on for the sessions to display.
tunnel-name *tunnel-name*	(Optional) Displays status for the session matching the tunnel-name specified.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Sessions are displayed in ascending order of destination IP address, destination port, and source IP address.

Examples

The following example displays brief information about all paths in the router:

```
RP/0/RP0/CPU0:router# show rsvp session

Type    Session Addr  Port  Proto/ExtTunID  PSBs  RSBs  Reqs
---- --------------- ----- --------------- ----- ----- -----
LSP4     10.40.40.40  2001     10.66.67.68     1     1     1
LSP4     10.66.67.68  2000     10.40.40.40     1     1     0
```

Table 51 describes the significant fields shown in the display.

Table 51 show rsvp session Field Descriptions

Field	Description
Type	Type of data flow (Traffic-Engineering LSP (LSP4), OUNI or IPV4 session).
Session Addr	Destination Address of the data packets and also tail of the LSP.
Port	Destination port or Tunnel ID in case of TE/OUNI tunnels.
Proto/ExtTunID	Source address of TE/OUNI tunnels or Protocol as in the case of IPV4 sessions.
PSBs	Number of Path State Blocks for this session.
RSBs	Number of Reservations State Blocks pertaining to incoming or local Reservations for this session.
Reqs	Number of Requests. State datastructure representing Reservations sent up-stream.

The following example displays detailed information about all sessions in the system:

```
RP/0/RP0/CPU0:router# show rsvp session detail

SESSION: IPv4-LSP Addr: 10.40.40.40, TunID: 2001, ExtID: 10.66.67.68
 PSBs: 1, RSBs: 1, Requests: 1
 Tunnel Instance: 2
 Tunnel Name: RSVP5_t2001
  RSVP Path Info:
   InLabel: POS0/7/0/1, No label.
   Incoming Address: 10.31.31.31
   Explicit Route:
     10.31.31.31
     10.40.40.40
   Record Route: None
   Tspec: avg rate=0, burst=1K, peak rate=0
  RSVP Resv Info:
   OutLabel: No intf, No label
   FRR OutLabel: No intf, No label
   Record Route: None
   Fspec: avg rate=0, burst=1K, peak rate=0

SESSION: IPv4-LSP Addr: 10.66.67.68, TunID: 2000, ExtID: 10.40.40.40
 PSBs: 1, RSBs: 1, Requests: 0
 Tunnel Instance: 15
 Tunnel Name: MFR-345-ROUTER_t2000
  RSVP Path Info:
   InLabel: No intf, No label
   Incoming Address: Unknown
   Explicit Route:
     10.40.40.40
     10.31.31.32
     10.66.67.68
   Record Route: None
   Tspec: avg rate=0, burst=1K, peak rate=0
  RSVP Resv Info:
   OutLabel: POS0/7/0/1, 3
   FRR OutLabel: No intf, No label
   Record Route: None
   Fspec: avg rate=0, burst=1K, peak rate=0
```

Table 52 describes the significant fields shown in the display.

Table 52 show rsvp session detail Field Descriptions

Field	Description
TunID	Tunnel Identifier and the destination port of the LSP.
ExtID	Ingree node address of LSP.
Tunnel Instance	Source port of the LSP (with the ExtId forms the source parameters).
Tunnel Name	Name of the tunnel/LSP.
InLabel	Incoming interface and label info for the LSP in the upstream direction. At the egress node Using penultimate hop popping at the egress node (implicit NULL) will appear as *No Label* .
Incoming Address	Address of the ingress interface.
Explicit Route	Explicit route specified in the ERO object of the Path message.
Record Route	Record Route object in either the Path or Reservation message.
Tspec	Traffic parameters.
OutLabel	Outgoing interface and label to be sent downstream.
FRR OutLabel	In case of FRR displays the backup tunnel and Merge-point label (shown in show rsvp reservation).
Fspec	Flow spec parameters for desired QOS.

signalling dscp

To give all Resource Reservation Protocol (RSVP) signaling packets sent out on a specific interface higher priority in the network by marking them with a particular Differentiated Service Code Point (DSCP), use the **signalling dscp** command in RSVP interface configuration submode. To disable the override of DSCP on the interface, use the **no** form of this command.

signalling dscp *dscp*

no signalling *dscp*

Syntax Description

dscp	A DSCP priority number from 0 to 63.

Defaults

No DSCP override

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

DSCP marking improves signaling setup and teardown times.

Ordinarily, when a router receives path messages for a particular state marked with a DSCP value, it sends out path messages for that state marked with the same DSCP value. This command overrides that DSCP persistence and ensures that all messages sent out a particular interface are marked with a specified DSCP.

Though this command controls RSVP signaling packets, it has no effect on ordinary IP or Multiprotocol Label Switching (MPLS) data packets traveling along the path created or reserved by this RSVP session.

DSCP persistence operates on a per-state basis, but this command operates on a per-interface basis. So, if some incoming message (for example, multicast Path) with DSCP 10 causes two outgoing messages on interfaces A and B, ordinarily both will be sent out with DSCP 10. If **signalling dscp 5** is configured for RSVP on interface A, the Path messages being sent out interface A would be marked with DSCP 5, but the Path messages being sent out interface B would still be marked with DSCP 10.

There is a difference between the **signalling dscp 0** and **no signalling dscp** commands. The first command instructs RSVP to explicitly set to 0 the DSCP on all packets sent out this interface. The second command removes any override on the packets being sent out this interface, and allows the DSCP of received packets that created this state to persist on packets forwarded out this interface.

The RFC specifies a standard mapping from the eight IP precedence values to eight values in the 64-value DSCP space. You can use those special DSCP values to specify IP precedence bits only.

Examples

The following example shows how to specify that all RSVP packets going out on POS interface 0/1/0/1 be marked with DSCP 20:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/1/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling dscp 20
```

The following example shows how to disable DSCP marking of signaling packets going out POS interface 0/1/0/1:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# interface pos 0/1/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling dscp
```

signalling rate-limit

To limit the rate of Resource Reservation Protocol (RSVP) signaling messages being sent out a particular interface, use the **signalling rate-limit** command in RSVP interface configuration mode. To disable signalling rate-limiting, use the **no** form of the command.

signalling rate-limit rate *messages* **interval** *interval-length*

no signalling rate-limit rate *messages* **interval** *interval-length*

Syntax Description

rate *messages*	(Optional) Number of messages to be sent per scheduling interval. The range is from 1 to 500.
interval *interval-length*	(Optional) Interval length between scheduling intervals (specified in milliseconds). The range is from 250 to 2000 milliseconds.

Defaults

Disabled

messages: 100

interval-length: 1 second

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use the rate-limiting feature with caution. Limiting the rate of RSVP signaling has the advantage of avoiding an overload of the next hop router's input queue, because such overloads would cause the next hop router to drop RSVP messages. However, reliable messaging and rapid retransmit usually enable the router to recover very rapidly from message drops, so rate limiting might not be necessary.

If the rate is set too low, it causes slower convergence times. This command limits all RSVP messages except acknowledgments (ACK) and SRefresh messages. The command does not let you make a router generate messages faster than its inherent limit. (That limit differs among router models.)

Examples

The following example shows how to enable rate-limiting:

```
RP/0/RP0/CPU0:router# configure terminal
RP/0/RP0/CPU0:router(config)# rsvp interface POS0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling rate-limit
```

The following example shows how to limit the rate to 50 messages per second:

```
RP/0/RP0/CPU0:router# configure terminal
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling rate-limit rate 50
```

The following example shows how to set a limit at 40 messages for every 250 milliseconds:

```
RP/0/RP0/CPU0:router# configure terminal
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling rate-limit rate 40 interval 250
```

The following example shows how to restore the rate to the default of 100 messages per second:

```
RP/0/RP0/CPU0:router# configure terminal
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling rate-limit rate
```

The following example shows how to disable rate-limiting:

```
RP/0/RP0/CPU0:router# configure terminal
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/3/0/0
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling rate-limit
```

signalling refresh interval

To change the frequency with which a router updates the network about the Resource Reservation Protocol (RSVP) state of a particular interface, use the **signalling refresh interval** command in RSVP interface configuration mode. To return the refresh interval to its default of 45 seconds, use the **no** form of this command.

signalling refresh interval *seconds*

no signalling refresh interval

Syntax Description

seconds	Number of seconds the router waits to update the network about the RSVP state of an interface (specified in seconds). Range is from 10 to 180 seconds. The default is 45 seconds.

Defaults

45 seconds

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

RSVP relies on a soft-state mechanism to maintain state consistency in the face of network losses. That mechanism is based on continuous refresh messages to keep a state current. Each RSVP router is responsible for sending periodic refresh messages to its neighbors.

The router attempts to randomize network traffic and reduce metronomic burstiness by jittering the actual interval between refreshes by as much as 50 percent. As a result, refreshes may not be sent at exactly the interval specified. However, the average rate of refreshes are within the specified refresh interval.

Lengthening the interval reduces the refresh load of RSVP on the network but causes downstream nodes to hold state longer. This reduces the responsiveness of the network to failure scenarios. Shortening the interval improves network responsiveness but expands the messaging load on the network.

The reliable messaging extension, implemented through the **signalling refresh reduction reliable** command, may cause new or changed messages to be temporarily refreshed at a more rapid rate than specified, in order to improve network responsiveness.

The use of reliable messaging with rapid retransmit substantially improves network responsiveness in case of transient message loss; if the refresh interval is changed when using the reliable messaging feature, it is more useful to lengthen the interval than to shorten it.

The summary refresh extension, implemented through the **signalling refresh reduction summary** command, provides a lower-cost mechanism to refresh RSVP state. The router uses the same refresh interval between successive refreshes of a single state when using summary refresh and when using ordinary message-based refresh.

Examples

The following example shows how to specify a refresh interval of 30 seconds:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh interval 30
```

The following example shows how to restore the refresh interval to the default value of 45 seconds:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh interval
```

Related Commands

Command	Description
signalling refresh missed	Specifies the number of successive refresh messages that can be missed before RSVP deems the state to be expired and tears it down.
signalling refresh reduction reliable	Customizes acknowledgment message size and hold interval, and the RSVP message retransmit interval.
signalling refresh reduction summary	Enables and configures the maximum size of the SRefresh message.

signalling refresh missed

To specify the number of successive refresh messages that can be missed before the Resource Reservation Protocol (RSVP) deems a state to be expired (resulting in the state to be torn down), use the **signalling refresh missed** command in RSVP interface configuration mode. To return the missed-messages number to its default value of four messages, use the **no** form of this command.

signalling refresh missed *number*

no signalling refresh missed

Syntax Description

number	Number of successive missed refresh messages. The range is from 1 to 8. The default is 4.

Defaults

number: 4

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Decreasing the missed-message number improves RSVP responsiveness to major failures like router failure or link faults, but decreases the resilience of RSVP resulting in packet drops or temporary network congestion. The latter condition makes RSVP too sensitive.

Increasing the missed-message number increases the resilience of RSVP to such transient packet loss, but decreases the RSVP responsiveness to more intransient network failures such as router failure or link fault.

The default value of 4 provides a balance of resilience and responsiveness factors.

Examples

The following example shows how to specify a missed refresh limit of six (6) messages:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh missed 6
```

The following example shows how to return the missed refresh limit to the default value of four (4):

```
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh missed
```

Related Commands

Command	Description
signalling refresh interval	Changes the frequency with which a router updates the network about the RSVP state of an interface.
signalling refresh reduction reliable	Customizes acknowledgment message size and hold interval, and the RSVP message retransmit interval.
signalling refresh reduction summary	Enables and configures the maximum size of the SRefresh message.

signalling refresh reduction disable

To disable Resource Reservation Protocol (RSVP) refresh reduction on an interface, use the **signalling refresh reduction disable** command in RSVP interface configuration mode. To enable RSVP refresh reduction on the interface, use the **no** form of this command.

signalling refresh reduction disable

no signalling refresh reduction disable

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

The following features of the IETF refresh reduction standard RFC 2961 are enabled with this command:

- Setting the refresh-reduction-capable bit in message headers
- Message-ID usage
- Reliable messaging with rapid retransmit, acknowledgment (ACK), and NACK messages
- Summary refresh extension

Because refresh reduction relies on cooperation of the neighbor, the neighbor must also support the standard. If the router detects that a neighbor is not supporting the refresh reduction standard (either through observing the refresh-reduction-enabled bit in messages received from the next hop, or by sending a Message-ID object to the next hop and receiving an error), refresh reduction will not be used on this link. That information can be obtained through use of the **show rsvp interface detail** command.

Examples

The following example shows how to disable RSVP refresh reduction on an interface:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh reduction disable
```

The following example shows how to enable RSVP refresh reduction on the interface:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh reduction disable
```

Related Commands

Command	Description
show rsvp interface	Displays information about all interfaces with RSVP enabled.
signalling refresh interval	Changes the frequency with which a router updates the network about the RSVP state of an interface.
signalling refresh reduction reliable	Customizes acknowledgment message size and hold interval, and the RSVP message retransmit interval.
signalling refresh reduction summary	Enables and configures the maximum size of the signalling refresh message.

signalling refresh reduction reliable

To configure the parameters of reliable messaging, use the **signalling refresh reduction reliable** command in RSVP interface configuration mode. To restore the parameters to their default values, use the **no** form of this command.

signalling refresh reduction reliable [**ack-max-size** *bytes* | **ack-hold-time** *milliseconds* | **retransmit-time** *milliseconds* | **summary-refresh**]

no signalling refresh reduction reliable [**ack-max-size** *bytes* | **ack-hold-time** *milliseconds* | **retransmit-time** *milliseconds* | **summary-refresh**]

Syntax Description

ack-max-size	(Optional) The maximum size of the Resource Reservation Protocol (RSVP) component within a single acknowledgment message. This length includes the RSVP message header and any other RSVP object headers. It does not include the IP header or any other Layer 3 (L3) or Layer 2 (L2) overheads.
bytes	(Optional) The number of bytes that define the maximum size of an RSVP component. The range is from 20 to 65000. (Because all RSVP objects are sized in multiples of 4, when you specify a size that is not a multiple of 4, RSVP uses the largest multiple of 4 just under the specified value.)
ack-hold-time	(Optional) The maximum amount of time a router will hold onto an acknowledgment before sending it, in an attempt to bundle several acknowledgments into a single acknowledgment message.
milliseconds	(Optional) The number of milliseconds that define the acknowledgment hold time. The range is from 100 to 5000.
retransmit-time	(Optional) The amount of time the router initially waits for an acknowledgment message before resending the RSVP message. If still no acknowledgment is received, the router doubles this interval and resends again. After five such successive backoffs, the original RSVP message is sent via normal refresh mechanism (if Path or Reservation) or is discarded (if Error or Tear).
milliseconds	(Optional) The number of milliseconds that define the retransmit time. The range is from 100 to 10000.
summary-refresh	(Optional) Enables the use of reliable transmission for RSVP summary refresh messages.

Defaults

Enabled

acknowledgment message size: 4096 bytes

acknowledgment-hold time: 400 milliseconds (0.4 seconds).

resend time: 900 milliseconds (0.9 seconds).

reliable transmission of RSVP summary refresh messages: disabled

Command Modes

RSVP interface configuration

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

For reliable messaging to work properly, configure the retransmit-time on the router (A) sending the message and acknowledgment hold time on the peer router (B). (Vice versa for messages in reverse direction.)

The retransmit time must be greater than the acknowledgment hold time, so that the acknowledgment message has time to get back to the sender before the message is retransmitted. We recommend that the retransmit-time interval be at least twice the acknowledgment hold-time interval. If the retransmit-time value is smaller than the acknowledgment hold-time value, then router A will retransmit the message even though router B may have received the message and is waiting for an acknowledgment hold time to time out to send the acknowledgment. This causes unnecessary network traffic.

Reducing the acknowledgment-max-size causes more acknowledgment messages to be issued, with fewer acknowledgments contained within each acknowledgment message. However, reducing the acknowledgment-max-size does not speed up the rate at which acknowledgment messages are issued, because their frequency is still controlled by the time values (acknowledgment hold time and retransmit time).

To use reliable messaging for summary refresh messages, use the **rsvp interface** *interface-name* **signalling refresh reduction summary** command.

Examples

The following example shows how to set the maximum acknowledgment message size to 4096 bytes on POS interface 0/4/0/1:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/4/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh reduction reliable ack-max-size
4096
```

The following example shows how to return the maximum acknowledgment message size to the default of 1000 bytes on POS interface 0/4/0/1:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/4/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# no rsvp signalling refresh reduction reliable
```

The following example shows how to set the acknowledgment hold-time to 1 second:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/4/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh reduction reliable
ack-hold-time 1000
```

The following example shows how to return the acknowledgment hold time to the default of 0.4 second:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/4/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh reduction reliable
ack-hold-time
```

The following example shows how to set the retransmit timer to 2 seconds:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/4/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh reduction reliable
retransmit-time 2000
```

The following example shows how to return the retransmit timer to the default of 0.9 seconds:

```
RP/0/RP0/CPU0:router(config)# rsvp interface pos 0/4/0/1
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh reduction reliable
```

The following example shows how to enable the use of reliable transmission for RSVP summary refresh messages:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh reduction reliable
summary-refresh
```

The following example shows how to disable the use of reliable transmission for RSVP summary refresh messages:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh reduction reliable
summary-refresh
```

Related Commands

Command	Description
signalling refresh reduction disable	Disables RSVP refresh reduction on an interface.

signalling refresh reduction summary

To configure Resource Reservation Protocol (RSVP) summary refresh message size on an interface, use the **signalling refresh reduction summary** command in RSVP interface configuration mode. To restore RSVP summary refresh message size to default on the interface, use the **no** form of this command.

signalling refresh reduction summary [**max-size** *bytes*]

no signalling refresh reduction summary [**max-size** *bytes*]

Syntax Description

max-size *bytes*	(Optional) Specifies the maximum size in bytes of a single RSVP summary refresh message. The valid range is from 20 to 6500 bytes.

Defaults

bytes: 4096

Command Modes

RSVP interface configuration submode.

Command History

Release	Modification
Release 2.0	This command was first introduced on the Cisco CRS-1 router.
Release 3.0	No modification.
Release 3.1	This command was first supported on the Cisco 12000 Series router.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, refer to the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use the **signalling refresh reduction summary** command to specify the maximum size of the summary refresh messages sent. The configured message size can be verified by entering the **show rsvp interface detail** command.

Examples

The following example shows how to change the summary message maximum size on an interface:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# signalling refresh reduction summary max-size 6000
```

The following example shows how to return the summary message maximum size to the default value on an interface:

```
RP/0/RP0/CPU0:router(config-rsvp-if)# no signalling refresh reduction summary max-size
6000
```

Related Commands

Command	Description
show rsvp interface	Displays information about all interfaces with RSVP enabled.
signalling refresh interval	Changes the frequency with which a router updates the network about the RSVP state of an interface.