ZebOS-XP®
Network Platform

Version 1.4
Extended Performance

RSVP-TE Command Reference

December 2015

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Contents

Preface

This document describes the ZebOS-XP commands for Resource Reservation—Traffic Engineering (RSVP-TE).

Audience

This document is intended for network administrators and other engineering professionals who configure and manage RSVP-TE.

Conventions

Table P-1 shows the conventions used in this guide.

Table P-1: Conventions

Convention	Description
Italics	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
`monospaced type`	Code elements such as commands, functions, parameters, files, and directories

Contents

This document contains these chapters and appendices:

- Chapter 1, *Command Line Interface*
- Chapter 2, *RSVP-TE Commands*
- Chapter 3, *Fast Reroute Commands*
- Chapter 4, *Refresh Reduction Commands*
- Chapter 5, *Differentiated Services Commands*
- Chapter 5, *Differentiated Services Commands*
- Chapter 7, *Point-to-Multipoint Commands*
- Chapter 8, *Show Commands*

Related Documents

The following guides are related to this document:

- *Multi-Protocol Label Switching Command Reference*

- *Multi-Protocol Label Switching Configuration Guide*
- *Multi-Protocol Label Switching Developer Guide*
- *Multi-Protocol Label Switching Software Forwarder Developer Guide*
- *Label Distribution Protocol Command Reference*
- *Label Distribution Protocol Developer Guide*
- *Network Services Module Command Reference*
- *RSVP-TE Developer Guide*
- *Architecture Guide*
- *Installation Guide*

Note: All ZebOS-XP technical manuals are available to licensed customers at http://www.ipinfusion.com/support/document_list.

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CHAPTER 1 Command Line Interface

This chapter introduces the ZebOS-XP Command Line Interface (CLI) and how to use its features.

Overview

You use the CLI to configure, monitor, and maintain ZebOS-XP devices. The CLI is text-based and each command is usually associated with a specific task.

You can give the commands described in this manual locally from the console of a device running ZebOS-XP or remotely from a terminal emulator such as `putty` or `xterm`. You can also use the commands in scripts to automate configuration tasks.

Starting the Command Line Interface

You must start daemons as described in this section before you can use the CLI. The general steps are listed below. For details about the ZebOS-XP daemons, see the *Installation Guide.*

1. Start your terminal emulator and connect to the device or go to the console of the device running ZebOS-XP.
2. Connect to the directory where you installed the ZebOS-XP executables.
3. Start the Network Services Module (NSM).
   ```
   # ./nsm -d
   ```
4. Start the protocol module daemons that your organization uses, such as `mstpd`, `ospf6d`, or `ripd`.
   ```
   # ./mstpd -d
   ```
5. Start the Integrated Management Interface (IMI) daemon.
   ```
   # ./imi -d
   ```
6. Start the IMI shell.
   ```
   # ./imish
   ```
   Note: Your organization may use a ZebOS-XP build that does not include `imish`. If that is the case, you must connect to a port on which a protocol daemon is listening. For details, see the *Installation Guide.*

You can now begin using the CLI.

Command Line Interface Help

You access the CLI help by entering a full or partial command string and a question mark “?”. The CLI displays the command keywords or parameters along with a short description. For example, at the CLI command prompt, type:

```
> show ?
```

The CLI displays this keyword list with short descriptions for each keyword:

```
show ?
  application-priority            Application Priority
```

```
  arp                             Internet Protocol (IP)
  bfd                             Bidirectional Forwarding Detection (BFD)
  bgp                             Border Gateway Protocol (BGP)
  bi-lsp                          Bi-directional lsp status and configuration
  bridge                          Bridge group commands
  ce-vlan                         COS Preservation for Customer Edge VLAN
  class-map                       Class map entry
  cli                             Show CLI tree of current mode
  clns                            Connectionless-Mode Network Service (CLNS)
  control-adjacency               Control Adjacency status and configuration
  control-channel                 Control Channel status and configuration
  cspf                            CSPF Information
  customer                        Display Customer spanning-tree
  cvlan                           Display CVLAN information
  debugging                       Debugging functions (see also 'undebug')
  dot1x                           IEEE 802.1X Port-Based Access Control
  etherchannel                    LACP etherchannel
  ethernet                        Layer-2
...
```

If you type the ? in the middle of a keyword, the CLI displays help for that keyword only.

```
> show de?
debugging  Debugging functions (see also 'undebug')
```

If you type the ? in the middle of a keyword, but the incomplete keyword matches several other keywords, ZebOS-XP displays help for all matching keywords.

```
> show i? (CLI does not display the question mark).
interface  Interface status and configuration
ip         IP information
isis       ISIS information
```

Command Completion

The CLI can complete the spelling of a command or a parameter. Begin typing the command or parameter and then press the tab key. For example, at the CLI command prompt type `sh`:

```
> sh
```

Press the tab key. The CLI displays:

```
> show
```

If the spelling of a command or parameter is ambiguous, the CLI displays the choices that match the abbreviation. Type `show i` and press the tab key. The CLI displays:

```
> show i
  interface  ip         ipv6       isis
> show i
```

The CLI displays the `interface` and `ip` keywords. Type `n` to select `interface` and press the tab key. The CLI displays:

```
> show in
> show interface
```

Type ? and the CLI displays the list of parameters for the `show interface` command.

```
> show interface
  IFNAME  Interface name
  |       Output modifiers
```



```
>       Output redirection
<cr>
```

The CLI displays the only parameter associated with this command, the `IFNAME` parameter.

Command Abbreviations

The CLI accepts abbreviations that uniquely identify a keyword in commands. For example:

```
> sh in eth0
```

is an abbreviation for:

```
> show interface eth0
```

Command Line Errors

Any unknown spelling causes the CLI to display the error `Unrecognized command` in response to the ?. The CLI displays the command again as last entered.

```
> show dd?
% Unrecognized command
> show dd
```

When you press the Enter key after typing an invalid command, the CLI displays:

```
(config)#router ospf here
                          ^
% Invalid input detected at '^' marker.
```

where the ^ points to the first character in error in the command.

If a command is incomplete, the CLI displays the following message:

```
> show
% Incomplete command.
```

Some commands are too long for the display line and can wrap mid-parameter or mid-keyword, as shown below. This does *not* cause an error and the command performs as expected:

```
area 10.10.0.18 virtual-link 10.10.0.19 authent
ication-key 57393
```

Command Negation

Many commands have a `no` form that resets a feature to its default value or disables the feature. For example:

- The `ip address` command assigns an IPv4 address to an interface
- The `no ip address` command removes an IPv4 address from an interface

Syntax Conventions

Table 1-1 describes the conventions used to represent command syntax in this reference.

Table 1-1: Syntax conventions

Convention	Description	Example
`monospaced font`	Command strings entered on a command line	`show rsvp diffserv-info`
`lowercase`	Keywords that you enter exactly as shown in the command syntax.	`show rsvp diffserv-info`
`UPPERCASE`	See Variable Placeholders	`IFNAME`
`()`	Optional parameters, from which you must select one. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>)`
`()`	Optional parameters, from which you select one or none. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>|)`
`()`	Optional parameter which you can specify or omit. Do not enter the parentheses or vertical bar as part of the command.	`(IFNAME|)`
`{}`	Optional parameters, from which you must select one or more. Vertical bars delimit the selections. Do not enter the braces or vertical bars as part of the command.	`{intra-area <1-255>|inter-area <1-255>|external <1-255>}`
`[]`	Optional parameters, from which you select zero or more. Vertical bars delimit the selections. Do not enter the brackets or vertical bars as part of the command. A '?' before a parameter in square brackets limits that parameter to one occurrence in a command string.	`[<1-65535>|AA:NN|internet|local-AS|no-advertise|no-export]`
`.`	Repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	`set as-path prepend .<1-65535>`

Variable Placeholders

Table 1-2 shows the tokens used in command syntax use to represent variables for which you supply a value.

Table 1-2: Variable placeholders

Token	Description
WORD	A contiguous text string (excluding spaces)
LINE	A text string, including spaces; no other parameters can follow this parameter
IFNAME	Interface name whose format varies depending on the platform; examples are: eth0, Ethernet0, ethernet0, xe0
A.B.C.D	IPv4 address
A.B.C.D/M	IPv4 address and mask/prefix
X:X::X:X	IPv6 address
X:X::X:X/M	IPv6 address and mask/prefix
HH:MM:SS	Time format
AA:NN	BGP community value
XX:XX:XX:XX:XX:XX	MAC address
<1-5> <1-65535> <0-2147483647> <0-4294967295>	Numeric range

Command Description Format

Table 1-3 explains the sections used to describe each command in this reference.

Table 1-3: Command descriptions

Section	Description
Command Name	The name of the command, followed by what the command does and when should it be used
Command Syntax	The syntax of the command
Parameters	Parameters and options for the command
Default	The state before the command is executed
Command Mode	The mode in which the command runs; see Command Modes
Example	An example of the command being executed

Keyboard Operations

Table 1-4 lists the operations you can perform from the keyboard.

Table 1-4: Keyboard operations

Key combination	Operation
Left arrow or Ctrl+b	Moves one character to the left. When a command extends beyond a single line, you can press left arrow or Ctrl+b repeatedly to scroll toward the beginning of the line, or you can press Ctrl+a to go directly to the beginning of the line.
Right arrow or Ctrl-f	Moves one character to the right. When a command extends beyond a single line, you can press right arrow or Ctrl+f repeatedly to scroll toward the end of the line, or you can press Ctrl+e to go directly to the end of the line.
Esc, b	Moves back one word
Esc, f	Moves forward one word
Ctrl+e	Moves to end of the line
Ctrl+a	Moves to the beginning of the line
Ctrl+u	Deletes the line
Ctrl+w	Deletes from the cursor to the previous whitespace
Alt+d	Deletes the current word
Ctrl+k	Deletes from the cursor to the end of line
Ctrl+y	Pastes text previously deleted with Ctrl+k, Alt+d, Ctrl+w, or Ctrl+u at the cursor

Table 1-4: Keyboard operations (Continued)

Key combination	Operation
Ctrl+t	Transposes the current character with the previous character
Ctrl+c	Ignores the current line and redisplays the command prompt
Ctrl+z	Ends configuration mode and returns to exec mode
Ctrl+l	Clears the screen
Up Arrow or Ctrl+p	Scroll backward through command history
Down Arrow or Ctrl+n	Scroll forward through command history

Show Command Modifiers

You can use two tokens to modify the output of a `show` command. Enter a question mark to display these tokens:

```
# show users ?
  | Output modifiers
  > Output redirection
```

You can type the | (vertical bar character) to use output modifiers. For example:

```
> show rsvp | ?
  begin     Begin with the line that matches
  exclude   Exclude lines that match
  include   Include lines that match
  redirect  Redirect output
```

Begin Modifier

The `begin` modifier displays the output beginning with the first line that contains the input string (everything typed after the `begin` keyword). For example:

```
# show run | begin eth1
...skipping
interface eth1
 ipv6 address fe80::204:75ff:fee6:5393/64
!
interface eth2
 ipv6 address fe80::20d:56ff:fe96:725a/64
!
line con 0
 login
!
end
```

You can specify a regular expression after the `begin` keyword, This example begins the output at a line with either “eth3” or “eth4”:

```
# show run | begin eth[3-4]

...skipping
interface eth3
```

```
 shutdown
!
interface eth4
 shutdown
!
interface svlan0.1
 no shutdown
!
route-map myroute permit 3
!
route-map mymap1 permit 10
!
route-map rmap1 permit 3
!
line con 0
 login
line vty 0 4
 login
!
end
```

Include Modifier

The `include` modifier includes only those lines of output that contain the input string. In the output below, all lines containing the word “input” are included:

```
# show interface eth1 | include input
    input packets 80434552, bytes 2147483647, dropped 0, multicast packets 0
    input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 1, missed 0
```

You can specify a regular expression after the `include` keyword. This examples includes all lines with “input” or “output”:

```
#show int eth0 | include (in|out)put
    input packets 597058, bytes 338081476, dropped 0, multicast packets 0
    input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 0, missed 0
    output packets 613147, bytes 126055987, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
```

Exclude Modifier

The `exclude` modifier excludes all lines of output that contain the input string. In the following output example, all lines containing the word “input” are excluded:

```
# show interface eth1 | exclude input
Interface eth1
  Scope: both
  Hardware is Ethernet, address is 0004.75e6.5393
  index 3 metric 1 mtu 1500 <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Administrative Group(s): None
  DSTE Bandwidth Constraint Mode is MAM
  inet6 fe80::204:75ff:fee6:5393/64
    output packets 4438, bytes 394940, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
    collisions 0
```

You can specify a regular expression after the `exclude` keyword. This example excludes lines with “output” or “input”:


```
# show interface eth0 | exclude (in|out)put
Interface eth0
  Scope: both
  Hardware is Ethernet  Current HW addr: 001b.2139.6c4a
  Physical:001b.2139.6c4a  Logical:(not set)
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 3000
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Bandwidth 100m
  DHCP client is disabled.
  inet 10.1.2.173/24 broadcast 10.1.2.255
  VRRP Master of :  VRRP is not configured on this interface.
  inet6 fe80::21b:21ff:fe39:6c4a/64
    collisions 0
```

Redirect Modifier

The `redirect` modifier writes the output into a file. The output is not displayed.

```
# show history | redirect /var/frame.txt
```

The output redirection token (>) does the same thing:

```
# show history >/var/frame.txt
```

Command Modes

Commands are grouped into modes arranged in a hierarchy. Each mode has its own set of commands. Table 1-5 lists the command modes common to all protocols.

Table 1-5: Common command modes

Name	Description
Executive mode	Also called *view* mode, this is the first mode to appear after you start the CLI. It is a base mode from where you can perform basic commands such as `show`, `exit`, `quit`, `help`, `list`, and `enable`.
Privileged executive mode	Also called *enable* mode, in this mode you can run additional basic commands such as `debug`, `write`, and `show`.
Configure mode	Also called *configure terminal* mode, in this mode you can run configuration commands and go into other modes such as interface, router, route map, key chain, and address family.
Interface mode	In this mode you can configure protocol-specific settings for a particular interface. Any setting you configure in this mode overrides a setting configured in router mode.
Router mode	This mode is used to configure router-specific settings for a protocol such as RIP or OSPF.

Command Mode Tree

The diagram below shows the common command mode hierarchy.

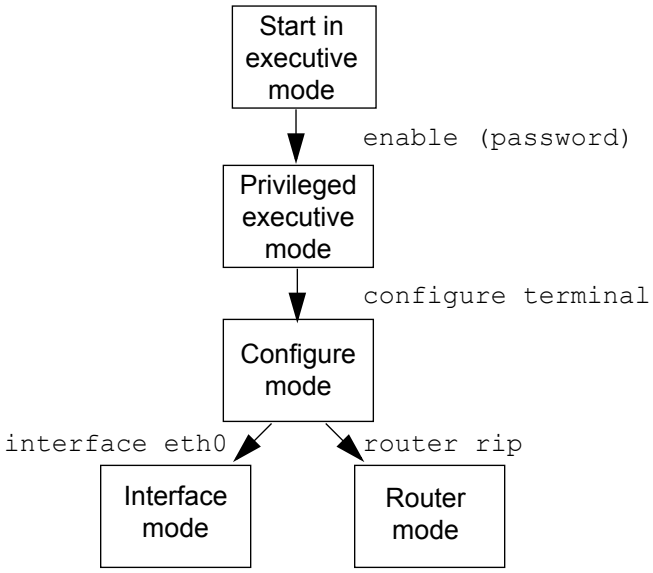

Figure 1-1: Common command modes

To change modes:

1. Enter privileged executive mode by entering `enable` in Executive mode.
2. Enter configure mode by entering `configure terminal` in Privileged Executive mode.

The example below shows starting `imish` and then moving from executive mode to privileged executive mode to configure mode and finally to router mode:

```
# ./imish
> enable mypassword
# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
(config)# router rip
(config-router)#
```

Note: Each protocol can have modes in addition to the common command modes. See the command reference for the respective protocol for details.

Debug Command

Whether the settings you make for a `debug` command persist between sessions depends on the mode where you make the settings:

- When you make settings for a `debug` command in executive mode, the configuration is valid for the current session only and is not saved in the `ZebOS.conf` file.
- When you make settings for a `debug` command in configuration mode, the configuration is retained and saved in `ZebOS.conf` and used even after the session restarts.

CHAPTER 2 RSVP-TE Commands

This chapter describes the RSVP-TE commands.

- map-route X:X::X:X
- neighbor A.B.C.D
- neighbor X:X::X:X
- no-cspf
- no-loop-detection
- no-php
- no-record
- no-refresh-path-parsing
- no-refresh-resv-parsing
- php
- primary ADMIN-GROUP-NAMEprimary affinity
- primary bandwidth
- primary cspf
- primary cspf-retry-limit
- primary cspf-retry-timer
- primary filter
- primary filter
- primary hold-priority
- primary hop-limit
- primary label-record
- primary local-protection
- primary no-affinity
- primary no-cspf
- primary no-record
- primary path
- primary record
- primary retry-limit
- primary retry-timer
- primary reuse-route-record
- primary setup-priority
- primary traffic
- record
- refresh-time
- refresh-path-parsing
- refresh-resv-parsing
- router rsvp

- rsvp hello-interval
- rsvp hello-receipt
- rsvp hello-timeout
- rsvp keep-multiplier
- rsvp refresh-time
- rsvp-path
- rsvp-trunk
- rsvp-trunk-restart
- secondary ADMIN-GROUP-NAME
- secondary affinity
- secondary bandwidth
- secondary cspf
- secondary cspf-retry-limit
- secondary cspf-retry-timer
- secondary filter
- secondary hold-priority
- secondary hop-limit
- secondary label-record
- secondary local-protection
- secondary no-affinity
- secondary no-cspf
- secondary no-record
- secondary path
- secondary record
- secondary retry-limit
- secondary retry-timer
- secondary reuse-route-record
- secondary setup-priority
- secondary traffic
- snmp restart rsvp
- to A.B.C.D
- to X:X::X:X
- update-type
- X:X::X:X

A.B.C.D

Use this command to configure an explicit IPv4 route sub-object as either loose or strict. A list of sub-objects specifies an explicit route to the egress router for an LSP.

- For the strict type of route addresses, the route taken from the previous router to the current router must be a directly connected path and a message exchanged between the two routers should not pass any intermediate routers. This ensures that routing is enforced on the basis of each link.
- For the loose type of route addresses, the route taken form the previous router to the current router need not be a direct path and a message exchanged between the two routers can pass other routers.

Use the `no` parameter with this command to disable the configuration.

Note: Refer to X:X::X:X to configure an explicit IPv6 route sub-object as either loose or strict.

Command Syntax

```
A.B.C.D
A.B.C.D (loose|strict)
no A.B.C.D
no A.B.C.D (loose|strict)
```

Parameters

`loose`	Make this node loose
`strict`	Make this node strict

Command Mode

Path mode

Examples

```
#configure terminal
(config)#rsvp-path mypath
(config-path)#10.10.0.5 strict
```

clear rsvp session

Use this command to reset either all or specified sessions originating from a specific ingress and terminating on the specific egress.

Note: If the affected session originates from the router where the command is issued, it is stopped and started. If the affected session does not originate from the router where the command is issued, it is stopped and deleted.

Command Syntax

Note: When RSVP Point-to-Multipoint (P2MP) sessions are configured, only the `clear rsvp session *` syntax is valid.

```
clear rsvp session TUNNEL-ID LSP-ID INGRESS EGRESS
clear rsvp session *
```

Parameters

`*`	Clear all RSVP sessions configured
`TUNNELID`	Clear tunnel ID sessions
`LSP-ID`	Clear LSP ID sessions
`INGRESS`	Clear ingress sessions
`EGRESS`	Clear egress sessions

Command Mode

Exec mode and Privileged Exec mode

Examples

```
#clear rsvp session *
#clear rsvp session 1 1 1.2.3.4 192.168.1.1
```

clear rsvp statistics

Use this command to reset all RSVP statistical counters to zero. This command sets the path receipt and sent counters to zero. Once this command is executed, all counters read zero, and if a new message is sent or received it shows up in the statistics.

Command Syntax

```
clear rsvp statistics
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Examples

```
#clear rsvp statistics
```

Note: The following sample output from the `show rsvp statistics` command displays all counters at zero after the clear rsvp statistics command is used.

```
#show rsvp statistics
  PacketType              Total
                   Sent       Received
  Path                1             0
  PathErr             0             0
  PathTear            0             0
  Resv FF             0             0
  Resv WF             0             0
  Resv SE             0             0
  Resv Err            0             0
  ResvTear            0             0
  ResvConf            0             0
  Hello               0             0
#
```

clear rsvp trunk

Use this command to clear an RSVP trunk or to clear all RSVP trunks.

Clearing a trunk also kills any session associated with the trunk. This command is useful when a trunk is missing required data such as routing information. When data is missing, the trunk is in an incomplete state, and clearing it correctly re-initializes the session.

Note: If this command is given in the session on the ingress router, the session stops and restarts. If this command is given in the session on the egress router, the session is not cleared.

Command Syntax

Note: Use the following commands to clear standard RSVP Trunks:

```
clear rsvp trunk *
clear rsvp trunk ingress (TRUNKNAME|*)
clear rsvp trunk non-ingress (TRUNKNAME|*)
clear rsvp trunk (TRUNKNAME|*)
clear rsvp trunk (TRUNKNAME|*) primary
clear rsvp trunk (TRUNKNAME|*) secondary
```

Note: Use the following commands to clear RSVP P2MP trunks:

```
clear rsvp trunk *
clear rsvp trunk TRUNKNAME
clear rsvp trunk ingress *
clrear rsvp trunk ingress TRUNKNAME
clear rsvp trunk TRUNKNAME primary
clear rsvp trunk TRUNKNAME secondary
```

Parameters

`*`	Clear all RSVP trunks configured
`TRUNKNAME`	Name of a specific trunk to be cleared
`ingress`	Clear an RSVP ingress trunk
`non-ingress`	Clear an RSVP non-Ingress trunk
`primary`	Clear all primary sessions configured for this trunk
`secondary`	Clear all secondary sessions configured for this trunk

Command Mode

Privileged Exec mode

Examples

```
#clear rsvp trunk mytrunk
#clear rsvp trunk *
#clear rsvp trunk ingress mytrunk
#clear rsvp trunk ingress *
#clear rsvp trunk non-ingress mytrunk
#clear rsvp trunk non-ingress *
#clear rsvp trunk mytrunk primary
```

```
#clear rsvp trunk * primary
#clear rsvp trunk mytrunk secondary
#clear rsvp trunk * secondary
```

cspf

Use this command to enable the use of Constrained Shortest Path First (CSPF) server for all RSVP sessions. If CSPF is turned off globally, it cannot be enabled for any LSP.

The CSPF server computes paths for LSPs that are subject to various constraints such as bandwidth, hop count, administrative groups, priority, and explicit routes. When computing paths for LSPs, CSPF considers not only the topology of the network and the attributes defined for the LSP but also the links. It attempts to minimize congestion by intelligently balancing the network load.

Use the no-cspf command to disable this configuration.

Command Syntax

```
cspf
```

Parameters

None

Default

The CSPF server is enabled by default.

Command Mode

Router mode

Example

This example shows using the `no-cspf` command in Router mode to disable CSPF for all RSVP sessions.

```
#configure terminal
(config)#router rsvp
(config-router)#cspf
```

debug rsvp all

Use this command to enable all debugging options for an RSVP daemon.

Use the `no` parameter with this command to stop logging all debugging information.

Command Syntax

```
debug rsvp (all|)
no debug rsvp (all|)
```

Parameters

None

Command Mode

Privileged Exec mode and Configure mode

Examples

```
#debug rsvp all
```

debug rsvp cspf

Use this command to enable the exchange of debugging messages between the RSVP module and the CSPF module.

Use the `no` parameter with this command to stop logging CSPF debugging information.

Command Syntax

```
debug rsvp cspf
no debug rsvp cspf
```

Parameters

None

Command Mode

Privileged Exec mode and Configure mode

Examples

```
#debug rsvp cspf
```

debug rsvp events

Use this command to enable debugging of events that were generated from an RSVP daemon.

Use the `no` parameter with this command to stop logging RSVP debugging information.

Command Syntax

```
debug rsvp events
no debug rsvp events
```

Parameters

None

Command Mode

Privileged Exec and Configure modes

Examples

```
#debug rsvp events
```

debug rsvp fsm

Use these commands to enable debugging of events related to RSVP finite state machines (FSM). Commands are available to log debugging information for the egress FSM, the ingress FSM, the transit FSM, the transit upstream FSM, or the transit downstream FSM.

Use the `no` parameter with these commands to stop logging FSM debugging information.

Command Syntax

```
debug rsvp fsm
debug rsvp fsm egress
debug rsvp fsm ingress
debug rsvp fsm transit
debug rsvp fsm transit upstream
debug rsvp fsm transit downstream
no debug rsvp fsm
no debug rsfp fsm egress
no debug rsvp fsm ingress
no debug rsvp fsm transit
no debug rsvp fsm transit upstream
no debug rsvp fsm transit downstream
```

Parameters

None

Command Mode

Privileged Exec and Configure modes

Examples

```
(config)#debug rsvp fsm ingress upstream
```

debug rsvp hexdump

Use this command to enable the hexdump debugging option for an RSVP daemon.

Use the `no` parameter with this command to stop logging hexdump debugging information.

Command Syntax

```
debug rsvp hexdump
no debug rsvp hexdump
```

Parameters

None

Command Mode

Privileged Exec and Configure modes

Examples

```
#debug rsvp hexdump
```

debug rsvp nsm

Use this command to enable the NSM debugging option for an RSVP daemon.

Use the `no` parameter with this command to stop logging NSM debugging information.

Command Syntax

```
debug rsvp nsm
no debug rsvp nsm
```

Parameters

None

Command Mode

Privileged Exec and Configure modes

Examples

```
#debug rsvp nsm
```

debug rsvp packet

Use this command to enable packet debugging options for an RSVP daemon. Using the `in` option command enables debugging for incoming packets. Using the `out` option command enables debugging for outgoing packets.

Use the `no` parameter with these commands to stop logging debugging information.

Command Syntax

```
debug rsvp packet
debug rsvp packet in
debug rsvp packet out
no debug rsvp packet
no debug rsvp packet in
no debug rsvp packet out
```

Parameters

None

Command Mode

Privileged Exec and Configure modes

Examples

```
#debug rsvp packet in
#debug rsvp packet out
```

disable-igp-shortcut

Use this command to disable Interior Gateway Protocol (IGP) shortcut.

See enable-igp-shortcut to enable the IGP shortcut.

Command Syntax

```
disable-igp-shortcut
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#disable-igp-shortcut
```

disable-rsvp

Use this command to disable RSVP message exchange on an interface.

RSVP can be enabled using the enable-rsvp command.

Command Syntax

```
disable-rsvp
```

Parameters

None

Default

By default, RSVP message exchange is disabled on an interface.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#disable-rsvp
```

enable-igp-shortcut

Use this command to enable Interior Gateway Protocol (IGP) Shortcut. With IGP Shortcut, link-state IGPs calculate IP routes to forward traffic over tunnels configured by TE.

See disable-igp-shortcut to disable IGP shortcut.

Command Syntax

```
enable-igp-shortcut
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#enable-igp-shortcut
```

enable-rsvp

Use this command to enable RSVP message exchange on an interface.

Note: To use this command, the corresponding interface in the NSM needs to be enabled for label-switching using the `label-switching` command. See the *Network Services Module Command Reference* for details.

See disable-rsvp to undo the effects of this command.

Command Syntax

```
enable-rsvp
```

Parameters

None

Default

By default, RSVP message exchange is disabled.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#enable-rsvp
```

explicit-null

Use this command to send explicit-null labels for directly-connected forwarding equivalency classes (FECs) instead of implicit-null labels.

This command controls the label value advertised to an egress router of an LSP. By default, implicit null label (label 3) is advertised for directly connected FECs. If implicit-null label is advertised, the penultimate hop removes the label and sends the packet as a plain IP packet to the egress router. The explicit-null command advertises label 0 and retains the label so the egress router can pop it. For details about usage of explicit-null, please refer to *RFC 3032*.

Use the `no` parameter with this command to stop sending explicit-null labels for directly-connected FECs and resume sending implicit-null labels.

Note: This command is not applicable to P2MP LSPs because the egress of a P2MP LSP always distributes non-reserved labels to its peer.

Command Syntax

```
explicit-null
no explicit-null
```

Parameters

None

Default

By default implicit-null labels are advertised.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#explicit-null
```

ext-tunnel-id A.B.C.D

Use this command to configure an extended-tunnel identifier as an IPv4 address. These identifiers are used in RSVP messages. If no extended-tunnel ID is specified, the LSR-ID for the router is used as the extended-tunnel ID for all LSPs. The extended-tunnel ID is a simple way of identifying all LSPs belonging to the same trunk.

Use the `no` parameter with this command to remove a configured extended-tunnel ID.

Command Syntax

```
ext-tunnel-id A.B.C.D
no ext-tunnel-id A.B.C.D
no ext-tunnel-id
```

Parameters

`A.B.C.D`	Extended tunnel identifier for this trunk in IPv4 address format

Default

By default, the LSR-ID of the router is used as the extended-tunnel ID for all sessions.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk t1
(config-trunk)#ext-tunnel-id 10.10.10.30

(config)#rsvp-trunk t1
(config-trunk)#no ext-tunnel-id 10.10.10.30
```

ext-tunnel-id X:X::X:X

Use this command to configure an extended-tunnel identifier as an IPv6 address. These identifiers are used in RSVP messages. If no extended-tunnel ID is specified, the LSR-ID for the router is used as the extended-tunnel ID for all LSPs. The extended-tunnel ID is a simple way of identifying all LSPs belonging to the same trunk.

Use the `no` parameter with this command to remove a configured extended-tunnel ID.

Command Syntax

```
ext-tunnel-id X:X::X:X
no ext-tunnel-id X:X::X:X
no ext-tunnel-id
```

Parameters

`X:X::X:X`	Extended tunnel identifier for this trunk in IPv6 address format

Default

By default, the LSR-ID of the router is used as the extended-tunnel ID for all sessions.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk t1
(config-trunk)#ext-tunnel-id 1:2::3:4


(config)#rsvp-trunk t1
(config-trunk)#no ext-tunnel-id 1:2::3:4
```

from A.B.C.D

Use this command to specify a “from” IPv4 address for the RSVP daemon. This command can be invoked from either the router rsvp mode or from the rsvp-trunk mode. In the RSVP router mode, this command defines the source address as an IPv4 packet sent out by the RSVP daemon. In the RSVP trunk mode, this command indicates a sender’s address in the sender template object that is used in path messages.

Use the `no` parameter with this command to revert to the default settings.

Command Syntax

```
from A.B.C.D
no from A.B.C.D
no from
```

Parameters

`A.B.C.D`	When in trunk mode, this is the IPv4 address of a tunnel ingress node
`A.B.C.D`	When in router mode, this is the loopback IPv4 address

Command Mode

Router or Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#from 10.10.0.5

#configure terminal
(config)#router rsvp
(config-router)#from 10.10.0.5
```

from X:X::X:X

Use this command to specify a “from” IPv6 address for the RSVP daemon. This command can be invoked from either the router rsvp mode or from the rsvp-trunk mode. In the router rsvp mode, this command defines the source address as an IPv4 packet being sent out by the RSVP daemon. In the rsvp trunk mode, this command indicates a sender’s address in the sender template object that is used in path messages.

Use the `no` parameter with this command to revert to the default settings.

Command Syntax

```
from X:X::X:X
no from X:X::X:X
```

Parameters

`X:X::X:X`	In trunk mode, this is the address of a tunnel ingress
`X:X::X:X`	In router mode, this is the loopback address

Command Mode

Router or Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#from 3ffe::3:34

#configure terminal
(config)#router rsvp
(config-router)#from 3ffe::3:34
```

graceful-restart

Use this command to enable RSVP-TE Graceful Restart capability on a router. This is a global parameter. RSVP-TE determines whether or not to send the graceful restart capability object in its hello message. However, this capability also depends on support for graceful restart on the neighbor router.

The following conditions must be met in order to activate RSVP-TE Graceful Restart:

- This command is used on the local router
- The neighbor router is explicitly set with a neighbor command (refer to either the neighbor A.B.C.Dor neighbor X:X::X:X command for details)
- The neighbor router supports Graceful Restart, and it is activated

Command Syntax

```
graceful-restart (enable|disable)
```

Parameters

`enable`	Enable graceful restart
`disable`	Disable graceful restart

Command Mode

Router mode

Default

Graceful restart is disabled by default

Example

```
#configure terminal
(config)#router rsvp
(config-router)#graceful-restart enable

(config-router)#graceful-restart disable
```

graceful-restart recovery-time

Use this command to set a recovery time for an RSVP-TE graceful restart configuration.

Use the `no` parameter with this command to reset the recovery time.

Command Syntax

```
graceful-restart recovery-time <1-4294967295>
no graceful-restart recovery-time
```

Parameters

`<1-4294967295>` Recovery time value in milliseconds

Command Mode

Router mode

Example

```
#configure terminal
(config)#router rsvp
(config-router)#graceful-restart recovery-time 555
```

graceful-restart restart-time

Use this command to set a restart time for an RSVP-TE graceful restart configuration.

Use the `no` parameter with this command to reset the restart time.

Command Syntax

```
graceful-restart restart-time <1-4294967295>
no graceful-restart restart-time
```

Parameters

`<1-4294967295>` Restart time value in milliseconds

Command Mode

Router mode

Example

```
#configure terminal
(config)#router rsvp
(config-router)#graceful-restart restart-time 555
```

hello-interval

Use this command to set an interval between Hello packets.

Used as a global command, this value is over-ridden by the hello-interval set on the interface (see rsvp hello-interval). For optimum performance, set this value no more than one-third of the hello-timeout value.

Use the `no` parameter with this command to return to the default hello interval value.

Command Syntax

```
hello-interval <1-65535>
no hello-interval
```

Parameter

`<1-65535>`	The time in seconds after which hello packets are sent

Default

The default hello interval is 2 seconds.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#hello-interval 5

(config)#router rsvp
(config-router)#no hello-interval
```

hello-receipt

Use this command to enable the receipt of Hello messages from peers.

Use the `no` parameter with this command to disable the exchange of Hello messages.

Command Syntax

```
hello-receipt
no hello-receipt
```

Parameters

None

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#hello-receipt
```

hello-timeout

If an LSR has not received a Hello message from a peer within the number of seconds set with this command, all sessions shared with this peer are reset. The hello-timeout determines how long an RSVP node waits for a hello message before declaring a neighbor to be down.

Use the `no` parameter with this command to return to the default hello timeout value.

Command Syntax

```
hello-timeout <1-65535>
no hello-timeout
```

Parameter

`<1-65535>`	Time set to receive a Hello message, in seconds

Default

The default hello-timeout value is 10 seconds.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#hello-timeout 12

(config)#router rsvp
(config-router)#no hello-timeout
```

keep-multiplier

Use this command to configure the constant to be used to calculate a valid reservation lifetime for a Labeled Switched Path (LSP).

The refresh time and keep multiplier are two interrelated timing parameters used to calculate the valid reservation lifetime for an LSP. Use the following formula to calculate the reservation lifetime for an LSP:

```
L >= (K + 0.5)* 1.5 * R
```

`K` = keep-multiplier

`R` = refresh timer

The router sends refresh messages periodically so that the neighbors do not timeout.

Use the `no` parameter with this command to return to the default keep-multiplier setting.

Command Syntax

```
keep-multiplier <1-255>
no keep-multiplier <1-255>
```

Parameters

`<1-255>`	The keep-multiplier value

Default

The default keep-multiplier value is 3.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#keep-multiplier 2
```

loop-detection

Use this command to turn on loop detection for Path and Reservation messages exchanged between LSRs.

Use the no-loop-detection command to return to default settings.

Command Syntax

```
loop-detection
```

Parameters

None

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#loop-detection
```

lsp-metric

Use this command to set LSP absolute metric or relative metric for IGP Shortcut use

Use the `no` parameter along with this command to unset the LSP metirc for IGP shortcut.

Command Syntax

```
lsp-metric absolute <1-65535>
lsp metric relative (<-65535-0>|<1-65535>)
no lsp metric
```

Parameters

`absolute`	Absolute metric
`relative`	Relative metric
`<1-65535>`	Metric value
`<-65535-0>`	The keep-multiplier value

Command Mode

RSVP Trunk mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#exit
(config)#rsvp trunk T1
(config-trunk)#lsp-metric absolute 10
(config-trunk)#lsp-metric relative 10
```

map-route A.B.C.D

Use this command to map a route using an IPv4 to an RSVP trunk. If the primary LSP for a trunk goes down, all mapped routes are sent automatically to a secondary LSP configured as backup for a primary LSP.

Use the `no` parameter with this command to unmap routes from specified trunks.

Command Syntax

```
map-route A.B.C.D/M
map-route A.B.C.D/M CLASS
map-route A.B.C.D A.B.C.D
map-route A.B.C.D A.B.C.D CLASS
no map-route A.B.C.D/M
no map-route A.B.C.D/M CLASS
no map-route A.B.C.D A.B.C.D
no map-route A.B.C.D A.B.C.D CLASS
```

Parameters

`A.B.C.D/M`	Prefix to map, plus mask
`A.B.C.D`	Prefix to be mapped
`A.B.C.D`	Prefix mask
`CLASS`	Incoming DiffServ Class (for example, be, ef, etc.) to map to the RSVP trunk

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#map-route 2.2.2.2/16
```

map-route X:X::X:X

Use this command to map a route using an IPv6 to an RSVP trunk. If the primary LSP for a trunk goes down, all mapped routes are sent automatically to a secondary LSP configured as backup for a primary LSP.

Use the `no` parameter with this command to unmap routes from specified trunks.

Command Syntax

```
map-route X:X::X:X/M
map-route X:X::X:X/M CLASS
map-route X:X::X:X X:X::X:X
map-route X:X::X:X X:X::X:X CLASS
no map-route X:X::X:X/M
no map-route X:X::X:X/M CLASS
no map-route X:X::X:X X:X::X:X
no map-route X:X::X:X X:X::X:X CLASS
```

Parameters

`X:X::X:X/M`	Prefix to be mapped, plus mask
`X:X::X:X`	Prefix to be mapped
`X:X::X:X`	Prefix map
`CLASS`	Incoming DiffServ Class (for example, be, ef, etc.) to map to the trunk

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#map-route 1:2::3:4/16
```

neighbor A.B.C.D

Use this command to designate a neighbor IPv4 address to use when exchanging hello messages. Any neighbor hello message that is not explicitly identified is rejected.

Use the `no` parameter with this command to remove an IP neighbor from the system.

Command Syntax

```
neighbor A.B.C.D
no neighbor A.B.C.D
```

Parameters

None

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#neighbor 10.10.0.5
```

neighbor X:X::X:X

Use this command to designate a neighbor IPv6 address to use when exchanging hello messages. Any neighbor hello message that is not explicitly identified is rejected.

Use the `no` parameter with this command to remove an IP neighbor from the system.

Command Syntax

```
neighbor X:X::X:X
no neighbor X:X::X:X
```

Parameters

None

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#neighbor 3ffe::3:34
```

no-cspf

Use this command to disable the use of the Constrained Shortest Path First (CSPF) server for all RSVP sessions. Disable CSPF when no nodes support the required traffic engineering extensions.

When this command is executed in Router mode, CSPF is disabled for all configured RSVP sessions, and all RSVP sessions configured from this point forward. If the default CSPF per RSVP session is enabled, it will be disabled. The CSPF status for RSVP sessions can be verified using the show rsvp session command with the detail option.

Use the cspf command to revert to the default settings.

Command Syntax

```
no-cspf
```

Parameters

None

Command Mode

Router mode

Example

This example shows using the `no-cspf` command in Router mode to disable CSPF for all RSVP sessions.

```
#configure terminal
(config)#router rsvp
(config-router)#no-cspf
```

no-loop-detection

Use this command to turn off loop detection for Path and Reservation messages exchanged between LSRs. When a Path or Resv message is received, the primary IP address of the incoming interface is compared with the received route record list.

Use the loop-detection command to revert to default settings.

Command Syntax

```
no-loop-detection
```

Parameters

None

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#no-loop-detection
```

no-php

Use this command to disable Penultimate-Hop-Popping (PHP) for the router. An egress router sends either the implicit-null or the explicit-null label for LSPs. hen the `no-php` command is used, the egress router sends non-reserved labels (those labels in the label pool range allotted to RSVP) to the upstream router.

Note: Use the show rsvp command to display the status of Penultimate-Hop-Popping.

Use the php command to revert to default settings.

Note: In the case of P2MP LSPs, the default behavior is always equivalent to `no-php`. Only non-reserved labels are always sent by the egress.

Command Syntax

```
no-php
```

Parameters

None

Default

By default, Penultimate-Hop-Popping is enabled for standard RSVP LSP.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#no-php
```

no-record

Use this command to disable recording of the route taken by Path and Reservation Request (Resv) messages that confirm establishment of reservations and are used to identify errors. The routes are recorded by means of the Route Record Object (RRO) in RSVP messages.

Use the record command to revert to the default settings.

Command Syntax

```
no-record
```

Parameters

None

Default

Routes are recorded by default.

Command Mode

RSVP Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass bypassname
(config-trunk)#no-record
```

no-refresh-path-parsing

Use this command to disable parsing of Refresh PATH messages received from upstream nodes. Enable this command to minimize message processing by RSVP, if you are sure that a particular router does not need to parse Refresh-PATH messages to check for changes because LSPs passing through this router are not required to be updated, simultaneously.

Use the refresh-path-parsing command to revert to the default settings.

Command Syntax

```
no-refresh-path-parsing
```

Parameters

None

Default

Refresh-path-parsing is enabled.

Command Mode

Router mode

Example

```
Router#configure terminal
Router(config)#router rsvp
Router(config-router)#no-refresh-path-parsing
```

no-refresh-resv-parsing

Use this command to disable parsing of Refresh RESV messages received from upstream nodes. Enable this command to minimize message processing by RSVP, if you are sure that a particular router does not need to parse Refresh RESV messages to check for changes because LSPs passing through this router are not required to be updated simultaneously.

Command Syntax

```
no-refresh-resv-parsing
```

Parameters

None

Default

Refresh reservation parsing is enabled.

Command Mode

Router mode

Example

```
Router#configure terminal
Router(config)#router rsvp
Router(config-router)#no-refresh-resv-parsing
```

php

Use this command to enable Penultimate-Hop-Popping for the router. An egress router sends either the implicit-null or the explicit-null label for LSPs. If the `no-php` command has been enabled, the egress router sends `non-reserved` labels (those labels in the label pool range allotted to RSVP) to the upstream router.

Note: Use the show rsvp command to display the status of Penultimate-Hop-Popping.

Use the no-php command to disable this setting.

Note: In the case of P2MP LSPs, the default behavior is always equivalent to `no-php`. Only non-reserved labels are always sent by the egress. Penultimate-Hop-Popping is not supported for P2MP LSPs.

Command Syntax

```
php
```

Parameters

None

Default

Penultimate-Hop-Popping is enabled by default.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#php
```

primary ADMIN-GROUP-NAME

Use this command to configure primary administrative groups. Administrative groups are manually assigned attributes that describe the color of links, so that links with the same color are in one class. These groups are used to implement different policy-based LSP setups. Administrative group attributes can be included or excluded for an LSP or for a path's primary and secondary paths.

Note: A link can be added to a specific Administrative Group via the Network Services Module. Refer to the *Network Services Module Command Reference* for details.

Use the `no` parameter to remove a previously configured group from an administrative group list.

Command Syntax

```
primary (include-any|include-all|exclude-any) ADMIN-GROUP-NAME
primary (include-any|exclude-any) ADMIN-GROUP-NAME
primary (include-any|include-all|exclude-any) ADMIN-GROUP-NAME
primary (include-any|exclude-any) ADMIN-GROUP-NAME
```

Parameters

`include-any`	Include any attributes
`include-all`	Include all attributes
`exclude-any`	Exclude any attribute
`ADMIN-GROUP-NAME`	Administrative group name

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary exclude-any myadmingroup

#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary include-all admingrp2

#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary include-any admingrp2
```

primary affinity

Use this command to enable sending of session attribute objects with resource affinity data.

Use the primary no-affinity command to disable sending of session attribute objects.

Command Syntax

```
primary affinity
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary affinity
```

primary bandwidth

Use this command to reserve the primary bandwidth in bits per second for the current trunk.

Each LSP has an associated bandwidth attribute. The bandwidth value is included in the sender's RSVP Path message and specifies the bandwidth to be reserved for the LSP. It is specified in bits per second, with a higher value indicating a greater user traffic volume. A zero bandwidth reserves no resources, although exchanges labels.

Use the `no` parameter to remove configured bandwidth information.

Command Syntax

```
primary bandwidth BANDWIDTH
no primary bandwidth BANDWIDTH
```

Parameter

`BANDWIDTH`	Set a bandwidth specified in bits per second in the range of 1 to 1000000000 bits. Usable units include kilobits (k), megabits (m), and gigabits (g).

Default

The default bandwidth is 0 bits per second, which allows data to flow through but does not reserve bandwidth.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary bandwidth 100m
```

primary cspf

Use this command to enable the use of Constrained Shortest Path First (CSPF) server for an explicit route to the egress, or all RSVP sessions. When CSPF is turned off globally, it cannot be enabled for any LSP.

The CSPF server computes paths for LSPs that are subject to constraints such as bandwidth, hop count, administrative groups, priority, and explicit routes. When computing paths for LSPs, CSPF considers not only the topology of the network and the attributes defined for the LSP, but also the links. It attempts to minimize congestion by intelligently balancing the network load.

Use the primary no-cspf command to revert to the default settings.

Command Syntax

```
primary cspf
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary cspf
```

primary cspf-retry-limit

Use this command to specify the number of retries that CSPF should carry out for a request received from RSVP.

Use the `no` parameter with this command to disable this configuration.

Command Syntax

```
primary cspf-retry-limit <1-65535>
no primary cspf-retry-limit <1-65535>
no primary cspf-retry-limit
```

Parameter

`<1-65535>`	Set the number of times CSPF should retry for this LSP

Default

The default retry-limit is 0.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary cspf-retry-limit 535

(config)#rsvp-trunk T1
(config-trunk)#no primary cspf-retry-limit
```

primary cspf-retry-timer

Use this command to specify the time between each retry that CSPF might carry out for a request received from RSVP.

Use the `no` parameter with this command to disable this configuration.

Command Syntax

```
primary cspf-retry-timer <1-600>
no primary cspf-retry-timer <1-600>
no primary cspf-retry-timer
```

Parameter

`<1-600>`	Timeout between successive retries, in seconds

Default

The default retry-timer is 0.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary cspf-retry-timer 45

(config)#rsvp-trunk T1
(config-trunk)#no primary cspf-retry-timer 45
```

primary filter

Use this command to set the filter to the fixed or shared style for an LSP.

- The shared filter style identifies a shared reservation environment. It creates a single reservation into which flows from all senders are mixed.
- The fixed filter style designates a distinct reservation. A distinct reservation request is created for data packets from a particular sender. The fixed filter style is also used style to prevent rerouting of an LSP and to prevent another LSP from using this bandwidth.

Use the `no` parameter to reset the configured filter to the default.

Command Syntax

```
primary filter (fixed|shared-explicit)
no primary filter (fixed|shared-explicit)
```

Parameters

`fixed`	Use a fixed filter for this LSP
`shared-explicit`	Use a shared-explicit filter for this LSP

Default

The fixed filter style is the default.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary filter shared-explicit
```

primary hold-priority

Use this command to configure the hold priority value for the selected trunk. In case of insufficient bandwidth, remove less important existing LSPs to free up a portion of the bandwidth. This can be done by preempting one or more of the signaled LSPs. Hold priority determines the degree to which an LSP holds onto its reservation for a session after the LSP has been configured successfully. When the hold priority is high, the existing LSP is less likely to give up its reservation.

Use the `no` parameter to reset the trunk to the default hold-priority value.

Command Syntax

```
primary hold-priority <0-7>
no primary hold-priority <0-7>
no primary hold-priority
```

Parameter

`<0-7>`	Set a hold priority for the LSP

Default

The default hold-priority value is 0, which is the highest. Once a session is configured with a hold priority of 0, no other session can preempt it.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary hold-priority 2
```

primary hop-limit

Use this command to specify a limit of hops for an RSVP trunk. Hop-limit data is sent to the CSPF server if CSPF is used.

Upon configuration of an arbitrary hop-limit, the hop-limit is compared with the number of hops configured in the primary path, if a primary path has been configured. If the number of hops in the primary path exceeds the hop-limit configured, no `Path` messages are sent, and any existing session is torn down. If no primary path is configured, the trunk is processed normally and Path messages are sent.

Use the `no` parameter to reset the trunk to the default hop-limit value.

Command Syntax

```
primary hop-limit <1-255>
no primary hop-limit <1-255>
no primary hop-limit
```

Parameters

`<1-255>`	Set the number of acceptable hops for the LSP

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary hop-limit 23
```

primary label-record

Use this command to record all labels exchanged between RSVP-enabled routers during the reservation setup process.

Use the `no` parameter with this command to turn off recording.

Command Syntax

```
primary label-record
```

```
no primary label-record
```

Parameters

None

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary label-record
```

primary local-protection

Use this command to enable the local repair of explicit routes for which this router is a transit node.

Use the `no` parameter with this command to disable local repair of explicit routes.

Command Syntax

```
primary local-protection
no primary local-protection
```

Parameters

None

Command Mode

Trunk mode

Usage

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary local-protection
```

primary no-affinity

Use this command to disable the use of sending out session attribute objects with resource affinity data.

Use the primary affinity command to return to the default settings.

Command Syntax

```
primary no-affinity
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary no-affinity
```

primary no-cspf

Use this command to disable the use of Constrained Shortest Path First (CSPF) server for an explicit route to the egress, or all RSVP sessions. When CSPF is turned off globally it cannot be enabled for any LSP. If used per LSP, it can be used to turn off CSPF computation for a specific LSP.

Disable CSPF when all nodes do not support the required traffic engineering extensions, and configure LSPs manually to use an explicit path. The LSP is then established only along the path specified by the operator.

Use the primary cspf command to enable this setting.

Command Syntax

```
primary no-cspf
```

Parameters

None

Command Mode

Trunk mode

Example

This example shows using the `no-cspf` command in Trunk mode to disable CSPF for the primary LSP.

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary no-cspf
```

primary no-record

Use this command to disable recording of the route taken by Path and Reservation Request (Resv) messages to confirm establishment of reservations and identify errors. Routes are recorded by means of the Route Record Object (RRO) in RSVP messages.

Use the primary record command to return to the default settings.

Command Syntax

```
primary no-record
```

Parameters

None

Default

Routes are recorded by default.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary no-record
```

primary path

Use this command to specify an RSVP path to be used. The `PATHNAME` in this command is the string (name) used to identify an RSVP path defined for the node (refer to `rsvp-path` command).

Use the `no` parameter with this command to remove a configured RSVP path.

Command Syntax

```
primary path PATHNAME
no primary path PATHNAME
no primary path
```

Parameters

`PATHNAME`	The name of the path to use

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary path mypath
```

primary record

Use this command to enable recording of the route taken by Path and Reservation Request (Resv) messages to confirm establishment of reservations and identify errors. Routes are recorded by means or the Route Record Object (RRO) in RSVP messages.

Use the primary no-record command to disable recording of routes.

Command Syntax

```
primary record
```

Parameters

None

Default

Routes are recorded by default.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary record
```

primary retry-limit

Use this command to specify a retry count this RSVP Trunk.

If a session is in a `nonexistent` state due to a path error message, the system tries to recreate the LSP for the number of times specified by the `retry-limit` command.

Although the same retry command controls both the trunk and the session, the retry-limit value affects only the session and not the trunk. If the trunk is in an `incomplete` state, the code keeps trying forever to bring it to a `complete` state regardless of the retry-limit value.

Use the `no` parameter with this command to revert to the default retry-limit value.

Command Syntax

```
primary retry-limit <1-65535>
no primary retry-limit <1-65535>
no primary retry-limit
```

Parameter

`<1-65535>`	The set number of times the system should try setting up the LSP

Default

By default, the retry-limit value is 0, and the trunk and session try to create the LSP indefinitely.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary retry-limit 256
```

primary retry-timer

Use this command to specify a retry interval for an RSVP Trunk. When an ingress node tries to configure an LSP and the setup fails due to the receipt of a Path Error message, the system waits for the time configured with this command, before retrying the LSP setup process.

Use the `no` parameter with this command to revert to the default retry-time value.

Command Syntax

```
primary retry-timer <1-600>
no primary retry-timer <1-600>
no primary retry-timer
```

Parameter

`<1-600>`	Time in seconds after which the system should retry setting up the LSP

Default

The default retry-timer value is 30 seconds.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary retry-timer 12
```

primary reuse-route-record

Use this command to use the updated Route Record List as an Explicit Route (with all strict nodes) when a path message is sent out at the next refresh.

The ERO list contains the hops to be taken to reach the egress from the current LSR. If CSPF is not available, to place an ERO with all strict routes, use this command to modify the ERO after receiving the Resv message. The future Path messages have the ERO with all strict nodes, identifying each and every node to be traversed.

Use the `no` parameter with this command to disable the use of the Route Record List as the explicit route.

Command Syntax

```
primary reuse-route-record
no primary reuse-route-record
```

Parameters

None

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary reuse-route-record
```

primary setup-priority

Use this command to configure a setup priority value for a trunk. In case of insufficient bandwidth, users must remove less important LSPs to free up the bandwidth. This can be done by preempting one or more of the existing LSPs. The primary setup priority determines if a new LSP can preempt an existing LSP.

The setup priority of the new LSP must be higher than the hold priority of an existing LSP for the existing LSP to be preempted. Note that for a trunk, the setup priority should not be higher than the hold priority.

Use the `no` parameter with this command to revert to the default primary setup priority value.

Command Syntax

```
primary setup-priority <0-7>
no primary setup-priority <0-7>
no primary setup-priority
```

Parameters

`<0-7>`	Set the priority value

Default

The default setup priority is 7, which is the lowest.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary setup-priority 2
```

primary traffic

Use this command to specify the traffic type for this RSVP Trunk.

Use the `no` parameter with this command to reset the configured traffic type.

Command Syntax

```
primary traffic (guaranteed|controlled-load)
no primary traffic (guaranteed|controlled-load)
no primary traffic
```

Parameters

`controlled-load` Controlled loaded traffic

`guaranteed` Guaranteed traffic

Default

The controlled-load traffic type is the default.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#primary traffic guaranteed
```

record

Use this command to enable recording of the route taken by Path and Reservation Request (Resv) messages. These messages confirm the establishment of reservations and also identifies errors. Routes are recorded by means of the Route Record Object (RRO) in the RSVP message.

Use the no-record command to disable recording of routes.

Command Syntax

```
record
```

Parameters

None

Default

Routes are recorded by default.

Command Mode

RSVP Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass bypassname
(config-trunk)#record
```

refresh-time

Use this command to configure RSVP refresh interval timer. The timer specifies the interval after which Path and/ or Reservation Request (Resv) messages will be sent out.

The refresh time and keep multiplier are two interrelated timing parameters used to calculate the valid Reservation Lifetime for an LSP. Refresh time regulates the interval between Refresh messages which include Path and Reservation Request (Resv) messages. Refresh messages are sent periodically so that reservation does not timeout in the neighboring nodes. Each sender and receiver host sends Path and Resv messages, downstream and upstream respectively, along the paths.

Use the `no` parameter with this command to return to the default refresh-time interval.

Command Syntax

```
refresh-time <1-65535>
no refresh-time <1-65535>
no refresh-time
```

Parameter

`<1-65535>`	The duration for which messages are sent, in seconds

Default

The default refresh-time interval is 30 seconds.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#refresh-time 20
```

refresh-path-parsing

Use this command to disable parsing of Refresh PATH messages received from upstream nodes. Use this command to minimize message processing by RSVP when you are sure that a particular router does not need to parse Refresh-PATH messages to check for changes, because LSPs passing through this router are not required to be updated simultaneously.

Use the no-refresh-path-parsing command to disable this setting.

Command Syntax

```
refresh-path-parsing
```

Parameters

None

Default

Refresh-path-parsing is enabled.

Command Mode

Router mode

Example

```
Router#configure terminal
Router(config)#router rsvp
Router(config-router)#refresh-path-parsing
```

refresh-resv-parsing

Use this command to disable parsing of Refresh RESV messages received from upstream nodes. Use this command to minimize message processing by RSVP when you are sure that a particular router does not need to parse Refresh RESV messages to check for changes because LSPs passing through this router are not required to be updated simultaneously.

Use the no-refresh-resv-parsing command to disable this setting.

Command Syntax

```
refresh-resv-parsing
```

Parameters

None

Default

Refresh reservation parsing is enabled.

Command Mode

Router mode

Example

```
Router#configure terminal
Router(config)#router rsvp
Router(config-router)#refresh-resv-parsing
```

router rsvp

Use this command to enter router mode from configure mode and to enable the RSVP daemon, if it is not already enabled.

Use the `no` parameter with this command to disable RSVP on the node.

Command Syntax

```
router rsvp
```

```
no router rsvp
```

Parameters

None

Default

RSVP is started only if this command is executed.

Command Mode

Configure mode

Example

The command prompt changes from config to config-router, as illustrated below:

```
#configure terminal
(config)#router rsvp
(config-router)#

(config-router)#exit
(config)#no router rsvp
```

rsvp hello-interval

Use this command to enable the sending of Hello packets on the interface and to set the interval value between successive Hello packets to neighbor. For optimum performance, set this value to less than one-third the value of the configured RSVP hello-timeout. See the rsvp hello-timeout command for more information.

Note: This is an interface-specific command and when not used, the global hello-interval state applies.

Use the `no` parameter with this command to return to the default hello interval value.

Command Syntax

```
rsvp hello-interval <1-65535>
no rsvp hello-interval
```

Parameter

`<1-65535>`	RSVP hello interval in seconds

Default

The default RSVP hello interval is 2 seconds.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp hello-interval 110

(config)#interface eth0
(config-if)#no rsvp hello-interval
```

rsvp hello-receipt

Use this command to enable the receipt of hello messages from peers connected through this interface. This is an interface-specific command and when not used, the global hello-receipt command applies.

Use the `no` parameter with this command to disable the exchange of hello messages for this interface.

Command Syntax

```
rsvp hello-receipt
no rsvp hello-receipt
```

Parameters

None

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp hello-receipt
```

rsvp hello-timeout

This command determines how long an RSVP node should wait for a hello message before declaring a neighbor to be down. If an LSR does not received a hello message from a peer connected to an interface within the specified duration, the LSR resets all sessions that are shared with this particular peer. This is an interface-specific command and when not used, the global hello-timeout command applies.

Use the `no` parameter to revert to the default hello timeout value.

Command Syntax

```
rsvp hello-timeout <1-65535>
no rsvp hello-timeout
```

Parameters

`<1-65535>`	Time to receive a hello message, in seconds

Default

The default hello-timeout value is 10 seconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp hello-timeout 550

(config)#interface eth0
(config-if)#no rsvp hello-timeout
```

rsvp keep-multiplier

This command sets the constant for calculating a valid reservation lifetime for an LSP, which allows messages to be exchanged through this interface. This is an interface-specific command and when not specified, the global keep-multiplier command applies.

Reservation lifetime is the duration of bandwidth reservation for the LSP. The refresh time and keep multiplier are two interrelated timing parameters used to calculate the valid reservation lifetime for an LSP. Use the following formula to calculate the reservation lifetime for an LSP:

```
L >= (K + 0.5)* 1.5 * R
```

`K` = keep-multiplier

`R` = refresh timer

Refresh messages are sent periodically so that neighbors do not timeout.

Use the `no` parameter with this command to return to the global keep-multiplier value.

Command Syntax

```
rsvp keep-multiplier <1-255>
no rsvp keep-multiplier <1-255>
```

Parameter

`<1-255>`	Set a value for the lifetime constant

Default

The default RSVP keep-multiplier value is 3.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp keep-multiplier 3

(config)#interface eth0
(config-if)#no rsvp keep-multiplier 3
```

rsvp refresh-time

Use this command to configure RSVP refresh interval timer for the current interface. This is an interface-specific command and when not used, the global refresh-time command applies.

The refresh time and keep multiplier are two interrelated timing parameters used to calculate the valid reservation lifetime for an LSP. Refresh time regulates the interval between refresh messages that include path and reservation request (Resv) messages. Refresh messages are sent periodically so that the reservation does not timeout in the neighboring nodes. Each sender and receiver host sends path and resv messages, downstream and upstream respectively, along the paths.

Use the `no` parameter with this command to revert to the refresh-time value set in RSVP mode.

Command Syntax

```
rsvp refresh-time <1-65535>
no rsvp refresh-time <1-65535>
```

Parameter

`<1-65535>`	The duration for which messages are sent, in seconds

Default

The default refresh interval is 30 seconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp refresh-time 5055

(config)#interface eth0
(config-if)#no rsvp refresh-time 5055
```

rsvp-path

Use this command to create a new RSVP path or to enter the `Path` command mode. In this mode, you can add or delete paths and also specify the path to be loose or strict.

Use the `no` parameter with this command to delete the path and its specified hops.

Command Syntax

```
rsvp-path PATHNAME
no rsvp-path PATHNAME
```

Parameter

`PATHNAME`	Name of the path

Command Mode

Configure mode

Example

```
#configure terminal
(config)#rsvp-path mypath
(config-path)#
```

rsvp-trunk

Use this command to create a new RSVP trunk. When the trunk is created, the attributes required to configure an explicitly-routed or traditionally-routed LSP are set. Once a trunk is configured with the required attributes, an RSVP session (and PSB) is created for this trunk, which enables the exchange of messages and completes the LSP setup.

This command also modifies an existing RSVP path to configure an explicitly-routed or traditionally-routed LSP. In addition, this command can be used to set the address family (IPv4 or IPv6) of an RSVP trunk. If no address family is assigned, the default value is used. If the address family is already set, a check is made to see whether the address family configured and the one already in the database are the same. An error message is returned if the two do not match.

Use the `no` parameter with this command to remove an RSVP trunk and all configured attributes, except the primary path.

Command Syntax

```
rsvp-trunk TRUNKNAME (ipv4|ipv6)
no rsvp-trunk TRUNKNAME (ipv4|ipv6|)
```

Parameters

`TRUNKNAME`	Name to use for the trunk
`ipv4`	IPv4 address family trunk
`ipv6`	IPv6 address family trunk

Command Mode

Configure mode

Examples

The command prompt changes from `config` to `config-trunk` as illustrated below:

```
#configure terminal
(config)#rsvp-trunk mytrunk ipv4
(config-trunk)#
```

rsvp-trunk-restart

Use this command to restart the RSVP trunk. This command “kills” an existing LSP and restarts the LSP setup process.

Command Syntax

```
rsvp-trunk-restart
```

Parameters

None

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#rsvp-trunk-restart
```

secondary ADMIN-GROUP-NAME

Use this command to configure secondary administrative groups. Administrative groups are manually assigned attributes that describe the color of links, so that links with the same color are in one class. These groups are used to implement different policy-based LSP setups. Administrative group attributes can be included or excluded for an LSP or for a path's primary and secondary paths.

Note: A link can be added to a specific Administrative Group via NSM. Refer to the *Network Services Module Command Reference* for details.

Use the `no` parameter to remove a previously set group from an administrative group list.

Command Syntax

```
secondary (include-any|include-all|exclude-any) ADMIN-GROUP-NAME
secondary (include-any|exclude-any) ADMIN-GROUP-NAME
no secondary (include-any|include-all|exclude-any) ADMIN-GROUP-NAME
no secondary (include-any|exclude-any) ADMIN-GROUP-NAME
```

Parameters

`include-any`	Include any attribute
`include-all`	Include all attribute
`exclude-any`	Exclude any attribute
`ADMIN-GROUP-NAME`	Administrative group name

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary exclude-any myadmingroup

#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary include-any myadmingroup

#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary include-all myadmingroup
```

secondary affinity

Use this command to enable the sending out of session attribute objects with resource affinity data.

Use the secondary no-affinity command to disable sending out of session attribute objects.

Command Syntax

```
secondary affinity
```

Parameter

None

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#secondary affinity
```

secondary bandwidth

Use this command to reserve the bandwidth in bits per second for the current trunk.

Each LSP has an associated bandwidth attribute. The bandwidth value is included in the sender's RSVP Path message and specifies the bandwidth to be reserved for the LSP. It is set in bits per second, with a higher value indicating a greater user traffic volume. A zero bandwidth reserves no resources, although label exchanges are possible.

Use the `no` parameter with this command to unset the configured bandwidth information.

Command Syntax

```
secondary bandwidth BANDWIDTH
no secondary bandwidth BANDWIDTH
no secondary bandwidth
```

Parameter

`BANDWIDTH`	Set a bandwidth specified in bits per second in the range of 1 to 10000000000 bits. Usable units include kilobits (k), megabits (m), and gigabits (g).

Default

The default bandwidth is 0 bits per second, which allows data to flow through but does not reserve bandwidth.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary bandwidth 100m
```

secondary cspf

Use this command to enable the use of Constrained Shortest Path First (CSPF) server for an explicit route to the egress, or all RSVP sessions.

The CSPF server computes paths for LSPs that are subject to constraints such as bandwidth, hop count, administrative groups, priority, and explicit routes. When computing paths for LSPs, CSPF considers not only the topology of the network and the attributes defined for the LSP, but also the links. It attempts to minimize congestion by intelligently balancing the network load.

Use the secondary no-cspf command to revert to the default settings.

Command Syntax

```
secondary cspf
```

Parameters

None

Command Mode

Trunk mode

Example

This example shows using the `no-cspf` command in Trunk mode to disable CSPF for the primary LSP.

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary cspf
```

secondary cspf-retry-limit

Use this command to specify the number of retries that CSPF should carry out for a request received from RSVP.

Use the `no` parameter with this command to remove this configuration.

Command Syntax

```
secondary cspf-retry-limit <1-65535>
no secondary cspf-retry-limit <1-65535>
no secondary cspf-retry-limit
```

Parameter

`<1-65535>`	The number of times CSPF should retry for this LSP

Default

By default, no retry limit for CSPF route calculations is configured, so the value is 0.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary cspf-retry-limit 535
```

secondary cspf-retry-timer

Use this command to specify the time between each retry that CSPF might carry out for a request received from RSVP.

Use the `no` parameter with this command to remove this configuration.

Command Syntax

```
secondary cspf-retry-timer <1-600>
no secondary cspf-retry-timer <1-600>
no secondary cspf-retry-timer
```

Parameters

`<1-600>`	Timeout between successive retries, in seconds

Default

By default, no retry-timer configuration is defined for CSPF calculations, so the value is set to 0.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary cspf-retry-timer 45
```

secondary filter

Use this command to set the filter to fixed or shared filter style for RSVP trunk.

- The shared filter style identifies a shared reservation environment. It creates a single reservation into which flows from all senders are mixed.
- The fixed filter style designates a distinct reservation. A distinct reservation request is created for data packets from a particular sender. The fixed filter style is also used style to prevent rerouting of an LSP and to prevent another LSP from using this bandwidth.

Use the `no` parameter to reset the configured filter to the default style.

Command Syntax

```
secondary filter (fixed|shared-explicit)
no secondary filter (fixed|shared-explicit)
no secondary filter
```

Parameters

`fixed`	Use a Fixed Filter for this RSVP Trunk.
`shared-explicit`	Use a Shared Explicit Filter for this RSVP Trunk.

Default

The fixed filter style is the default.

Command Mode

Trunk mode

Usage

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary filter shared-explicit
```

secondary hold-priority

Use this command to configure the hold priority value for the selected trunk.

In case of insufficient bandwidth, the user must remove any less important existing LSP to free up the bandwidth. This can be done by preempting one or more of the signaled LSPs. Hold priority determines the degree to which an LSP holds onto its reservation for a session after the LSP has been configured successfully. When the hold priority is high, the existing LSP is less likely to give up its reservation.

Use the `no` parameter to revert to the default hold-priority value.

Command Syntax

```
secondary hold-priority <0-7>
no secondary hold-priority <0-7>
no secondary hold-priority
```

Parameter

`<0-7>`	Specify a value for hold priority

Default

The default hold-priority is 0, the highest value. Once a session is configured with a 0 hold priority value, no other session can preempt it.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary hold-priority 2
```

secondary hop-limit

Use this command to specify a limit of hops for an RSVP trunk.

Upon configuration of an arbitrary hop-limit, the hop-limit is compared with the number of hops configured in the primary path, if a primary path has been configured. If the number of hops in the primary path exceed the hop-limit configured, no path messages are sent out and any existing session is torn down. If no primary path is configured, the trunk is processed normally and the path messages are sent out. The hop-limit data is sent to the CSPF server, if CSPF is being used.

Use the `no` parameter to revert to the default hop-limit value.

Command Syntax

```
secondary hop-limit <1-255>
no secondary hop-limit <1-255>
no secondary hop-limit
```

Parameter

`<1-255>`	The number of acceptable hops

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary hop-limit 23
```

secondary label-record

Use this command to record all labels exchanged between RSVP enabled routers during the reservation setup process. This command records all labels exchanged for an LSP from the ingress to the egress, and helps with debugging.

Use the `no` parameter to turn off recording.

Command Syntax

```
secondary label-record
```

```
no secondary label-record
```

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary label-record
```

secondary local-protection

Use this command to enable the local repair of explicit routes for which this router is a transit node.

Use the `no` parameter with this command to disable local repair of explicit routes.

Command Syntax

```
secondary local-protection
no secondary local-protection
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary local-protection
```

secondary no-affinity

Use this command to disable the use of sending out session attribute objects with resource affinity data.

Use the secondary affinity command to revert to the default settings.

Command Syntax

```
secondary no-affinity
```

Parameters

None

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary no-affinity
```

secondary no-cspf

Use this command to disable the use of Constrained Shortest Path First (CSPF) server for an explicit route to the egress, or all RSVP sessions.

If CSPF is turned off globally, it cannot be enabled for any LSP. If used per LSP, it can be used to turn off CSPF computation for a specific LSP. The CSPF server computes paths for LSPs that are subject to various constraints such as bandwidth, hop count, administrative groups, priority, and explicit routes. When computing paths for LSPs, CSPF considers not only the topology of the network and the attributes defined for the LSP, but, also the links. It attempts to minimize congestion by intelligently balancing the network load.

Disable CSPF when all nodes do not support the required traffic engineering extensions and configure LSPs manually to use an explicit path. The LSP is then established only along the path specified by the operator.

Use the secondary cspf command to revert to the default settings.

Command Syntax

```
secondary no-cspf
```

Parameters

None

Command Mode

Trunk mode

Example

This example shows using the `no-cspf` command in Trunk mode to disable CSPF for the primary LSP.

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary no-cspf
```

secondary no-record

This command is used to disable recording of the route taken by path and resv messages and confirms the establishment of reservations and to identify errors. Routes are recorded by means of the route record object (RRO) in an RSVP message.

Use the secondary record command to revert to the default settings.

Command Syntax

```
secondary no-record
```

Parameters

None

Default

Routes are recorded by default.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary no-record
```

secondary path

Use this command to specify an RSVP path to be used.

Use the `no` parameter with this command to remove a configured RSVP path.

Command Syntax

```
secondary path PATHNAME
no secondary path PATHNAME
no secondary path
```

Parameters

`PATHNAME`	The name of the path to be used. `PATHNAME` is a string (name) used to identify an RSVP path defined for the node (refer to the rsvp-path command).

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary path mypath
```

secondary record

This command is used to enable recording of the route taken by path and resv messages to confirm the establishment of reservations and to identify errors. Routes are recorded by means of the route record object (RRO) in RSVP messages.

Use the secondary no-record command to revert to the default settings.

Command Syntax

```
secondary record
```

Parameters

None

Default

Routes are recorded by default.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary record
```

secondary retry-limit

Use this command to specify a retry count this RSVP Trunk.

If a session is in a nonexistent state due to the receipt of a path error message, it tries to recreate the LSP for the number of times specified by primary retry-limit. Although the same retry command controls both the trunk and the session, the retry-limit value affects only the session and not the trunk. If the trunk is in an incomplete state, the code keeps trying to bring it to a complete state, irrespective of the retry-limit value.

Use the `no` parameter to revert to the default retry-limit value.

Command Syntax

```
secondary retry-limit <1-65535>
no secondary retry-limit <1-65535>
```

Parameter

`<1-65535>`	The set number of times the system should try setting up the LSP

Default

By default, the retry-limit value is 0 so the trunk and session try to create the LSP indefinitely.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary retry-limit 256
```

secondary retry-timer

Use this command to specify a retry interval for an RSVP Trunk. When the ingress tries to configure an LSP and the setup fails due to the receipt of a path error message, the system waits for the time configure by this command before retrying the LSP setup process.

Use the `no` parameter to revert to the default.

Command Syntax

```
secondary retry-timer <1-600>
no secondary retry-timer <1-600>
no secondary retry-timer
```

Parameter

`<1-600>`	Interval after which the system should retry setting up the LSP, in seconds

Default

The default retry time is 30 seconds.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary retry-timer 12
```

secondary reuse-route-record

Use this command to use the updated route record list as an explicit route (with all strict nodes) when a path message is sent out at the next refresh.

An explicit route object (ERO) list contains the hops to be taken to reach the egress from the current LSR. If CSPF can not place an ERO with all strict routes, then this command helps modify the ERO after receiving resv messages. Future path messages have the ERO with all strict nodes, which identify each and every node to be traversed.

Use the `no` parameter to disable the use of the route record list as the explicit route.

Command Syntax

```
secondary reuse-route-record
no secondary reuse-route-record
```

Parameters

None

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary reuse-route-record
```

secondary setup-priority

Use this command to configure a setup priority value for this trunk.

In case of insufficient bandwidth, the user must remove any less important LSPs to free up bandwidth. This can be done by preempting one or more of the existing LSPs. The setup priority determines whether a new LSP that preempts an existing LSP may be established. The setup priority of the new LSP must be higher than the hold priority of an existing LSP for the existing LSP to be preempted. Note that for a trunk, the setup priority should not be higher than the hold priority.

Use the `no` parameter with this command to revert to the default setup priority value.

Command Syntax

```
secondary setup-priority <0-7>
no secondary setup-priority <0-7>
```

Parameters

`<0-7>`	The priority value

Default

The default setup value is 7 (the lowest).

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary setup-priority 2
```

secondary traffic

Use this command to identify the traffic type for this RSVP Trunk.

Use the `no` parameter with this command to unset the configured traffic type.

Command Syntax

```
secondary traffic (guaranteed|controlled-load)
no secondary traffic (guaranteed|controlled-load)
no secondary traffic
```

Parameters

`guaranteed`	Guaranteed traffic
`controlled-load`	Controlled load traffic

Default

Controlled load is the default traffic type.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#secondary traffic guaranteed
```

snmp restart rsvp

Use this command to restart SNMP in Resource Reservation Protocol -Traffic Engineering (RSVP-TE)

Command Syntax

```
snmp restart rsvp
```

Parameters

None

Command Mode

Configure mode

Examples

```
#snmp restart rsvp
```

to A.B.C.D

Use this command to specify an IPv4 egress for an LSP. When configuring an LSP, you must specify the address of the egress router by using this command in the trunk node. An egress definition is a mandatory attribute; no RSVP session is created when an egress is not defined.

Use the `no` parameter with this command to unset the configured egress address.

Command Syntax

```
to A.B.C.D
no to A.B.C.D
```

Parameters

None

Default

The operator must specify an egress for LSP initialization to begin.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#to 10.10.0.5
```

to X:X::X:X

Use this command to specify an IPv6 egress for an LSP. When configuring an LSP, you must specify the address of the egress router by using this command in the trunk node. An egress definition is a mandatory attribute; no RSVP session is created when an egress is not defined.

Use the `no` parameter with this command to unset the configured egress address.

Command Syntax

```
to X:X::X:X
no to X:X::X:X
```

Parameters

None

Default

The operator must specify an egress for LSP initialization to begin.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#to 3ffe::3:34
```

update-type

Use this command to change the method of updating attributes for sessions (primary/ secondary) for this trunk.

- If make-before-break is configured (default type), a new LSP is created for each attribute update. When the new LSP becomes operational, the original LSP is torn down.
- If break-before-make is configured, the existing LSP is torn down and restarted for each attribute update.

Use the `no` parameter with this command to remove an update type.

Command Syntax

```
update-type (make-before-break|break-before-make)
update-type (make-before-break|break-before-make|soft)
no update-type (make-before-break|break-before-make)
no update-type (make-before-break|break-before-make|soft)
no update-type
```

Parameters

`make-before-break`
: Make before break update

`break-before-make`
: Break before make update

`soft`
: Soft update

Default

By default, make-before-break types of updates are carried out.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#update-type break-before-make

#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#update-type make-before-break

#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#update-type soft
```

X:X::X:X

Use this command to define an explicit IPv6 route sub-object as either loose or strict. A list of sub-objects specifies an explicit route to the egress router for an LSP.

- For the strict type of route addresses, the route taken from the previous router to the current router must be a directly-connected path and a message exchanged between the two routers should not pass any intermediate routers. This ensures that routing is enforced on the basis of each link.
- For the loose type of route addresses, the route taken form the previous router to the current router need not be a direct path and a message exchanged between the two routers can pass other routers.

Use the `no` parameter with this command to disable the configuration.

Command Syntax

```
X:X::X:X
X:X::X:X (loose|strict)
no X:X::X:X
no X:X::X:X (loose|strict)
```

Parameters

`loose`	Make this node loose
`strict`	Make this node strict

Command Mode

Path mode

Examples

```
#configure terminal
(config)#rsvp-path mypath
(config-path)#3ffe::3:34 strict
```

CHAPTER 3 Fast Reroute Commands

This chapter describes the RSVP-TE Fast Reroute commands.

- primary fast-reroute node-protection
- primary fast-reroute protection
- primary fast-reroute setup-priority
- record
- retry-limit
- retry-timer
- reuse-route-record
- rsvp-bypass
- setup-priority
- show rsvp bypass
- to A.B.C.D
- to X:X::X:X
- traffic
- update-type

affinity

Use this command to enable sending session attribute objects with resource-affinity data.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the no-affinity command to disable sending session-attribute objects.

Command Syntax

```
affinity
```

Parameters

None

Command Mode

Bypass mode

Default

Enabled

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#affinity
```

bandwidth

Use this command to reserve bandwidth for the current bypass trunk.

Each LSP has an associated bandwidth attribute. The bandwidth value is included in the sender's RSVP Path message and specifies the bandwidth to be reserved for the LSP. It is specified in bits per second, with a higher value indicating a greater user traffic volume. A zero bandwidth reserves no resources, although exchanges labels.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove a configured bandwidth.

Command Syntax

```
bandwidth BANDWIDTH
no bandwidth
```

Parameter

`BANDWIDTH`	Set a bandwidth in the range of 1 to 10000000000 in bits per second. Usable units include kilobits (k), megabits (m), and gigabits (g).

Default

The default bandwidth is 0 bits per second, which allows data to flow through, but reserves no bandwidth for it.

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#bandwidth 100m

(config)#rsvp-bypass b1
(config-bypass)#no bandwidth
```

class-to-exp-bit

Use this command to configure the private PHB-EXP (Per-Hop Behavior-Experimental) mapping only used by this ELSP (EXP-Inferred-PSC LSP). This mapping is different from the node level PHB-EXP mapping.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove a PHB-EXP mapping configuration.

Command Syntax

```
class-to-exp-bit CLASS <0-7>
no class-to-exp-bit CLASS <0-7>
```

Parameters

`CLASS`	Diff-Serv class alias mapped to the per-hop-behavior (PHB); for example be, ef, af1, af11 etc.
`<0-7>`	Exp bit that is to be mapped to this PHB

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#class-to-exp-bit ef 3
```

class-type

Use this command to configure a Class-Type for a Bypass LSP session.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove the class type configuration of a bypass LSP session.

Command Syntax

```
class-type CT-NAME
no class-type NAME
```

Parameters

`CT-NAME`	A class-type name to add
`NAME`	A class-type name to remove

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#class-type a1
```

cspf-retry-limit

Use this command to specify the number of retries that CSPF should carry out for a request received from RSVP.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove CSPF retry count.

Command Syntax

```
cspf-retry-limit <1-65535>
no cspf-retry-limit
```

Parameter

`<1-65535>`	The number of times CSPF should retry for this LSP

Default

By default, there is no retry limit for CSPF route calculations, so the value is set to 0.

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass T1
(config-bypass)#cspf-retry-limit 535

(config)#rsvp-bypass T1
(config-bypass)#no cspf-retry-limit
```

cspf-retry-timer

Use this command to specify the time between each retry that CSPF might carry out for a request received from RSVP.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove the CSPF retry timer.

Command Syntax

```
cspf-retry-timer <1-600>
no cspf-retry-timer
```

Parameter

`<1-600>`	Timeout between successive retries, in seconds

Default

By default, no retry-timer configuration is defined for CSPF calculations, so the timer is set to 0.

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass T1
(config-bypass)#cspf-retry-timer 45

(config)#rsvp-bypass T1
(config-bypass)#no cspf-retry-timer
```

detour-identification

Use this command to set a path-specific detour LSP identification method, using the detour object.

Use the no parameter with this command to unset the detour LSP identification method.

Note: This command helps identify the backup LSP identification method for one-to-one protection only.

Command Syntax

```
detour-identification (path|sender-template)
no detour-identification (path|sender-template|)
```

Parameters

`path`	Set a path-specific detour identification method
`sender-template`	Set a sender template-specific detour identification method

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#detour-identification path

#configure terminal
(config)#router rsvp
(config-router)#detour-identification sender-template

#configure terminal
(config)#router rsvp
(config-router)#no detour-identification path

#configure terminal
(config)#router rsvp
(config-router)#no detour-identification sender-template
```

elsp-preconfigured

Use this command to configure a Differentiated Services (Diff-Serv) pre-configured E-LSP (EXP-Inferred-PSC LSP).

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove a DiffServ preconfigured E-LSP.

Command Syntax

```
elsp-preconfigured
no elsp-preconfigured
```

Parameters

None

Command Mode

Bypass mode

Default

The default node level PHB-EXP mapping on each node is used by this preconfigured E-LSP.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#elsp-preconfigured
```

elsp-signaled

Use this command to configure a Diff-Serv (Differentiated Services) explicitly signaled E-LSP (EXP-Inferred-PSC LSP).

The CLASS1 through CLASS7 optional parameters can be selected from the node level PHB-EXP (Per-Hop Behavior) mapping as PHBs. They will then be used for an E-LSP. If you do not specify a class with this command, all classes will be selected for the E-LSP.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove the Diff-Serv E-LSP configuration.

Command Syntax

```
elsp-signaled
elsp-signaled CLASS1 CLASS2
elsp-signaled CLASS1 CLASS2 CLASS3
elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4
elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5
elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5 CLASS6
elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5 CLASS6 CLASS7
no elsp-signaled
```

Parameters

`CLASS(1-7)`	Diff-Serv class alias, for example, be, ef, af1, af11, etc.

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#elsp-signaled be af ef be

(config)#rsvp-bypass b1
(config-bypass)#no elsp-signaled
```

exclude-address

This command is used to exclude an address link or address node from the LSP creation of the Bypass Tunnel.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove a previously specified exclude address.

Command Syntax

```
exclude-address (link|node|) A.B.C.D
no exclude-address
```

Parameters

`A.B.C.D`	Address to exclude to avoid interface/router address
`link`	Enable link protection - Nexthop (NHOP)
`node`	Enable node protection - Next Nexthop (NNHOP)

Command mode

Bypass mode

Default

When the link parameter is used, the result is exclusion of that interface address. When the node parameter is used, the result is exclusion of that router itself. If no option is specified, the node option is implemented, where A.B.C.D is the router ID.

Examples

```
#configure terminal
(config)#rsvp-bypass my_bypass
(config-bypass)#exclude-address node 1.2.3.4

#configure terminal
(config)#rsvp-bypass my_bypass
(config-bypass)#no exclude-address
```

ext-tunnel-id A.B.C.D

This command is used to configure an IPv4 address as the extended tunnel identifier that will be used in RSVP messages. If no extended tunnel ID is specified, the LSR-ID for the router is used as the extended tunnel ID for all LSPs. The extended tunnel ID is a simple way of identifying all LSPs belonging to the same trunk.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove a preconfigured extended tunnel ID. Using the `no` parameter configures the default tunnel-id to the bypass session.

Command Syntax

```
ext-tunnel-id A.B.C.D
no ext-tunnel-id A.B.C.D
no ext-tunnel-id
```

Parameter

None

Command Mode

Bypass mode

Default

By default, the LSR-ID of the router is used as the extended tunnel ID for all sessions.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#ext-tunnel-id 10.10.10.30
```

ext-tunnel-id X:X::X:X

This command is used to configure an IPv6 address as the extended tunnel identifier that will be used in RSVP messages. If no extended tunnel ID is specified, the LSR-ID for the router is used as the extended tunnel ID for all LSPs. The extended tunnel ID is a simple way of identifying all LSPs belonging to the same trunk.

Note: This command helps specify desired attributes of the FRR backup LSP for the facility backup protection method, only.

Use the `no` parameter with this command to remove the pre-configured extended tunnel ID. Using the `no` parameter configures the default tunnel ID to the bypass session.

Command Syntax

```
ext-tunnel-id X:X::X:X
no ext-tunnel-id X:X::X:X
no ext-tunnel-id
```

Parameter

None

Command Mode

Bypass mode

Default

By default, the LSR-ID of the router is used as the extended tunnel ID for all sessions.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#ext-tunnel-id 10:10::10:30
```

fast-reroute bandwidth

Use this command to configure bandwidth to reserve for fast reroute on a P2MP LSP.

Note: This command is only applicable to primary P2MP LSPs.

Use the `no` parameter with this command to remove the reserved bandwidth.

Command Syntax

```
fast-reroute bandwidth BANDWIDTH
no fast-reroute bandwidth
```

Parameters

`BANDWIDTH`	Set a bandwidth in the range of 1 to 10000000000 in bits per second. Usable units include kilobits (k), megabits (m), and gigabits (g).

Command Mode

P2MP LSP mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#primary-lsp
(config-p2mp-lsp)#fast-reroute protection facility
(config-p2mp-lsp)#

(config-p2mp-lsp)#no fast-reroute protection facility
```

fast-reroute facility-backup

Use this command to configure a fast-reroute LSP and enable facility backup.

Note: This command is only applicable to primary P2MP LSPs.

Use the `no` parameter with this command to remove a fast-reroute LSP and disable facility backup.

Command Syntax

```
fast-reroute facility-backup
no fast-reroute facility-backup
```

Parameters

None

Command Mode

P2MP LSP mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#primary-lsp
(config-p2mp-lsp)#fast-reroute protection facility
(config-p2mp-lsp)#

(config-p2mp-lsp)#no fast-reroute protection facility
(config-p2mp-lsp)#
```

fast-reroute node-protection

Use this command to configure fast-reroute node-protection for a P2MP LSP.

Note: This command is only applicable to primary P2MP LSPs.

Use the `no` parameter with this command to remove fast-reroute node-protection.

Command Syntax

```
fast-reroute node-protection
no fast-reroute node-protection
```

Parameters

None

Command Mode

P2MP LSP mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#primary-lsp
(config-p2mp-lsp)#fast-reroute node-protection

(config-p2mp-lsp)#no fast-reroute node-protection
(config-p2mp-lsp)#
```

filter

Use this command to set the filter to fixed or shared filter style for an RSVP trunk.

The shared filter style specifies a shared reservation environment. It creates a single reservation into which flows from all senders are mixed. The Fixed Filter style specifies a distinct reservation. A distinct reservation request is created for data packets from a particular sender. Use the Fixed Filter style to prevent rerouting of an LSP and to prevent another LSP from using this bandwidth.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to unset the configured filter to the default.

Command Syntax

```
filter (fixed|shared-explicit)
no filter
```

Parameters

`fixed`	Use a fixed filter for this RSVP trunk
`shared-explicit`	Use a shared explicit filter for this RSVP trunk

Command Mode

Bypass mode

Default

Fixed Filter

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#filter shared-explicit
```

from A.B.C.D

Use this command to specify a “from” IPv4 address for tunnel ingress.

Use the `no` parameter with this command to remove an IPv4 address for tunnel egress.

Command Syntax

```
from A.B.C.D
no from A.B.C.D
no from
```

Parameters

None

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#from 10.10.0.5
```

from X:X::X:X

Use this command to specify a “from” IPv6 address for tunnel ingress.

Use the `no` parameter with this command to remove an IPv6 address from tunnel ingress.

Command Syntax

```
from X:X::X:X
no from X:X::X:X
no from
```

Parameters

None

Command Mode

Router mode or Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk mytrunk
(config-trunk)#from 3ffe::3:34

#configure terminal
(config)#router rsvp
(config-router)#from 3ffe::3:34
```

hold-priority

Use this command to configure the hold priority value for a trunk.

In case of insufficient bandwidth, remove less important existing LSP to free up the bandwidth. This can be done by preempting one or more of the signaled LSPs. Hold priority determines the degree to which an LSP holds onto its reservation for a session after the LSP has been configured successfully. When the hold priority is high, the existing LSP is less likely to give up its reservation.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to revert to the default hold-priority value.

Command Syntax

```
hold-priority <0-7>
no hold-priority
```

Parameter

`<0-7>`	Set a value for hold priority

Command Mode

Bypass mode

Default

The default hold priority is 0, the highest value. Once a session is configured with a 0 hold priority value, no other session can preempt it.

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#hold-priority 2

(config)#rsvp-bypass b1
(config-bypass)#no hold-priority
```

hop-limit

Use this command to specify a limit of hops for an RSVP Bypass trunk.

Upon configuration of an arbitrary hop-limit, the hop-limit is compared with the number of hops configured in the primary path, if a primary path has been configured. If the number of hops in the path exceeds the hop-limit configured, no Path messages are sent out and any existing session is torn down. If no primary path is configured, the trunk is processed normally and the Path messages are sent out.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to revert to the default hop-limit value.

Command Syntax

```
hop-limit <1-255>
no hop-limit
```

Parameter

`<1-255>`	Set the number of acceptable hops

Command Mode

Bypass mode

Default

The default hop limit is 255.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#hop-limit 23

(config)#rsvp-bypass b1
(config-bypass)#no hop-limit
```

include-any

Use this command to include any of the administrative groups in an LSP. Administrative groups are manually assigned attributes that ensure that links with the same color belong to the same class. These groups are used to implement different policy-based LSP setups. If an include-any list is configured, all chosen links must belong to at least one of the administrative groups enumerated in the include-any list. Administrative groups, also known as link coloring or resource class, are manually assigned attributes that describe the “color” of links, such that links with the same color conceptually belong to the same class. You can use administrative groups to implement a variety of policy-based LSP setups.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove an administrative group.

Command Syntax

```
include-any ADMIN-GROUP-NAME
no include-any ADMIN-GROUP-NAME
```

Parameter

`ADMIN-GROUP-NAME`

The name of the administrative group

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#include-any admingrp2
```

label-record

Use this command to record all labels exchanged between RSVP enabled routers during the reservation setup process.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to turn off label recording.

Command Syntax

```
label-record
no label-record
```

Parameters

None

Command Mode

Bypass mode

Default

Disabled

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#label-record
```

llsp

Use this command to configure a Differentiated Services Label-Only-Inferred-PSC (Diff-Serv L-LSP) that uses Diff-Serv Class as its PHB Scheduling Class (PSC).

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove the DiffServ L-LSP configuration.

Command Syntax

```
llsp CLASS
no llsp
```

Parameter

`CLASS`	Diff-Serv class alias, for example, be, ef, af1, af11, etc.

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#llsp be

(config)#rsvp-bypass b1
(config-bypass)#no llsp
```

no-affinity

Use this command to disable the sending of session attribute objects with resource affinity data. Use the affinity command to revert to the default settings (affinity enabled).

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the affinity command to enable the sending of session attribute objects.

Command Syntax

```
no-affinity
```

Parameters

None

Command Mode

Bypass mode

Default

Enabled

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#no-affinity
```

no-record

Use this command to disable recording of the route taken by path and reservation request (Resv) messages for the bypass LSP.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the record command to enable recording of routes.

Command Syntax

```
no-record
```

Parameters

None

Command Mode

Bypass mode

Default

Routes are recorded by default.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#no-record
```

path

Use this command to specify an RSVP path to be used.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to remove a configured RSVP path.

Command Syntax

```
path PATHNAME
no path
```

Parameter

`PATHNAME`	The name of the path to be used. This parameter is the string (name) used to identify an RSVP path defined for the node (refer to rsvp-path).

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#path mypath
```

primary fast-reroute

Use this command to configure administrative groups for use with a bypass LSP configuration. Administrative groups are assigned attributes that describe the color of links, so that links with the same color are in one class. Administrative groups are used to implement different policy-based LSP setups.

Use the `no` parameter with this command to modify the attributes of, or to remove an administrative group.

Command Syntax

```
primary fast-reroute (include-any|exclude-any) ADMIN-GROUP-NAME
no primary fast-reroute (include-any|exclude-any) ADMIN-GROUP-NAME
```

Parameter

`include-any`	Set the include-any attribute
`exclude-any`	Set the exclude-any attribute
`ADMIN-GROUP-NAME`	Name of the administrative group

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#exclude-any myadmingroup
```

primary fast-reroute bandwidth

Use this command to set the detour LSP bandwidth.

Note: This command helps identify attributes of the FRR backup LSP for either the one-to-one or facility-backup protection methods.

Use the `no` parameter with this command to unset fast-reroute LSP bandwidth.

Command Syntax

```
primary fast-reroute bandwidth BANDWIDTH
no primary fast-reroute bandwidth BANDWIDTH
no primary fast-reroute bandwidth
```

Parameter

`BANDWIDTH`	Set a bandwidth in the range of 1 to 10000000000 in bits per second. Usable units include kilobits (k), megabits (m), and gigabits (g).

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute bandwidth 10000000
```

primary fast-reroute hold-priority

Use this command to set the hold-priority for a detour LSP.

Note: This command helps identify attributes of the FRR backup LSP for either the one-to-one or facility-backup protection methods.

Use the `no` parameter with this command to unset the detour LSP hold-priority.

Command Syntax

```
primary fast-reroute hold-priority <0-7>
no primary fast-reroute hold-priority (<0-7>|)
```

Parameter

`<0-7>`	Set the value for hold-priority

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute hold-priority 3
```

primary fast-reroute hop-limit

Use this command to set the hop-limit for a detour LSP.

Note: This command helps identify attributes of the FRR backup LSP for either the one-to-one or facility-backup protection methods.

Use the `no` parameter with this command to unset the detour LSP hop-limit.

Command Syntax

```
primary fast-reroute hop-limit <1-255>
no primary fast-reroute hop-limit (<1-255>|)
```

Parameter

`<1-255>`	Set the number of hops

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute hop-limit 25
```

primary fast-reroute node-protection

Use this command to set node protection.

Note: This command helps identify attributes of the FRR backup LSP for either the one-to-one or facility-backup protection methods.

Use the `no` parameter with this command to remove node protection.

Command Syntax

```
primary fast-reroute node-protection
```

```
no primary fast-reroute node-protection
```

Parameters

None

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute node-protection
```

primary fast-reroute protection

Use this command to create an Fast Reroute backup and to set an LSP one-to-one protection mechanism. This command can also be used to create an FRR Facility (Bypass) backup and assign a Facility Backup (Bypass Tunnel) available to the protected LSP.

Note: This command helps identify attributes of the FRR backup LSP for either the one-to-one or facility-backup protection methods.

Use the `no` parameter with this command to remove LSP protection mechanism.

Parameters

None

Command Syntax

```
primary fast-reroute protection (one-to-one|facility)
no primary fast-reroute protection (one-to-one|facility|)
```

Parameters

`one-to-one`	Set the one-to-one protection mechanism
`facility`	Set the facility protection mechanism

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute protection one-to-one

#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute protection facility
```

primary fast-reroute setup-priority

Use this command to configure a setup-priority for the detour LSP.

Note: This command helps identify attributes of the FRR backup LSP for either the one-to-one or facility-backup protection methods.

Use the `no` parameter with this command to remove the detour LSP setup-priority.

Command Syntax

```
primary fast-reroute setup-priority <0-7>
no primary fast-reroute setup-priority (<0-7>|)
```

Parameter

`<0-7>`	Set a value for setup priority

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary fast-reroute setup-priority 2
```

record

Use this command to enable recording of the route taken by path and reservation request (Resv) messages for the bypass LSP. This command helps confirm the establishment of reservations and to identify errors. The routes are recorded by means of the Route Record Object (RRO) in RSVP messages.

Use the no-record command to disable recording of routes.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Command Syntax

```
record
```

Parameters

None

Command Mode

Bypass mode

Default

Routes are recorded by default.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#record
```

retry-limit

Use this command to specify a retry count value for a RSVP bypass trunk.

If a session is in a nonexistent state due a path error message, it tries to recreate the LSP for the number of times specified by the retry-limit command. Although the same retry command controls both the trunk and the session, the retry-limit value affects only the session and not the trunk. If the bypass trunk is in an incomplete state, the code keeps trying forever to bring it to a complete state regardless of the retry-limit value.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to revert to the default retry-limit value.

Command Syntax

```
retry-limit <1-65535>
no retry-limit
```

Parameters

`<1-65535>`	The number of times the system should try setting up the LSP

Command Mode

Bypass mode

Default

By default, the retry-limit value is 0 and the trunk and session try to create the LSP indefinitely.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#retry-limit 256

(config)#rsvp-bypass b1
(config-bypass)#no retry-limit
```

retry-timer

Use this command to specify a retry interval for an RSVP Bypass Trunk. If ingress tries to configure an LSP, but fails due a path error message, the system waits for the specified time given in this command before retrying the LSP setup process.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to revert to the default.

Command Syntax

```
retry-timer <1-600>
no retry-timer
```

Parameters

`<1-600>`	Set a time in seconds after which the system should retry setting up the LSP

Default

The default retry time is 30 seconds.

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#retry-timer 12

(config)#rsvp-bypass b1
(config-bypass)#no retry-timer
```

reuse-route-record

Use this command to use the updated route record list as an explicit Route (with all strict nodes) when a path message is sent out at the next refresh. The ERO list contains the hops to be taken to reach the egress from the current LSR. The future Path messages have the ERO with all strict nodes, identifying each and every node to be traversed.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to disable the use of the Route Record List as the explicit route.

Command Syntax

```
reuse-route-record
no reuse-route-record
```

Parameters

None

Command Mode

Bypass mode

Default

Disabled

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#reuse-route-record
```

rsvp-bypass

This command is used to create a new RSVP Bypass Tunnel or to modify the existing RSVP Bypass Tunnel.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method only.

Use the `no` parameter with this command to delete the configured RSVP Bypass Tunnel.

Command Syntax

```
rsvp-bypass BYPASSNAME
no rsvp-bypass TRUNKNAME
```

Parameter

`BYPASSNAME`	Name assigned to the bypass tunnel to be added
`TRUNKNAME`	Name assigned to the bypass tunnel to be removed

Command mode

Configure mode

Example

```
#configure terminal
(config)#rsvp-bypass my_bypass
(config-bypass)#
```

setup-priority

Use this command to configure a setup priority value for this trunk.

In case of insufficient bandwidth, remove less important existing LSPs to free up the bandwidth. This can be done by preempting one or more of the existing LSPs. The setup priority determines if a new LSP that preempts an existing LSP may be established. The setup priority of the new LSP must be higher than the hold priority of an existing LSP for the existing LSP to be preempted. For a trunk, the setup priority should not be higher than the hold priority.

Note: This command helps identify attributes of the FRR backup LSP for the facility-backup protection method, only.

Use the `no` parameter with this command to revert to the default setup priority configuration.

Command Syntax

```
setup-priority <0-7>
no setup-priority
```

Parameter

`<0-7>`	Set a priority value

Default

The default setup value is 7 (the lowest).

Command Mode

Bypass mode

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#setup-priority 2

(config)#rsvp-bypass b1
(config-bypass)#setup-priority
```

show rsvp bypass

This command is used to show information for a specified bypass tunnel or for all bypass tunnels present. The information for all bypass tunnels is displayed if no bypass name is specified.

Command Syntax

```
show rsvp bypass
show rsvp bypass BYPASSNAME
show rsvp bypass detail
```

Parameters

BYPASSNAME	The name of the bypass tunnel for which information is to be displayed
detail	Use this parameter to display detailed information for all bypass tunnels

Command Mode

Privileged Exec Mode

Example

```
#show rsvp bypass
To              From            State Pri Rt Style Labelin Labelout LSPname
99.99.5.5    3.3.3.3         Up    Yes  1  1 SE       -               3 b1
4.4.4.4      3.3.3.3         Up    Yes  1  1 SE       -               3 b2
#
```

The following is a sample output displaying detailed information about all bypass trunks.

```
#show rsvp bypass detail
Ingress (Bypass)
99.99.5.5
  From: 3.3.3.3, LSPstate: Up, LSPname: b1
  Setup priority: 7, Hold priority: 0
  CSPF usage: Enabled, CSPF Retry Count: 0, CSPF Retry Interval: 30 seconds
  LSP Protection: None
  Label in: -,  Label out: 3,
  Tspec rate: 0, Fspec rate: 0
  Tunnel Id: 101, LSP Id: 101, Ext-Tunnel Id: 34.1.3.3
  Downstream: 99.99.5.5, eth2
  Path refresh: 30 seconds (due in 25 seconds)
  Resv lifetime: 157 seconds (due in 146 seconds)
  Retry count: 0, intrvl: 30 seconds
  RRO re-use as ERO: Disabled
  Label Recording: Disabled
  Admin Groups: none
  Configured Path: none
  Exclude Node: 4.4.4.4
  Session Explicit Route Detail :
   99.99.5.5/32 strict
  Record route: <self> 99.99.5.5
  Style: Shared Explicit Filter
  Traffic type: controlled-load
  Minimum Path MTU: 1500
  Last Recorded Error Code: None
#
```

to A.B.C.D

Use this command to specify an IPv4 egress for an LSP. When configuring an LSP, you must specify the address of the egress router by including this “to” command. An egress definition is a mandatory attribute; an RSVP session will not be created if an egress is not defined.

Use the `no` parameter to remove a configured egress address.

Command Syntax

```
to A.B.C.D
no to A.B.C.D
```

Parameters

None

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#to 10.10.0.5
```

to X:X::X:X

Use this command to specify an IPv6 egress for an LSP. When configuring an LSP, you must specify the address of the egress router by including this “to” command. An egress definition is a mandatory attribute; an RSVP session will not be created if an egress is not defined.

Use the `no` parameter to remove a configured egress address.

Command Syntax

```
to X:X::X:X
no to X:X::X:X
```

Parameters

None

Command Mode

Bypass mode

Examples

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#to 3ffe::3:34
```

traffic

Use this command to designate the traffic type for this RSVP Bypass Trunk.

Use the `no` parameter with this command to remove the configured traffic type.

Command Syntax

```
traffic (guaranteed|controlled-load)
no traffic
```

Parameters

`controlled-load`	Controlled loaded traffic
`guaranteed`	Guaranteed traffic

Command Mode

Bypass mode

Default

Controlled load is the default.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#traffic guaranteed

(config)#rsvp-bypass b1
(config-bypass)#no traffic
```

update-type

Use this command to change the method of updating attributes for sessions for this Bypass trunk.

- When make-before-break is configured, a new LSP is created for each attribute update. Once the new LSP becomes operational, the original LSP is torn down.
- When break-before-make is configured, for each attribute update, the existing LSP is torn down and restarted.

Use the no parameter with this command to disable the configuration.

Command Syntax

```
update-type [make-before-break|break-before-make]
```

Parameters

`make-before-break`

Set update-type to make-before-break

`break-before-make`

Set update-type break-before-make

Command Mode

Bypass mode

Default

By default, make-before-break types of updates are carried out.

Example

```
#configure terminal
(config)#rsvp-bypass b1
(config-bypass)#update-type break-before-make

(config)#rsvp-bypass b1
(config-bypass)#no update-type
```

CHAPTER 4 Refresh Reduction Commands

This chapter describes the RSVP-TE Refresh Reduction commands:

ack-wait-timeout

Use this command to configure the acknowledgement wait timeout for all RSVP-TE neighbors.

Use the `no` parameter with this command to revert to the default acknowledgement wait timeout.

Command Syntax

```
ack-wait-timeout <1-65535>
no ack-wait-timeout <1-65535>
no ack-wait-timeout
```

Parameter

`<1-65535>`	Specify a value for the acknowledgement wait timeout in seconds. The default timeout value is 10 seconds.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#ack-wait-timeout 5

(config)#router rsvp
(config-router)#no ack-wait-timeout 5
```

message-ack

Use this command to enable message acknowledgement for all messages being sent to neighbors that are known to support refresh reduction.

Use the `no` parameter with this command to disable message acknowledgement for all messages being sent to neighbors.

Command Syntax

```
message-ack
```

```
no message-ack
```

Parameters

None

Default

Message Acknowledgement is disabled by default.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#message-ack

(config)#router rsvp
(config-router)#no message-ack
```

refresh-reduction

Use this command to enable refresh reduction capability advertisement for all interfaces.

Use the `no` parameter with this command disable refresh reduction capability advertisement for all interfaces.

Command Syntax

```
refresh-reduction
no refresh-reduction
```

Parameters

None

Default

Refresh reduction mechanism is enabled by default.

Command Mode

Router mode

Examples

```
#configure terminal
(config)#router rsvp
(config-router)#refresh-reduction

(config)#router rsvp
(config-router)#no refresh-reduction
```

rsvp ack-wait-timeout

Use this command to configure the acknowledgement wait timeout for all neighbors detected via the specific interface.

Use the `no` parameter with this command to revert to the default acknowledgement wait timeout for the specified interface.

Command Syntax

```
rsvp ack-wait-timeout <1-65535>
no rsvp ack-wait-timeout <1-65535>
no rsvp ack-wait-timeout
```

Parameters

`<1-65535>`	Specify a value for the acknowledgement wait timeout in seconds. The default timeout value is 10 seconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp ack-wait-timeout 5

(config)#interface eth0
(config-if)#no rsvp ack-wait-timeout 5
```

rsvp message-ack

Use this command to enable message acknowledgement for all messages being sent to the neighbors that have been detected via the specific interface.

Use the `no` parameter with this command to disable message acknowledgement for all messages being sent to the neighbors that have been detected via the specified interface.

Command Syntax

```
rsvp message-ack
```

```
no rsvp message-ack
```

Parameters

None

Default

Message Acknowledgement is disabled by default.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp message-ack

(config)#interface eth0
(config-if)#no rsvp message-ack
```

rsvp refresh-reduction

Use this command to enable Refresh Reduction capability advertisement for a specific interface.

Use the `no` parameter with this command disable Refresh Reduction capability advertisement for the specified interface.

Command Syntax

```
rsvp refresh-reduction
```

```
no rsvp refresh-reduction
```

Parameters

None

Default

Refresh Reduction mechanism is enabled by default for all interfaces.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#rsvp refresh-reduction

(config)#interface eth0
(config-if)#no rsvp refresh-reduction
```

CHAPTER 5 Differentiated Services Commands

This chapter describes the RSVP Differentiated Services (DiffServ) commands.

map-route A.B.C.D

Use this command to map a IPv4 prefix route onto a trunk. This route is to be used for packets that are mapped to a specific RSVP trunk.

Use the `no` parameter with this command for unmapping routes from specified trunks.

Command Syntax

```
map-route A.B.C.D A.B.C.D
map-route A.B.C.D A.B.C.D CLASS
map-route A.B.C.D/M
map-route A.B.C.D/M CLASS
no map-route A.B.C.D A.B.C.D
no map-route A.B.C.D A.B.C.D CLASS
no map-route A.B.C.D/M
no map-route A.B.C.D/M CLASS
```

Parameters

`A.B.C.D`	Specify the IPV4 address to be mapped.
`A.B.C.D`	Specify a mask to be applied to the address being mapped.
`A.B.C.D/M`	Specify the IPV4 address to be mapped, with mask.
`CLASS`	Specify the DiffServ Class Name (for example, `be`, `ef` etc.) used for selecting incoming IP packets to be mapped to a specified RSVP trunk.

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#map-route 1.1.2.2/24 be
```

map-route X:X::X:X

Use this command to map a IPv6 prefix route onto a trunk. This route is to be used for packets that are mapped to a specific RSVP trunk.

Use the `no` parameter with this command for unmapping routes from specified trunks.

Command Syntax

```
map-route X:X::X:X X:X::X:X
map-route X:X::X:X X:X::X:X CLASS
map-route X:X::X:X/M
map-route X:X::X:X/M CLASS
no map-route X:X::X:X X:X::X:X
no map-route X:X::X:X X:X::X:X CLASS
no map-route X:X::X:X/M
no map-route X:X::X:X/M CLASS
```

Parameters

`X:X::X:X`	Specify the IPV6 address to be mapped.
`X:X::X:X`	Specify a mask to be applied to the address being mapped.
`X:X::X:X/M`	Specify the IPV6 address to be mapped, with mask.
`CLASS`	Specify the DiffServ Class Name (for example, `be`, `ef` etc.) used for selecting incoming IP packets to be mapped to a specified RSVP trunk.

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#map-route 1.1.2.2/24 be
```

override-diffserv

Use this command to enable the Differentiated Services (Diff-Serv) override configuration.

If a Path message is received without a Diff-Serv object by a Diff-Serv enabled node, it can be interpreted either as a request for an E-LSP (EXP-Inferred-PSC LSP) or as a request for Non-Diff-Serv LSP. This command supports the override option and when configured, the LSR interprets a path message without a Diff-Serv object as a request for Non-Diff-Serv LSP.

Use the `no` parameter with this command disable this feature.

Command Syntax

```
override-diffserv
no override-diffserv
```

Parameters

None

Default

Disabled

Command Mode

Router mode

Example

```
#configure terminal
(config)#router rsvp
(config-router)#override-diffserv
```

primary class-to-exp-bit

Use this command to configure a primary PHB-EXP (Per-Hop Behavior-Experimental) mapping to be used by an E-LSP (EXP-Inferred-PSC LSP). This mapping is different from the node level PHB-EXP mapping.

Use the `no` parameter with this command to remove a PHB-EXP mapping configuration from current E-LSP PHB-EXP mapping.

Command Syntax

```
primary class-to-exp-bit CLASS <0-7>
no primary class-to-exp-bit CLASS <0-7>
```

Parameters

`CLASS`	Diff-Serv class alias mapped to the particular PHB. For example `be`, `ef`, `af1`, `af11` etc.
`<0-7>`	Exp bit which is to be mapped to this PHB.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary class-to-exp-bit ef 3

(config)#rsvp-trunk T1
(config-trunk)#no primary class-to-exp-bit
```

primary elsp-preconfigured

Use this command to configure a primary Differentiated Services (Diff-Serv) pre-configured E-LSP (EXP-Inferred-PSC LSP) interface.

Use the `no` parameter with this command to remove the configuration.

Command Syntax

```
primary elsp-preconfigured
no primary elsp-preconfigured
```

Parameters

None

Command Mode

Trunk mode

Usage

The default node level PHB-EXP mapping on each node is used by this pre-configured E-LSP.

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary elsp-preconfigured
```

primary elsp-signaled

Use this command to configure a primary Diff-Serv (Differentiated Services) explicitly signaled E-LSP (EXP-Inferred-PSC LSP) interface.

The CLASS1 to CLASS7 are optional parameters that can be selected from node level PHB-EXP (Per-Hop Behavior) mapping as PHBs, which will then be used for an E-LSP. If you do not specify a class with this command, all classes will be selected for the E-LSP.

Use the `no` parameter with this command to remove the configuration.

Command Syntax

```
primary elsp-signaled
primary elsp-signaled CLASS1 CLASS2
primary elsp-signaled CLASS1 CLASS2 CLASS3
primary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4
primary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5
primary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5 CLASS6
primary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5 CLASS6 CLASS7
no primary elsp-signaled
```

Parameter

`CLASS(1-7)`	Diff-Serv class alias. For example, be, ef, af1, af11, etc.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary elsp-signaled be af ef be

(config)#rsvp-trunk T1
(config-trunk)#no primary elsp-signaled
```

primary llsp

Use this command to configure a primary Differentiated Services Label-Only-Inferred-PSC (Diff-Serv L-LSP) interface, which will use Diff-Serv Class as its PHB Scheduling Class (PSC).

Use the `no` parameter with this command to remove the Diff-Serv L-LSP configuration.

Command Syntax

```
primary llsp CLASS
no primary
```

Parameters

`CLASS`	Diff-Serv class alias. For example, be, ef, af1, af11, etc.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary llsp be

(config)#rsvp-trunk T1
(config-trunk)#no primary llsp
```

secondary class-to-exp-bit

Use this command to configure a secondary PHB-EXP (Per-Hop Behavior-Experimental) mapping to be used by an E-LSP (EXP-Inferred-PSC LSP). This mapping is different from the node level PHB-EXP mapping.

Use the `no` parameter with this command to remove a PHB-EXP mapping configuration from current E-LSP PHB-EXP mapping.

Command Syntax

```
secondary class-to-exp-bit CLASS <0-7>
no secondary class-to-exp-bit CLASS <0-7>
```

Parameters

`CLASS`	Diff-Serv class alias mapped to the particular PHB. For example `be`, `ef`, `af1`, `af11` etc.
`<0-7>`	Exp bit that is to be mapped to this PHB.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary class-to-exp-bit ef 3

(config)#rsvp-trunk T1
(config-trunk)#no secondary class-to-exp-bit
```

secondary elsp-preconfigured

Use this command to configure a secondary Differentiated Services (Diff-Serv) pre-configured E-LSP (EXP-Inferred-PSC LSP) interface.

Use the `no` parameter with this command to remove the configuration.

Command Syntax

```
secondary elsp-preconfigured
no secondary elsp-preconfigured
```

Parameters

none

Command Mode

Trunk mode

Usage

The default node level PHB-EXP mapping on each node is used by this pre-configured E-LSP.

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary elsp-preconfigured
```

secondary elsp-signaled

Use this command to configure a secondary Diff-Serv (Differentiated Services) explicitly signaled E-LSP (EXP-Inferred-PSC LSP) interface.

The CLASS1 through CLASS7 optional parameters can be selected from the node level PHB-EXP (Per-Hop Behavior) mapping as PHBs. They will then be used for an E-LSP. If you do not specify a class with this command, all classes will be selected for the E-LSP.

Use the `no` parameter with this command to remove the configuration.

Command Syntax

```
secondary elsp-signaled
secondary elsp-signaled CLASS1 CLASS2
secondary elsp-signaled CLASS1 CLASS2 CLASS3
secondary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4
secondary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5
secondary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5 CLASS6
secondary elsp-signaled CLASS1 CLASS2 CLASS3 CLASS4 CLASS5 CLASS6 CLASS7
no secondary elsp-signaled
```

Parameters

`CLASS(1-7)`	Diff-Serv class alias. For example, be, ef, af1, af11, etc.

Command Mode

Trunk mode

Examples

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary elsp-signaled be af ef be

(config)#rsvp-trunk T1
(config-trunk)#no secondary elsp-signaled
```

secondary llsp

Use this command to configure a secondary Differentiated Services Label-Only-Inferred-PSC (Diff-Serv L-LSP) interface, which will use Diff-Serv Class as its PHB Scheduling Class (PSC).

Use the `no` parameter with this command to remove the Diff-Serv L-LSP configuration.

Command Syntax

```
secondary llsp CLASS
no secondary llsp
```

Parameters

`CLASS(1-7)`	Diff-Serv class alias. For example, be, ef, af1, af11, etc.

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary llsp be

(config)#rsvp-trunk T1
(config-trunk)#no secondary llsp
```

show rsvp diffserv-info

Use this command to display node level Differentiated Services (Diff-Serv) configuration information received from NSM. This information includes the supported PHB/PSC (Per-Hop Behavior/ PHB Scheduling Class) by this node and the node level PHB-EXP mapping.

Command Syntax

```
show rsvp diffserv-info
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

Following is a sample output of the `show rsvp diffserv-info` command showing Diff-Serv information received from NSM.

```
#show rsvp diffserv-info
Supported DSCP:
CLASS       DSCP_value
  be           000000
af11           001010
af12           001100
 cs5           101000

CLASS-EXP mapping:
CLASS    DSCP_value     EXP_value
  be        000000            0
  be        000000            2
af12        001100            3
Example
#
```

CHAPTER 6 DiffServ-TE Commands

This chapter describes the RSVP Differentiated Services-Traffic Engineering (DiffServ-TE) commands.

primary class-type

Use this command to configure a primary Class-Type for an LSP session.

Use the `no` parameter with this command to remove the Class-Type configuration.

Command Syntax

```
primary class-type CT-NAME
no primary class-type NAME
```

Parameters

`CT-NAME`	Class-type name to add
`NAME`	Class-type name to remove

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#primary class-type a1
```

secondary class-type

Use this command to configure a secondary Class-Type for an LSP session.

Use the `no` parameter with this command to remove the Class-Type configuration.

Command Syntax

```
secondary class-type NAME
no secondary class-type NAME
```

Parameters

`NAME`	Class-type name

Command Mode

Trunk mode

Example

```
#configure terminal
(config)#rsvp-trunk T1
(config-trunk)#secondary class-type a1
```

show rsvp dste-info

Use this command to display the DiffServ-TE configuration information configured in NSM.

Command Syntax

```
show rsvp dste-info
```

Parameters

None

Command Mode

Privileged Exec mode

Example

This command only displays the ready-to-use TE classes and the related class types. When a class type is configured in NSM but is not used by any TE class, this command does not display it.

The following is a sample output of the `show rsvp dste-info` command displaying DiffServ-TE configuration information configured in NSM.

```
#show rsvp dste-info
te0 : {a1, 4}
te1 : {a2, 5}
te3 : {default, 6}
ct0 : default
ct1 : a2
ct2 : a2
#
```

CHAPTER 7 Point-to-Multipoint Commands

This chapter describes the command for managing Point-to-Multipoint (P2MP) Label Switched Paths (LSPs) in RSVP-TE.

affinity

Use this command to configure an administrative group and set affinity attributes for a P2MP LSP

Use the no parameter with this command to modify attributes or remove an administrative group from a P2MP LSP.

Command Syntax

Note: The first syntax example is used when Constrained Shortest Path First (CSPF) enabled. The second example is used when CSPF is not enabled.

```
affinity (include-any|exclude-any) ADMIN-GROUP-NAME
affinity (include-any|exclude-any|include-all) ADMIN-GROUP-NAME
no affinity (include-any|exclude-any) ADMIN-GROUP-NAME
no affinity (include-any|exclude-any|include-all) ADMIN-GROUP-NAME
```

Parameters

`include-any`	Include any attribute
`exclude-any`	Exclude any attribute
`include-all`	Include all attributes
`ADMIN-GROUP-NAME`	Name of the administrative group

Command Mode

P2MP LSP mode

Examples

```
#configure terminal
(config-p2mp-lsp)#affinity exclude-any abcd
(config-p2mp-lsp)#no affinity exclude-any abcd

(config-p2mp-lsp)#affinity include-any defg
(config-p2mp-lsp)#no affinity include-any defg
```

bandwidth

Use this command to configure the bandwidth to reserve for a P2MP LSP.

Use the no parameter with this command to remove a bandwidth reservation.

Command Syntax

```
bandwidth BANDWIDTH
no bandwidth
```

Parameters

BANDWIDTH	Maximum bandwidth in bits per second in the range 1 to 10000000000 bits. Usable units include kilobits (k), megabits (m), and gigabits (g).

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#bandwidth 1m
(config-p2mp-lsp)#no bandwidth(config-p2mp-lsp)#bandwidth 1m
(config-p2mp-lsp)#no bandwidth
```

class-type

Use this command to set a DiffServ Traffic Engineering (DSTE) class type for a P2MP LSP when DSTE is enabled.

Use the no parameter with this command to remove a DSTE class type.

Command Syntax

```
class-type CT-NAME
no class-type
```

Parameters

CT-NAME	Class type name

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#class-type ct0
(config-p2mp-lsp)#no class-type
```

clear rsvp p2mp-session

Use this command to clear a P2MP RSVP session.

Command Syntax

```
clear rsvp p2mp-session P2MP-ID TUNNEL-ID EXT-ID LSP-ID INGRESS EGRES
```

Parameters

`P2MP-ID`	P2MP ID of the session
`TUNNEL-ID`	Tunnel ID of the session
`EXT-ID`	Extended tunnel ID of the session
`LSP-ID`	LSP ID of the session
`INGRESS`	Ingress of the session
`EGRESS`	Egress of the session

Command Mode

Privileged Exec and Exec modes

Example

```
#clear rsvp p2mp-session 101 101 1.1.1.1 102 1.1.1.1 4.4.4.4
#
```

destination

Use this command to identify a destination address for a P2MP LSP and set CSPF routing or hop-by-hop routing.

Use the no parameter with this command to remove a destination address.

Note: The default is NO path and CSPF.

Command Syntax

```
destination A.B.C.D (path PATHNAME|) (cspf|no-cspf|)
no destination
```

Parameters

A.B.C.D	Destination address
PATHNAME	Path to use
cspf	Use CSPF for Path computation
no-cspf	Use hop-by-hop routing

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#destination 4.4.4.4
(config-p2mp-lsp)#destination 5.5.5.5 no-cspf
(config-p2mp-lsp)#destination 6.6.6.6 path P1 no-cspf

(config-p2mp-lsp)#no destination 5.5.5.5
(config-p2mp-lsp)#
```

exit-p2mp-lsp

Use this command to exit the P2MP LSP mode and return to Trunk mode. Upon successful execution of this command, the mode is changed to P2MP Trunk mode.

Command Syntax

```
exit-p2mp-lsp
```

Parameters

None

Command Mode

P2MP LSP mode

Examples

```
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#primary-lsp
(config-p2mp-lsp)#exit-p2mp-lsp
(config-p2mp-trunk)#
```

ext-tunnel-id

Use this command to configure an extended tunnel identifier for a P2MP trunk.

Command Syntax

```
ext-tunnel-id A.B.C.D
```

Parameters

A.B.C.D	IPv4 address value of the trunk

Command Mode

RSVP P2MP Trunk mode

Examples

```
(config-p2mp-trunk)#ext-tunnel-id 1.1.1.1
```

filter

Use this command to configure the reservation style to use.

Command Syntax

```
filter (fixed|shared-explicit)
```

Parameters

`fixed`	Use a fixed filter for this trunk
`shared-explicit`	Use a shared-explicit filter for this trunk

Command Mode

P2MP Trunk mode

Examples

```
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#filter shared-explicit
(config-p2mp-trunk)#filter fixed
```

from

Use this command to configure a P2MP tunnel ingress.

Command Syntax

```
from A.B.C.D
```

Parameters

A.B.C.D	IPv4 address of tunnel ingress

Command Mode

P2MP Trunk mode

Examples

```
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#from 1.1.1.1
```

hold-priority

Use this command to configure a hold priority for the P2MP LSP.

Use the no parameter with this command to remove the hold priority for the P2MP LSP.

Command Syntax

```
hold-priority <0-7>
no hold-priority
```

Parameters

<0-7>	Value for hold priority

Command Mode

P2MP LSP Mode

Examples

```
(config-p2mp-lsp)#hold-priority 4

(config-p2mp-lsp)#no hold-priority
(config-p2mp-lsp)#
```

hop-limit

Use this command to set a hop limit for a P2MP LSP

Use the no parameter with this command to remove a configured hop limit.

Command Syntax

```
hop-limit <1-255>
no hop-limit
```

Parameters

<1-255>	Number of acceptable hops

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#hop-limit 55

(config-p2mp-lsp)#no hop-limit
(config-p2mp-lsp)#
```

label-record

Use this command to record labels exchanged by all peers.

Use the no parameter with this command to stop recording labels exchanged by all peers.

Command Syntax

```
label-record
no label-record
```

Parameters

None

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#label-record

(config-p2mp-lsp)#no label-record
(config-p2mp-lsp)#
```

pack-affinity

Use this command to enable affinity packing for session attribute information. When this command is used, affinity information is packed into the session attribute object.

Use the no parameter with this command to disable affinity packing of session attributes.

Command Syntax

```
pack-affinity
no pack-affinity
```

Parameters

None

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#pack-affinity

(config-p2mp-lsp)#no pack-affinity
(config-p2mp-lsp)#
```

primary-lsp

Use this command to configure a primary P2MP LSP. When this command is executed successfully, the mode changes from P2MP Trunk mode to P2MP LSP mode for subsequent configuration of Primary LSP properties.

Use the no parameter with this command to remove a primary P2MP LSP.

Command Syntax

```
primary-lsp
no primary-lsp
```

Parameters

None

Command Mode

P2MP Trunk mode

Examples

```
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)# primary-lsp
(config-p2mp-lsp)#
```

retry-limit

Use this command to set a retry count for a P2MP LSP. If you have CSPF enabled, the retry limit you set with this command also becomes the CSPF retry limit, which is the number of times to probe CSPF in case of unsuccessful path computation.

Use the no parameter with this command to reset the retry count to its default value.

Command Syntax

```
retry-limit <1-65535>
no retry-limit
```

Parameters

<1-65535>	Number of times to retry a Path message

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#retry-limit 100

(config-p2mp-lsp)#no retry-limit
(config-p2mp-lsp)#
```

retry-timer

Use this command to set a retry timer for a P2MP LSP. If you have CSPF enabled, the retry timer set with this command also becomes the CSPF retry timer, which is the periodicity of subsequent CSPF probes in case of unsuccessful path computation.

Use the no parameter with this command to reset the retry timer to its default value.

Command Syntax

```
retry-timer <1-600>
no retry-timer
```

Parameters

<1-600>	Timeout, in seconds, between successive Path message retries.

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#retry-timer 200

(config-p2mp-lsp)#no retry-timer
(config-p2mp-lsp)#
```

route-record

Use this command to record the route on the path.

Use the no parameter with this command to stop recording the route on the path.

Command Syntax

```
route-record
no route-record
```

Parameters

None

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#route-record
(config-p2mp-lsp)#no route-record
(config-p2mp-lsp)#
```

rsvp-trunk

Use this command to set up an P2MP trunk for RSVP LSP. Upon successful execution of this command, the mode is changed from RSVP P2MP mode to P2MP Trunk mode for subsequent configuration of trunk properties.

Command Syntax

```
rsvp-trunk TRUNKNAME (ipv4 p2mp|ipv6 p2mp)
rsvp-trunk TRUNKNAME (ipv4|ipv6)
```

Parameters

TRUNKNAME	Name to use for the P2MP trunk
ipv4	IPv4 address family trunk
p2mp	P2MP-enabled trunk
ipv6	IPv6 address family trunk
p2mp	P2MP-enabled trunk

Command Mode

RSVP P2MP mode

Examples

```
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)#
```

secondary-lsp

Use this command to configure a secondary P2MP LSP. When this command is executed successfully, the mode changes from P2MP Trunk mode to P2MP LSP mode for subsequent configuration of Primary LSP properties.

Use the no parameter with this command to remove a secondary P2MP LSP.

Command Syntax

```
secondary-lsp
no secondary-lsp
```

Parameters

None

Command Mode

P2MP Trunk mode

Examples

```
(config)#rsvp-trunk T1 ipv4 p2mp
(config-p2mp-trunk)# secondary-lsp
(config-p2mp-lsp)#
```

setup-priority

Use this command to configure a setup priority for the LSP.

Use the no parameter with this command to remove a setup priority.

Command Syntax

```
setup-priority <0-7>
no setup-priority
```

Parameters

<0-7>	Value of setup priority

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#setup-priority 4

(config-p2mp-lsp)#no setup-priority
(config-p2mp-lsp)#
```

traffic

Use this command to set the traffic type for a P2MP LSP.

Use the no parameter with this command to remove a configured traffic type.

Command Syntax

```
traffic (guaranteed|controlled-load)
no traffic
```

Parameters

`guaranteed`	Set traffic type to guaranteed
`controlled-load`	Set traffic type to controlled-load

Command Mode

P2MP LSP mode

Examples

```
(config-p2mp-lsp)#traffic controlled-load

(config-p2mp-lsp)#traffic guaranteed

(config-p2mp-lsp)#no traffic
(config-p2mp-lsp)#
```

CHAPTER 8 Show Commands

This chapter describes the RSVP-TE show commands.

show debugging rsvp

This command displays the status of the options selected by the `debug RSVP` command.

Command Syntax

```
show debugging rsvp
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

```
#show debugging rsvp
NSM debugging status:
  RSVP event debugging is on
  RSVP packet debugging is on
  RSVP incoming packet debugging is on
  RSVP outgoing packet debugging is on
  RSVP hexadecimal dump debugging is on
#
```

show mpls p2mp-tunnel

Use this command to display information about P2MP tunnel configuration.

Command Syntax

Parameters

None

Command Mode

Privileged Exec and Exec modes

Examples

```
#show mpls p2mp-tunnel

========================================================================
Tunnel Name: T2
Owner: RSVP   Tunnel ID: 102     P2MP ID: 102     Ingress: 1.1.1.1
------------------------------------------------------------------------
LSP# : 102   (Primary)
 FTN Index : 6684774       XC Index: 1             Opcode  : PUSH
 Row Status: Active        Flags   : ACTIVE        XC Count: 1
   -------------   -------------   ---------------    ----------
   Out-seg. Index   Out. Interface   Nexthop Address    Out. Label
   -------------   -------------   ---------------    ----------
   1               eth1            10.1.1.1           53120
------------------------------------------------------------------------
------------------------------------------------------------------------
LSP# : 103   (Secondary)
 FTN Index : 6684775       XC Index: 2             Opcode  : PUSH
 Row Status: Active        Flags   : ACTIVE        XC Count: 1
   -------------   -------------   ---------------    ----------
   Out-seg. Index   Out. Interface   Nexthop Address    Out. Label
   -------------   -------------   ---------------    ----------
   2               eth1            10.1.1.1           53121
------------------------------------------------------------------------
========================================================================
```

show mpls p2mp-tunnel NAME

Use this command to display information about a named tunnel.

Command Syntax

```
show mpls p2mp-tunnel NAME
```

Parameters

NAME	Name of the tunnel for which information is desired

Command Mode

Privileged Exec and Exec modes

Examples

```
#show mpls p2mp-tunnel T2

================================================================================
Tunnel Name: T2
Owner: RSVP   Tunnel ID: 102     P2MP ID: 102     Ingress: 1.1.1.1
--------------------------------------------------------------------------------
LSP# : 102   (Primary)
 FTN Index : 6684774       XC Index: 1             Opcode  : PUSH
 Row Status: Active        Flags   : ACTIVE        XC Count: 1
   --------------   --------------   ---------------    ----------
   Out-seg. Index   Out. Interface   Nexthop Address    Out. Label
   --------------   --------------   ---------------    ----------
   1                eth1             10.1.1.1           53120
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
LSP# : 103   (Secondary)
 FTN Index : 6684775       XC Index: 2             Opcode  : PUSH
 Row Status: Active        Flags   : ACTIVE        XC Count: 1
   --------------   --------------   ---------------    ----------
   Out-seg. Index   Out. Interface   Nexthop Address    Out. Label
   --------------   --------------   ---------------    ----------
   2                eth1             10.1.1.1           53121
--------------------------------------------------------------------------------
================================================================================
```

show rsvp

Use this command to display data about the RSVP daemon.

Command Syntax

```
show rsvp
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp
RSVP Version                  : 1
Process uptime                : 8 minutes
RSVP Refresh Reduction        : Enabled
RSVP Message Acknowledgement  : Disabled
Bundle Send                   : Disabled
NSM Connection                : Up
CSPF Connection               : Up
CSPF usage                    : Enabled
RSVP Refresh Timer            : 5
Keep Multiplier               : 3
Acknowledgement Await Timeout : 10
Explicit-Null For Direct Conn : Disabled
Local Protection              : Disabled
Hello Receipt                 : Disabled
Hello Interval                : 2
Hello Timeout                 : 10
Loop detection                : Enabled (all interface)
Override Diffserv             : Disabled
Ingress                       : 1.1.1.1
Penultimate Hop Popping       : Enabled
Refresh PATH msg parsing      : Enabled
Refresh RESV msg parsing      : Enabled
Detour identification         : Sender-Template

#
```

show rsvp admin-groups

Use this command to display all known administrative groups configured through the NSM for the system.

Command Syntax

```
show rsvp admin-groups
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

This is a sample output showing four administrative groups configured through NSM.

```
#show rsvp admin-groups
 Admin group detail:
  Value of 0 associated with admin group 'a'
  Value of 1 associated with admin group 'b'
  Value of 2 associated with admin group 'c'
  Value of 3 associated with admin group 'd'
#
```

show rsvp bypass

Use this command to display data about RSVP bypass sessions.

Command Syntax

```
show rsvp bypass
show rsvp bypass detail
show rsvp bypass BYPASSNAME
```

Parameters

details	Use this parameter to display details of an RSVP bypass session
BYPASSNAME	Use this parameter to display the name of an RSVP bypass session

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp bypass
To        From     State  Pri Rt Style Labelin Labelout LSPName    DSType
0.0.0.0   4.4.4.40    Dn  Yes  0 0 SE  -        -       b1          DEFAULT
0.0.0.0   4.4.4.40    Dn  Yes  0 0 SE  -        -       bypassname DEFAULT
#
```

show rsvp control-adjacency

Use this command to display RSVP specific information for control adjacency.

Command Syntax

```
show rsvp control-adjacency
show rsvp control-adjacency CANAME
```

Parameters

CANAME	Use this parameter to display the name of a control-adjacency

Command Mode

Exec and Privileged Exec modes

Example

```
#sh rsvp control-adjacency
```

show rsvp data-link

Use this command to display RSVP specific information for data links.

Command Syntax

```
show rsvp data-link
```

Parameters

DLNAME	Use this parameter to display the name of a data link

Command Mode

Exec and Privileged Exec modes

Example

```
#sh rsvp data-link
```

show rsvp diffserv-info

Use this command to display data about the diffserv information for an RSVP bypass session.

Command Syntax

```
show rsvp diffserv-info
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp diffserv-info
Supported DSCP:
CLASS       DSCP_value
  be         000000

CLASS-EXP mapping:
CLASS    DSCP_value     EXP_value
  be      000000           0
#
```

show rsvp dste-info

Use this command to display data about a DSTE configuration for an RSVP bypass session.

Command Syntax

```
show rsvp dste-info
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp dste-info
```

show rsvp graceful-restart

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token.

Command Syntax

```
show rsvp graceful-restart
show rsvp graceful-restart A.B.C.D
```

Parameters

A.B.C.D	IPv4 address of a specific neighbor (optional).

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp graceful-restart

      Graceful Restart: Enabled
      Advertised Restart Time: 180000 msec
      Advertised Recovery Time: 360000 msec
      Sending Recovery Time: Yes

        Remote addr: 172.16.10.2           Local addr: 172.16.10.1
        Nbr State: Normal Type: Reroute
        Nbr Hello State: Up
        LSPs protecting: 0
        Restart Time: 0 msec, Recovery Time: 0 msec
        Rest of Restart Time: 0 msec, Rest of Recovery Time: 0 msec
#
```

show rsvp interface

Use this command to display data about RSVP-specific information for interfaces, or about a specific interface.

Command Syntax

```
show rsvp interface
show rsvp interface IFNAME
```

Parameter

IFNAME	The name of the interface to display data.

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp interface eth0
Status                          : Enabled
Interface Index                 : 2
Refresh Reduction usage         : Enabled
Message Acknowledgement         : Disabled
Bundle Buffer size              : 65535
Current Epoch Value             : 208043005
Primary IPv4 address            : 10.10.23.1
Primary IPv6 address            : N/A
Interface Type                  : Ethernet
Administrative Group            : a
                                : d
Configured refresh time         : 5
Configured keep multiplier      : 3
Acknowledgement Await Timeout   : 10
Hello Receipt                   : Disabled
Hello Interval                  : 2
Hello Timeout                   : 10
Non IANA Hello exchange         : Disabled
#
```

show rsvp neighbor

Use this command to display a list of IPv4 RSVP neighbors or just a single IPv4 RSVP neighbor.

Command Syntax

```
show rsvp neighbor
show rsvp neighbor A.B.C.D
```

Parameters

A.B.C.D	Use this parameter to display the IP address of the IPv4 RSVP neighbor.

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp neighbor
IP Address          UpStrm LSP DnStrm LSP RefreshReduc Srefresh In  Type
10.10.20.4          0          1          Enabled      5s           Implicit
10.10.23.2          0          1          Enabled      8s           Implicit
#
```

show rsvp local-addresses

Use this command to display data about any configured RSVP local address, including either IPv4 or IPv6 addresses.

Command Syntax

```
show rsvp local-addresses
show rsvp local-addresses ipv4
show rsvp local-addresses ipv6
```

Parameters

`ipv4`	Use this parameter to display IPv4 local addresses.
`ipv6`	Use this parameter to display IPv6 local addresses.

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp local-addresses
IPv4 Addresses:
 Address                        Interface
 4.4.4.40                       lo
 10.1.2.40                      eth0
 14.14.14.8                     eth4
 34.0.0.40                      eth2
 80.0.0.40                      eth2
 127.0.0.1                      lo
IPv6 Addresses:
 Address                        Interface
 ::1                            lo
 fe80::202:b3ff:fed5:8dbb       eth4
 fe80::202:b3ff:fed5:9842       eth2
 fe80::20e:cff:fe83:3727        eth0
#
```

show rsvp nexthop-cache

Use this command to display the current nexthops being cached by RSVP.

Command Syntax

```
show rsvp nexthop-cache
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp nexthop-cache
Prefix              Nexthop          Outgoing Intf  Valid For   Num Sessions
10.10.20.80/32      0.0.0.0          eth1           12 seconds  1
10.10.23.60/32      0.0.0.0          eth0           17 seconds  1
#
```

show rsvp path

Use this command to display the configured rsvp paths and their configured hops. Specify the pathname to show hops related to a specific path. If no pathname is specified all the rsvp paths are displayed.

Command Syntax

```
show rsvp path
show rsvp path PATHNAME
```

Parameter

PATHNAME	The name of a specific path.

Command Mode

Exec mode and Privileged Exec mode

Example

Following are sample outputs from this command, with and without a PATHNAME (PRI) specified.

```
#show rsvp path
Path name: PRI, id: 1
 10.10.11.51 strict
 10.10.12.50 strict
 10.10.13.51 strict

Path name: SEC, id: 2
 10.10.10.51 strict

Path name: loop, id: 3
 10.10.11.51 strict
 10.10.12.50 strict
 10.10.13.51 strict
 10.10.14.50 strict
#

#show rsvp path PRI
Path name: PRI, id: 1
 10.10.11.51 strict
 10.10.12.50 strict
 10.10.13.51 strict
#
```

show rsvp p2mp-session

Use these commands to display information about P2MP RSVP sessions, including ingress, egress and transit details.

Command Syntax

```
show rsvp p2mp-session
show rsvp p2mp-session ingress
show rsvp p2mp-session ingress branch
show rsvp p2mp-session transit
show rsvp p2mp-session transit branch
show rsvp p2mp-session transit bud
show rsvp p2mp-session egress
```

Parameters

None

Command Mode

Privileged Exec and Exec modes

Examples

```
#show rsvp p2mp-session
==========================================================================
TunnelName: ABCD
Tunnel-ID : 100      Ext-Tunnel-ID: 1.1.1.1          P2MP-ID: 10
#LSP(s)   : 2
 --------------------------------------------------------------------
 LSP-ID   : 65530    LSP-Type: Primary             State  : Up
 LSP-Role : Ingress  Sub-Role: No-Branch           #SubLSP: 65535
 --------------------------------------------------------------------
  Destination      S2L-Type  Sub-grp ID  Sub-grp Orig. ID  Operstatus
  ++++++++++++     ++++++++  ++++++++++  ++++++++++++++++  ++++++++++
  2.2.2.2          Regular   1           1.1.1.1           Up
  2.2.2.2          Update    4           1.1.1.1           Up
  3.3.3.3          Regular   2           1.1.1.1           Up
  3.3.3.3          Update    5           1.1.1.1           Down
  4.4.4.4          Regular   3           1.1.1.1           Up
 --------------------------------------------------------------------
 LSP-ID   : 65530    LSP-Type: Primary             State  : Up
 LSP-Role : Ingress  Sub-Role:                     #SubLSP: 65535
 --------------------------------------------------------------------
  Destination      S2L-Type  Sub-grp ID  Sub-grp Orig. ID  Operstatus
  ++++++++++++     ++++++++  ++++++++++  ++++++++++++++++  ++++++++++
  2.2.2.2          Regular   1           1.1.1.1           Up
  2.2.2.2          Update    4           1.1.1.1           Up
  3.3.3.3          Regular   2           1.1.1.1           Up
  3.3.3.3          Update    5           1.1.1.1           Down
  4.4.4.4          Regular   3           1.1.1.1           Up
 --------------------------------------------------------------------
 LSP-ID   : 65530    LSP-Type: MBB (of LSP 65534)  State  : Up
 LSP-Role : Ingress  Sub-Role:                     #SubLSP: 65535
 --------------------------------------------------------------------
```

```
  Destination      S2L-Type  Sub-grp ID  Sub-grp Orig. ID  Operstatus
  +++++++++++      ++++++++  ++++++++++  ++++++++++++++++  +++++++++++
  2.2.2.2          Regular   1           1.1.1.1           Up
  2.2.2.2          Update    4           1.1.1.1           Up
  3.3.3.3          Regular   2           1.1.1.1           Up
  3.3.3.3          Update    5           1.1.1.1           Down
  4.4.4.4          Regular   3           1.1.1.1           Up
=================================================================================
```

show rsvp p2mp-session NAME

Use these commands to display information about RSVP P2MP sessions for a trunk, LSP and sub-LSP.

Command Syntax

```
show rsvp p2mp-session NAME
show rsvp p2mp-session NAME primary-lsp
show rsvp p2mp-session NAME primary-lsp destination A.B.C.D
show rsvp p2mp-session NAME secondary-lsp
show rsvp p2mp-session NAME secondary-lsp destination A.B.C.D
```

Parameters

NAME	Trunk name

Command Mode

Privileged Exec and Exec modes

Examples

The example below shows output for a named trunk and primary LSP.

```
#show rsvp p2mp-session NAME primary-lsp
Trunk-Name     : ABCD:
Trunk-ID       : 100
P2MP-ID        : 10
Ext-Tunnel-ID  : 1.1.1.1
Role           : Ingress
#LSP(s)        : 2
  ----------------------------------
  LSP_ID: 2000   LSP-Role: Primary
  ----------------------------------
   Oper Status         : Up
   Setup priority      : 7
   Hold priority       : 0
   Tspec rate          : 10k
   Fspec rate          : 10k
   Style               : Shared Explicit Filter
   Traffic type        : Controlled-load
   DSTE Class Type No. : 0
   DSTE Class Type name: Default
   Admin Groups        : None
   LSP Protection      : None
   Retry count         : 0
   Retry interval      : 30 seconds (# remaining: inf)
   #S2L-SubLSP(s)      : 3
   ------------------------------------------------------------------------
   Sub-Group ID: 1   Sub Group Originator ID: 1.1.1.1    Destination: 2.2.2.2
   ------------------------------------------------------------------------
     Operstatus       : Up
     Downstream       : 10.10.0.3, eth0
     Minimum Path MTU : N/A
     CSPF usage       : Disabled
     Label in         : -
```

```
  Label out        : 606
  Record route     : <self>  ...incomplete
  Label Recording  : Disabled
  Configured Path  : none
  Explicit Path    :
10.10.0.3/32 strict
9.10.0.2/32 strict
  Last Recorded Error Code : None
  Last Recorded Error Value: None
  Node where Last Recorded Error originated: self
--------------------------------------------------------------------------------
Sub-Group ID: 2   Sub Group Originator ID: 1.1.1.1    Destination: 3.3.3.3
--------------------------------------------------------------------------------
  Operstatus       : Up
  Downstream       : 20.20.0.3, eth1
  Minimum Path MTU : N/A
  CSPF usage       : Disabled
  Label in         : -
  Label out        : 606
  Record route     : <self>  ...incomplete
  Label Recording  : Disabled
  Configured Path  : none
  Explicit Path    :
10.10.0.3/32 strict
9.10.0.2/32 strict
  Last Recorded Error Code : None
  Last Recorded Error Value: None
  Node where Last Recorded Error originated: self
--------------------------------------------------------------------------------
Sub-Group ID: 3   Sub Group Originator ID: 1.1.1.1    Destination: 4.4.4.4
--------------------------------------------------------------------------------
  Operstatus       : Up
  Downstream       : 20.20.0.3, eth2
  Minimum Path MTU : N/A
  CSPF usage       : Disabled
  Label in         : -
  Label out        : 606
  Record route     : <self>  ...incomplete
  Label Recording  : Disabled
  Configured Path  : none
  Explicit Path    :
10.10.0.3/32 strict
9.10.0.2/32 strict
  Last Recorded Error Code : None
  Last Recorded Error Value: None
  Node where Last Recorded Error originated: self
```

show rsvp session

Use this command to display session-related information for configured LSPs.

Command Syntax

```
show rsvp session
show rsvp session up
show rsvp session up detail
show rsvp session down
show rsvp session down detail
```

Parameters

up	Use this parameter to display sessions that are currently operational.
down	Use this parameter to display sessions that are currently not operational.
detail	Use this parameter to display detailed session-related information.

Command Mode

Exec mode and Privileged Exec mode

Example

Following is a sample output from the command using the detail parameter.

```
#show rsvp session detail
Ingress (Primary)
10.10.21.3
  From: 1.1.1.1, LSPstate: Up, LSPname: t1
  Setup priority: 5, Hold priority: 5
  CSPF usage: Disabled
  LSP Protection: None
  Label in: -,  Label out: 16,
  Tspec rate: 10m, Fspec rate: 10m
  Tunnel Id: 1, LSP Id: 2, Ext-Tunnel Id: 1.1.1.1
  Downstream: 10.10.23.2, eth0
  Path refresh: 5 seconds (due in 6772 seconds)
  Resv lifetime: 26 seconds (due in 25 seconds)
  Retry count: 0, intrvl: 30 seconds
  RRO re-use as ERO: Disabled
  Label Recording: Disabled
  Admin Groups: none
  Configured Path: p1 (in use)
  Configured Explicit Route Detail :
   10.10.23.2/32 strict
  Session Explicit Route Detail :
   10.10.23.2/32 strict
  Record route: <self> 10.10.23.2 10.10.21.3
  Style: Shared Explicit Filter
  Traffic type: controlled-load
  Minimum Path MTU: 1500
  LSP Type:  ELSP_SIGNAL
  CLASS    DSCP_value     EXP_value
#
```

show rsvp session count

Use this command to display session-related information for configured LSPs.

Command Syntax

```
show rsvp session count
show rsvp session count egress
show rsvp session count ingress
show rsvp session count transit
```

Parameters

`egress`	Use this parameter to display the number of configured egress sessions.
`ingress`	Use this parameter to display the number of configured ingress sessions.
`transit`	Use this parameter to display the number of configured transmit sessions.

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show rsvp session count
Total configured: 1520, Up 1520, Down 0
#
```

show rsvp session egress

Use this command to display session-related information for an egress router.

Command Syntax

```
show rsvp session egress
show rsvp session egress A.B.C.D
show rsvp session egress X:X::X:X
show rsvp session egress detail
show rsvp session egress down
show rsvp session egress down detail
show rsvp session egress up
show rsvp session egress up detail
```

Parameters

`A.B.C.D`	Use this parameter to display an IPv4 address of an egress router
`X:X::X:X`	Use this parameter to display an IPv6 address of an egress router
`down`	Use this parameter to display sessions that are currently not operational
`up`	Use this parameter to display sessions that are currently operational
`detail`	Use this parameter to display detailed session-related information

Command Mode

Privileged Exec mode

Examples

```
#show rsvp session egress detail
```

show rsvp session ingress

Use this command to display session-related information for an ingress router.

Command Syntax

```
show rsvp session ingress
show rsvp session ingress A.B.C.D
show rsvp session ingress X:X::X:X
show rsvp session ingress detail
show rsvp session ingress down
show rsvp session ingress down detail
show rsvp session ingress up
show rsvp session ingress up detail
```

Parameters

`A.B.C.D`	Use this parameter to display an IPv4 address of an ingress router
`X:X::X:X`	Use this parameter to display an IPv6 address of an ingress router.
`down`	Use this parameter to display sessions that are currently not operational
`up`	Use this parameter to display sessions that are currently operational
`detail`	Use this parameter to display detailed session-related information

Command Mode

Exec mode and Privileged Exec mode

Examples

```
#show rsvp session ingress detail
```

show rsvp session LSP-NAME

Use this command to display information only for sessions with a specified name.

Command Syntax

```
show rsvp session LSP-NAME
show rsvp session LSP-NAME primary
show rsvp session LSP-NAME secondary
```

Parameters

`primary`	Use this parameter to display any primary LSP sessions
`secondary`	Use this parameter to display any secondary LSP sessions

Command Mode

Exec mode and Privileged Exec mode

Usage

Following is a sample output from the command displaying session information about the LSP named `t1`.

```
#show rsvp session t1
Ingress (Primary)
192.168.0.90
  From: 192.168.0.63, LSPstate: Up, LSPname: t1
  Setup priority: 7, Hold priority: 0
  CSPF usage: Disabled, CSPF Retry Count: 0, CSPF Retry Interval: 30 seconds
  Label in: -,  Label out: 17,
  Tspec rate: 0
  Tunnel Id: 1, LSP Id: 1, Ext-Tunnel Id: 192.168.0.63
  Downstream: 10.10.23.60, eth0
  Path refresh: 30 seconds (due in 34 seconds)
  Resv lifetime 157 seconds (due in 155 seconds)
  Retry Count: 0, Retry Interval: 30 seconds
  RRO re-use as ERO: Enabled
  Labels Recording: Disabled
  Admin Groups: include-any -->  0(a)
  Configured Path: p1 (in use)
  Configured Explicit Route Detail :
   10.10.23.60/32 loose
  Session Explicit Route Detail :
   10.10.23.60/32 loose
   10.10.21.90/32 loose
  Record route: <self> 10.10.23.60 10.10.21.90
  Style: Shared Explicit Filter
  Traffic type: controlled-load
  Minimum Path MTU: 1500
  Last Recorded Error Code: None
  Last Recorded Error Value: None
#
```

show rsvp session transit

Use this command to display session-related information for the transit or intermediate router.

Command Syntax

```
show rsvp session transit
show rsvp session transit detail
show rsvp session transit up
show rsvp session transit down
show rsvp session transit up detail
show rsvp session transit down detail
```

Parameters

`up`	Use this parameter to display sessions that are operational
`down`	Use this parameter to display sessions that are not operational
`detail`	Use this parameter to display detailed session-related information

Command Mode

Exec mode and Privileged Exec mode

Example

Following are sample outputs from the command displaying detailed session information for the transit router.

```
#show rsvp session transit detail
Transit (Primary)
10.10.21.3
  From: 1.1.1.1, LSPstate: Up, LSPname: t1
  Setup priority: 5, Hold priority: 5
  LSP Protection: None
  Label in: 16,  Label out: 3,
  Tspec rate: 10m, Fspec rate: 10m
  Tunnel Id: 1, LSP Id: 2, Ext-Tunnel Id: 1.1.1.1
  Downstream: 10.10.21.3, eth1   Upstream: 10.10.23.1, eth3
  Path refresh: 5 seconds (due in 6155 seconds)
  Path lifetime: 26 seconds (due in 25 seconds)
  Resv refresh: 5 seconds (due in 2533 seconds)
  Resv lifetime: 26 seconds (due in 25 seconds)
  RRO re-use as ERO: Disabled
  Label Recording: Disabled
  Admin Groups:   Received Explicit Route Detail :
   10.10.23.2/32 strict
  Record route: 10.10.23.1 <self> 10.10.21.3
  Style: Shared Explicit Filter
  Traffic type: controlled-load
  Minimum Path MTU: 1500
  LSP Type:  ELSP_SIGNAL
  CLASS    DSCP_value     EXP_value
  af43      100110           7
  DSTE Class Type Number: 0, Class Type name: default
#
```

show rsvp statistics

Use this command to display the counts for various messages exchanged by the daemon. This displays the list of packet types, the number of sent packets and the number of received packets.

Command Syntax

```
show rsvp statistics
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

Following is a sample output from the command displaying the number of messages exchanged by the RSVP daemon.

```
#show rsvp statistics
  PacketType              Total
                  Sent      Received
  Path             185             0
  PathErr            0            11
  PathTear          39             0
  Resv FF            0            88
  Resv WF            0             0
  Resv SE            0             0
  Resv Err           0             0
  ResvTear           0             0
  ResvConf           0             0
  Hello              0             0
#
```

show rsvp summary-refresh

Use this command to display RSVP summary refresh data.

Command Syntax

```
show rsvp summary-refresh
```

Parameters

None

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show rsvp summary-refresh
```

show rsvp trunk

Use this command to display information for a specific trunk or for all trunks.

Command Syntax

```
show rsvp trunk
show rsvp trunk NAME
show rsvp trunk detail
```

Parameters

NAME	Enter the name of a trunk
detail	Use this parameter to display detailed information for all trunks

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show rsvp trunk
Trunk Name      Trunk ID  Type       # Sess       Egress Address(es)
T1              101       P2P             1       4.4.4.4
T2              102       P2P             2       5.5.5.5
T3              103       P2MP1                   4.4.4.4
                                                  5.5.5.5
Total trunks configured: 3.
#
```

Following is a sample output from the command using the detail parameter.

```
#show rsvp trunk detail
Trunk name: T1, tunnel-id: 101
 Type: P2P
 Ext-tunnel-id: 1.1.1.1/32
 Egress: 4.4.4.4/32
 # of LSPs in trunk: 1
 Mapped-routes: none

Trunk name: T2, tunnel-id: 102
 Type: P2P
 Ext-tunnel-id: 1.1.1.1/32
 Egress: 5.5.5.5/32
 # of LSPs in trunk: 2
 Mapped-routes: none

Trunk name: T3, tunnel-id: 103
 Type: P2MP,    P2MP-ID: 1
 Ext-tunnel-id: 1.1.1.1/32
 Egress: 4.4.4.4/32
         5.5.5.5/32
 # of LSPs in trunk: 1
 Mapped-routes: none
#
```

show rsvp version

Use this command to display the version of the RSVP daemon. Current RSVP version is 1.

Command Syntax

```
show rsvp version
```

Parameters

None

Command Mode

Exec and Privileged Exec modes

Example

```
#show rsvp version
Resource ReSerVation Protocol, version 1. rfc2205
   RSVP protocol       = Enabled
   R(refresh timer)    = 30 seconds
   K(keep multiplier) = 3
   Preemption          = Normal
#
```

Index

G

H

I

K

L

M

N

O

P

R

S

T

U

V

W