

# show access-lists rate-limit

To display information about rate-limit access lists, use the **show access-lists rate-limit EXEC** command.

```
show access-lists rate-limit [acl-index]
```

<b>Syntax Description</b>	<i>acl-index</i> (Optional) Rate-limit access list number from 1 to 199.				
<b>Command Modes</b>	EXEC				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.1 CC</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.1 CC	This command was introduced.
Release	Modification				
11.1 CC	This command was introduced.				

## Examples

The following is sample output from the **show access-lists rate-limit** command:

```
Router# show access-lists rate-limit

Rate-limit access list 1
  0
Rate-limit access list 2
  1
Rate-limit access list 3
  2
Rate-limit access list 4
  3
Rate-limit access list 5
  4
Rate-limit access list 6
  5
Rate-limit access list 9
  mask FF
Rate-limit access list 10
  mask 0F
Rate-limit access list 11
  mask F0
Rate-limit access list 100
  1001.0110.1111
Rate-limit access list 101
  00E0.34B8.D840
Rate-limit access list 199
  1111.1111.1111
```

The following is sample output from the **show access-lists rate-limit** command when specific rate-limit access lists are specified:

```
Router# show access-lists rate-limit 1

Rate-limit access list 1
  0

Router# show access-lists rate-limit 9

Rate-limit access list 9
  mask FF

Router# show access-lists rate-limit 101

Rate-limit access list 101
  00E0.34B8.D840
```

Table 14 describes the fields shown in these displays.

**Table 14** *show access-lists rate-limit Field Descriptions*

Field	Description
Rate-limit access list	Rate-limit access list number. A number from 1 to 99 represents a precedence-based access list. A number from 100 to 199 indicates a MAC address-based access list.
0	IP Precedence for packets in this rate-limit access list.
mask FF	IP Precedence mask for packets in this rate-limit access list.
1001.0110.1111	MAC address for packets in this rate-limit access list.

#### Related Commands

Command	Description
<b>access-list rate-limit</b>	Configures an access list for use with CAR policies.
<b>show access-lists</b>	Displays the contents of current IP and rate-limit access lists.

# show atm bundle

To display the bundle attributes assigned to each bundle virtual circuit (VC) member and the current working status of the VC members, use the **show atm bundle** privileged EXEC command.

**show atm bundle** *bundle-name*

Syntax Description	<i>bundle-name</i>	The name of the bundle whose member information is displayed. This is the bundle name specified by the <b>bundle</b> command when the bundle was created.
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Command Modes	Privileged EXEC
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Command History	Release	Modification
	12.0(3)T	This command was introduced.

**Examples** The following is sample output from the **show atm bundle** command (\* indicates that this VC is the VC for all precedence levels not explicitly configured):

```
Router# show atm bundle
```

```
new-york on atm1/0.1 Status: UP
```

Name	VPI/VCI	Config. Preced.	Active Preced.	Bumping Predec./Accept	PG/PV	Peak kbps	Avg/Min kbps	Burst Cells	Status
ny-control	0/207	7	7	4 /Yes	pv	10000	5000	32	UP
ny-premium	0/206	6-5	6-5	7 /No	pg	20000	10000	32	UP
ny-priority	0/204	4-2	4-2	1 /Yes	pg	10000	3000		UP
ny-basic*	0/201	1-0	1-0	- /Yes	pg	10000			UP

```
los-angeles on atm1/0.1 - Status: UP
```

Name	VPI/VCI	Config. Preced.	Active Preced.	Bumping Predec./Accept	pg/pv	Peak kbps	Avg/Min kbps	Burst Cells	Status
la-high	0/407	7-5	7-5	4 /Yes	pv	20000	5000	32	UP
la-med	0/404	4-2	4-2	1 /Yes	pg	10000	3000		UP
la-low*	0/401	1-0	1-0	- /Yes	pg	10000			UP

## show atm bundle

san-francisco on atm1/0.1 Status: UP

Name	VPI/VCI	Config. Preced.	Active Preced.	Bumping Predec./ Accept	PG/ PV	Peak kbps	Avg/Min kbps	Burst Cells	Status
sf-control	0/307	7	7	4 /Yes	pv	10000	5000	32	UP
sf-premium	0/306	6-5	6-5	7 /No	pg	20000	10000	32	UP
sf-priority	0/304	4-2	4-2	1 /Yes	pg	10000	3000		UP
sf-basic*	0/301	1-0	1-0	- /Yes	pg	10000			UP

### Related Commands

Command	Description
<b>show atm bundle statistics</b>	Displays statistics on the specified bundle.
<b>show atm map</b>	Displays the list of all configured ATM static maps to remote hosts on an ATM network.

# show atm bundle statistics

To display statistics or detailed statistics on the specified bundle, use the **show atm bundle statistics** privileged EXEC command.

**show atm bundle *bundle-name* statistics [detail]**

Syntax Description		
	<i>bundle-name</i>	Specifies the name of the bundle whose member information is displayed. This is the bundle name specified by the <b>bundle</b> command when the bundle was created.
	<b>detail</b>	(Optional) Displays detailed statistics.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.0(3)T	This command was introduced.

**Examples** The following is sample output from the **show atm bundle statistics** command:

```
Router# show atm bundle san-jose statistics

Bundle Name: Bundle State: UP
AAL5-NLPID
OAM frequency : 0 second(s), OAM retry frequency: 1 second(s)
OAM up retry count: 3, OAM down retry count: 5
BUNDLE is not managed.
InARP frequency: 15 minute(s)
InPkts: 3, OutPkts: 3, Inbytes: 1836, Outbytes: 1836
InPRoc: 3, OutPRoc: 0, Broadcasts: 3
InFast: 0, OutFast: 0, InAS: 0, OutAS: 0

Router# show atm bundle san-jose statistics detail

Bundle Name: Bundle State: UP
AAL5-NLPID
OAM frequency: 0 second(s), OAM retry frequency: 1 second(s)
OAM up retry count: 3, OAM down retry count: 5
BUNDLE is not managed.
InARP frequency: 15 minute(s)
InPkts: 3, OutPkts: 3, InBytes: 1836, OutBytes: 1836
InPRoc: 3, OutPRoc: 0, Broadcasts: 3
InFast: 0, OutFast: 0, InAS: 0, OutAS: 0

ATM1/0.52: VCD: 6, VPI: 0 VCI: 218, Connection Name: sj-basic
UBR, PeakRate: 155000
AAL5-LLC/SNAP, etype:0x0, Flags: 0xC20, VCmode: 0xE00
OAM frequency: 0 second(s), OAM retry frequency: 1 second(s)
OAM up retry count: 3, OAM down retry count: 5
OAM Loopbavk status: OAM Disabled
OMA VC state: Not Managed
ILMI VC state: Not Managed
```

## show atm bundle statistics

```

InARP frequency: 15 minute(s)
InPkts: 3, OutPkts: 3, InBytes: 1836, OutBytes: 1836
InProc: 3, OutProc: 0, Broadcasts: 3
InFast: 0, OutFast: 0, InAS: 0, OututAS: 0
OAM cells received: 0
F5 InEndloop: 0, F5 InSegloop: 0, F5 InAIS: 0, F5 InRDI: 0
F4 InEndloop: 0, F4 OutSegloop: 0, F4 InAIS: 0, F4 InRDI: 0
OAM cells sent: 0
F5 OutEndloop: 0, F5 OutSegloop: 0, f5 Out RDI: 0
F4 OutEndloop: 0, F4 OutSegloop: 0, F4 OutRDI: 0
OAM cell drops: 0
Status; UP

ATM1/0.52: VCD: 4, VPI: 0 VCI: 216, Connection Name: sj-premium
UBR, PeakRate: 155000
AAL5-LLC/SNAP, etype: 0x0, Flags: 0xC20, VCmode: 0xE000
OAM frequency: 0 second(s), OAM retry frequency: 1 second(s)
OAM up retry count: 3, OAM down retry count: 5
OAM Loopback status: OAM Disabled
OAM VC state: Not Managed
ILMI VC state: Not Managed
InARP frequency: 15 minute(s)
InPkts: 0, OutPkts: 0, InBytes: 0, OutBytes: 0
InProc: 0, OutProc: 0, Broadcasts: 0
InFast: 0, OutFast: 0, InAS: 0
OAM cells received: 0
F5 InEndloop: 0, F4 InSegloop: 0, F4 InAIS: 0, F4 InRDI: 0
F4 OutEndloop: 0, F4 OutSegloop: 0, F4 OutRDI: 0
OAM cell drops: 0
Status: UP

```

### Related Commands

Command	Description
<b>show atm bundle</b>	Displays the bundle attributes assigned to each bundle VC member and the current working status of the VC members.
<b>show atm map</b>	Displays the list of all configured ATM static maps to remote hosts on an ATM network.

# show class-map

To display all class maps and their matching criteria, or a specified class map and its matching criteria, use the **show class-map** EXEC or privileged EXEC command.

```
show class-map [class-map-name]
```

<b>Syntax Description</b>	<i>class-map-name</i> (Optional) Name of the class map.
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<b>Defaults</b>	No default behavior or values.
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<b>Command Modes</b>	EXEC or privileged EXEC
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Command History	Release	Modification
	12.0(5)T	This command was introduced.

<b>Usage Guidelines</b>	You can use the <b>show class-map</b> command to display all class maps and their matching criteria. If you enter the optional <i>class-map-name</i> argument, the specified class map and its matching criteria will be displayed.
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<b>Examples</b>	In the following example, three class maps are defined. Packets that match access list 103 belong to class c3, IP packets belong to class c2, and packets that come through input interface Ethernet1/0 belong to class c1. The output from the <b>show class-map</b> command shows the three defined class maps.
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```
Router# show class-map

Class Map c3
Match access-group 103

Class Map c2
Match protocol ip

Class Map c1
Match input-interface Ethernet1/0
```

Related Commands	Command	Description
	<b>class-map</b>	Creates a class map to be used for matching packets to a specified class.
<b>show policy-map</b>	Displays the configuration of all classes comprising the specified service policy map or all classes for all existing policy maps.	

# show interfaces fair-queue

To display information and all statistics about weighted fair queueing for a Versatile Interface Processor (VIP)-based interface, use the **show interfaces fair-queue** EXEC command.

**show interfaces** [*interface-type interface-number*] **fair-queue**

## Syntax Description

<i>interface-type</i>	(Optional) The type of the interface.
<i>interface-number</i>	(Optional) The number of the interface.

## Command Modes

EXEC

## Command History

Release	Modification
11.1 CC	This command was introduced.

## Examples

The following is sample output from the **show interfaces fair-queue** command for VIP-Distributed WFQ (DWFQ):

```
Router# show interfaces fair-queue

Hssi0/0/0 queue size 0
      packets output 1417079, drops 2
WFQ: aggregate queue limit 54, individual queue limit 27
      max available buffers 54

      Class 0: weight 10 limit 27 qsize 0 packets output 1150 drops 0
      Class 1: weight 20 limit 27 qsize 0 packets output 0 drops 0
      Class 2: weight 30 limit 27 qsize 0 packets output 775482 drops 1
      Class 3: weight 40 limit 27 qsize 0 packets output 0 drops 0
```

Table 15 describes the fields and statistics shown in this display.

**Table 15** *show interfaces fair-queue* Field Descriptions

Field	Description
queue size	Current output queue size for this interface.
packets output	Number of packets sent out this interface or number of packets in this class sent out the interface.
drops	Number of packets dropped or number of packets in this class dropped.
aggregate queue limit	Aggregate limit (in number of packets).
individual queue limit	Individual limit (in number of packets).
max available buffers	Available buffer space allocated to aggregate queue limit (in number of packets).
Class	QoS group or type of service (ToS) class.

**Table 15** *show interfaces fair-queue Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
weight	Percent of bandwidth allocated to this class during periods of congestion.
limit	Queue limit for this class (in number of packets).
qsize	Current size of the queue for this class.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show interfaces</b>	Displays statistics for all interfaces configured on the router or access server.

# show interfaces random-detect

To display information about Weighted Random Early Detection (WRED) for a Versatile Interface Processor (VIP)-based interface, use the **show interfaces random-detect EXEC** command.

**show interfaces** [*interface-type interface-number*] **random-detect**

## Syntax Description

<i>interface-type</i>	(Optional) The type of the interface.
<i>interface-number</i>	(Optional) The number of the interface.

## Command Modes

EXEC

## Command History

Release	Modification
11.1 CC	This command was introduced.

## Examples

The following is sample output from the **show interfaces random-detect** command for VIP-Distributed WRED (DWRED):

```
Router# show interfaces random-detect

FastEthernet1/0/0 queue size 0
      packets output 29692, drops 0
WRED: queue average 0
      weight 1/512
      Precedence 0: 109 min threshold, 218 max threshold, 1/10 mark weight
            1 packets output, drops: 0 random, 0 threshold
      Precedence 1: 122 min threshold, 218 max threshold, 1/10 mark weight
            (no traffic)
      Precedence 2: 135 min threshold, 218 max threshold, 1/10 mark weight
            14845 packets output, drops: 0 random, 0 threshold
      Precedence 3: 148 min threshold, 218 max threshold, 1/10 mark weight
            (no traffic)
      Precedence 4: 161 min threshold, 218 max threshold, 1/10 mark weight
            (no traffic)
      Precedence 5: 174 min threshold, 218 max threshold, 1/10 mark weight
            (no traffic)
      Precedence 6: 187 min threshold, 218 max threshold, 1/10 mark weight
            14846 packets output, drops: 0 random, 0 threshold
      Precedence 7: 200 min threshold, 218 max threshold, 1/10 mark weight
            (no traffic)
```

Table 16 describes the fields shown in this display.

**Table 16** *show interfaces random-detect* Field Descriptions

Field	Description
queue size	Current output queue size for this interface.
packets output	Number of packets sent out this interface.
drops	Number of packets dropped.

**Table 16** *show interfaces random-detect Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
queue average	Average queue length.
weight	Weighting factor used to determine the average queue size.
Precedence	WRED parameters for this precedence.
min threshold	Minimum threshold for this precedence.
max threshold	Maximum length of the queue. When the average queue is this long, any additional packets will be dropped.
mark weight	Probability of a packet being dropped if the average queue is at the maximum threshold.
packets output	Number of packets with this precedence that have been sent.
random	Number of packets dropped randomly through the WRED process.
threshold	Number of packets dropped automatically because the average queue was at the maximum threshold length.
(no traffic)	No packets with this precedence.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>random-detect (interface)</b>	Enables WRED or DWRED.
<b>random-detect flow</b>	Enables flow-based WRED.
<b>show access-lists rate-limit</b>	Configures WRED and DWRED parameters for a particular IP Precedence.
<b>show interfaces</b>	Displays statistics for all interfaces configured on the router or access server.
<b>show queueing</b>	Lists all or selected configured queueing strategies.

# show interfaces rate-limit

To display information about committed access rate (CAR) for an interface, use the **show interfaces rate-limit EXEC** command.

**show interfaces** [*interface-type interface-number*] **rate-limit**

## Syntax Description

<i>interface-type</i>	(Optional) The type of the interface.
<i>interface-number</i>	(Optional) The number of the interface.

## Command Modes

EXEC

## Command History

Release	Modification
11.1 CC	This command was introduced.

## Examples

The following is sample output from the **show interfaces rate-limit** command:

```
Router# show interfaces fddi2/1/0 rate-limit

Fddi2/1/0
Input
matches: access-group rate-limit 100
  params: 80000000 bps, 64000 limit, 80000 extended limit
  conformed 0 packets, 0 bytes; action: set-prec-continue 1
  exceeded 0 packets, 0 bytes; action: set-prec-continue 0
  last packet: 4737508ms ago, current burst: 0 bytes
  last cleared 01:05:47 ago, conformed 0 bps, exceeded 0 bps
matches: access-group 101
  params: 80000000 bps, 56000 limit, 72000 extended limit
  conformed 0 packets, 0 bytes; action: set-prec-transmit 5
  exceeded 0 packets, 0 bytes; action: set-prec-transmit 0
  last packet: 4738036ms ago, current burst: 0 bytes
  last cleared 01:02:05 ago, conformed 0 bps, exceeded 0 bps
matches: all traffic
  params: 50000000 bps, 48000 limit, 64000 extended limit
  conformed 0 packets, 0 bytes; action: set-prec-transmit 5
  exceeded 0 packets, 0 bytes; action: set-prec-transmit 0
  last packet: 4738036ms ago, current burst: 0 bytes
  last cleared 01:00:22 ago, conformed 0 bps, exceeded 0 bps
Output
matches: all traffic
  params: 80000000 bps, 64000 limit, 80000 extended limit
  conformed 0 packets, 0 bytes; action: transmit
  exceeded 0 packets, 0 bytes; action: drop
  last packet: 4809528ms ago, current burst: 0 bytes
  last cleared 00:59:42 ago, conformed 0 bps, exceeded 0 bps
```

Table 17 describes the fields shown in this display.

**Table 17** *show interfaces rate-limit Field Descriptions*

Field	Description
Input	These rate limits apply to packets received by the interface.
matches	Packets that match this rate limit.
params	Parameters for this rate limit, as configured by the <b>rate-limit</b> command.
bps	Average rate (in bits per second).
limit	Normal burst size (in bytes).
extended limit	Excess burst size (in bytes).
conformed	Number of packets that have conformed to the rate limit.
action	Conform action.
exceeded	Number of packets that have exceeded the rate limit.
action	Exceed action.
last packet	Time since the last packet (in milliseconds).
current burst	Instantaneous burst size at the current time.
last cleared	Time since the burst counter was set back to zero by the <b>clear counters</b> command.
conformed	Rate of conforming traffic.
exceeded	Rate of exceeding traffic.
Output	These rate limits apply to packets sent by the interface.

#### Related Commands

Command	Description
<b>access-list rate-limit</b>	Configures an access list for use with CAR policies.
<b>clear counters</b>	Clears the interface counters.
<b>show access-lists</b>	Displays the contents of current IP and rate-limit access lists.
<b>show access-lists rate-limit</b>	Displays information about rate-limit access lists.
<b>show interfaces</b>	Displays statistics for all interfaces configured on the router or access server.

# show ip rsvp

To display the IP Precedence bit values and type of service (ToS) bit values to be used to mark the ToS byte of the IP headers of all packets in a Resource Reservation Protocol (RSVP) reserved path that conform to or exceed the RSVP flowspec for a given interface, use the **show ip rsvp EXEC** command.

```
show ip rsvp {precedence | tos} [interface]
```

## Syntax Description

<b>precedence</b>	Displays IP Precedence bit and ToS bit conform and exceed values for all interfaces on the router.  Either argument— <b>precedence</b> or <b>tos</b> —yields the same results. IP Precedence and ToS bit values for all interfaces with RSVP enabled are displayed in both cases.  Either <b>tos</b> or <b>precedence</b> may be specified; one is required.
<b>tos</b>	Displays IP Precedence bit and ToS bit conform and exceed values for all interfaces on the router.  Either argument— <b>precedence</b> or <b>tos</b> —yields the same results. IP Precedence and ToS bit values for all interfaces with RSVP enabled are displayed in both cases.  Either <b>tos</b> or <b>precedence</b> may be specified; one is required.
<i>interface</i>	(Optional) The name of the interface. If this argument is omitted, IP Precedence and ToS bit values are displayed for all interfaces with RSVP enabled.

## Command Modes

EXEC

## Command History

Release	Modification
12.0(3)T	This command was introduced.

## Usage Guidelines

Use this command to show the current IP Precedence bit values set for traffic conforming to or exceeding the RSVP flowspec for an interface if the **ip rsvp precedence** command was used to configure values for any Enhanced ATM port adapter (PA-A3) interface on the router.

Use this command to show the current ToS bit values set for traffic conforming to or exceeding the RSVP flowspec for an interface if the **ip rsvp tos** command was used to configure values for any Enhanced ATM port adapter (PA-A3) interface on the router.

The **show ip rsvp tos** and **show ip rsvp precedence** commands are functionally equivalent. They both show the IP Precedence and ToS bit values for all interfaces with RSVP enabled.

To display these values for a given interface exclusively, specify the interface name. If the interface argument is omitted, IP Precedence and ToS bit values are displayed for all interfaces with RSVP enabled.

**Examples**

The following sample output shows that for the ATM0 interface, the IP Precedence bits are set to 3 for traffic that conforms to the RSVP flowspec and to 2 for traffic that exceeds the flowspec. It also shows that for the ATM2 interface, the ToS bits are set to 6 for traffic that conforms to the RSVP flowspec and to 5 for traffic that exceeds the flowspec.

```
Router# show ip rsvp precedence
```

Interface name	Precedence		TOS	
	conform	exceed	conform	exceed
ATM0	3	2	-	-
Ethernet1	-	-	-	-
ATM2	-	-	6	5
Hssi0	-	-	-	-
Loopback0	-	-	-	-

The following sample output shows that for the ATM0 interface, the IP Precedence bits are set to 3 for traffic that conforms to the RSVP flowspec and to 2 for traffic that exceeds the flowspec:

```
Router# show ip rsvp tos ATM0
```

Interface name	Precedence		TOS	
	conform	exceed	conform	exceed
ATM0	3	2	-	-

**Related Commands**

Command	Description
<b>ip rsvp precedence</b>	Allows you to set the IP Precedence values to be applied to packets that either conform to or exceed the RSVP flowspec.
<b>ip rsvp tos</b>	Allows you to set the ToS values to be applied to packets that either conform to or exceed the RSVP flowspec.

# show ip rsvp atm-peak-rate-limit

To display the current peak rate limit set for an interface, if any, use the **show ip rsvp atm-peak-rate-limit** EXEC command.

```
show ip rsvp atm-peak-rate-limit [interface]
```

Syntax Description	<i>interface</i>	(Optional) The name of the interface.
--------------------	------------------	---------------------------------------

Command Modes	EXEC
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Command History	Release	Modification
	12.0(3)T	This command was introduced.

**Usage Guidelines** The **show ip rsvp atm-peak-rate-limit** command displays the configured peak rate using the following notations for brevity:

- Kilobytes is shown as K bytes, for example, 1200 kilobytes is displayed as 1200K bytes.
- 1000 kilobytes is displayed as 1M bytes.

If no interface name is specified, configured peak rates for all Resource Reservation Protocol (RSVP)-enabled interfaces are displayed.

**Examples** The following example depicts results of the **show ip rsvp atm-peak-rate-limit** command, presuming that the subinterface atm2/0/0.1 was configured with a reservation peak rate limit of 100 KB using the **ip rsvp atm-peak-rate-limit** command.

The following is sample output from the **show ip rsvp atm-peak-rate-limit** command using the *interface* argument:

```
Router# show ip rsvp atm-peak-rate-limit atm2/0/0.1
RSVP: Peak rate limit for ATM2/0/0.1 is 100K bytes
```

The following samples show output from the **show ip rsvp atm-peak-rate-limit** command when no interface name is given:

```
Router# show ip rsvp atm-peak-rate-limit
Interface name      Peak rate limit
Ethernet0/1/1      not set
ATM2/0/0           not set
ATM2/0/0.1         100K
```

```
Router# show ip rsvp atm-peak-rate-limit
Interface name      Peak rate limit
Ethernet0/1         not set
ATM2/1/0           1M
ATM2/1/0.10        not set
ATM2/1/0.11        not set
ATM2/1/0.12        not set
```

Related Commands	Command	Description
	<b>ip rsvp atm-peak-rate-limit</b>	Sets a limit on the peak cell rate of reservations for all newly created RSVP SVCs established on the current interface or any of its subinterfaces.

# show ip rsvp installed

To display Resource Reservation Protocol (RSVP)-related installed filters and corresponding bandwidth information, use the **show ip rsvp installed** EXEC command.

**show ip rsvp installed** [*interface-type interface-number*]

## Syntax Description

<i>interface-type</i>	(Optional) The type of the interface.
<i>interface-number</i>	(Optional) The number of the interface.

## Command Modes

EXEC

## Command History

Release	Modification
11.2	This command was introduced.

## Usage Guidelines

The command displays the current installed RSVP filters and the corresponding bandwidth information for a specified interface or all interfaces.

## Examples

The following is sample output from the **show ip rsvp installed** command:

```
Router# show ip rsvp installed

RSVP:
RSVP: Ethernet1: has no installed reservations
RSVP: Serial0:
  kbps  To          From          Protocol DPort Sport Weight Conversation
  0     224.250.250.1  132.240.2.28  UDP 20   30   128  270
  150   224.250.250.1  132.240.2.1   UDP 20   30   128  268
  100   224.250.250.1  132.240.1.1   UDP 20   30   128  267
  200   224.250.250.1  132.240.1.25  UDP 20   30   256  265
  200   224.250.250.2  132.240.1.25  UDP 20   30   128  271
  0     224.250.250.2  132.240.2.28  UDP 20   30   128  269
  150   224.250.250.2  132.240.2.1   UDP 20   30   128  266
  350   224.250.250.3  0.0.0.0       UDP 20   0    128  26
```

Table 18 describes significant fields shown in this display.

**Table 18** *show ip rsvp installed* Field Descriptions

Field	Description
kbps	Reserved rate.
To	IP address of the source device.
From	IP address of the destination device.
Protocol DPort	Protocol type of the destination User Datagram Protocol UDP/TCP port (no longer the usual protocol).

**Table 18** *show ip rsvp installed Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Sport	Source UDP/TCP port.
Weight	Weight used in weighted fair queueing (WFQ).
Conversation	WFQ conversation number. If the WFQ is not configured on the interface, weight and conversation will be zero.

# show ip rsvp interface

To display Resource Reservation Protocol (RSVP)-related interface information, use the **show ip rsvp interface** EXEC command.

```
show ip rsvp interface [interface-type interface-number]
```

## Syntax Description

<i>interface-type</i>	(Optional) The type of the interface.
<i>interface-number</i>	(Optional) The number of the interface.

## Command Modes

EXEC

## Command History

Release	Modification
11.2	This command was introduced.

## Usage Guidelines

The primary purpose of this command is to determine the status of RSVP on an interface.

Use this command to determine if the **ip rsvp svc-required** command was used to configure an interface or subinterface to tell RSVP that reservations made on that interface are to be serviced by creation of a switched virtual circuit (SVC).

Use this command to determine if the **ip rsvp flow-assist** command was used to configure an interface to enable RSVP to attach itself to NetFlow.

Use this command to show the current allocation budget and maximum allocatable bandwidth.

## Examples

The following sample output from the **show ip rsvp interface** command shows that for the AT2/0/0 interface RSVP has been informed that reservations made on that interface are to be serviced by creation of an SVC. It also shows that for the AT2/0/1 interface, RSVP is enabled to attach itself to NetFlow.

```
Router# show ip rsvp interface

interface allocate i/f max flow max per/255 UDP IP UDP_IP UDP M/C
AT2/0/0 OM 116640K 116640K 0 /255 0 0 0 0 SVC
AT2/0/1 OM 116640K 116640K 0 /255 0 0 0 0 FLOW
Et1/0 OM 7500K 7500K 0 /255 0 1 0 0
```

The following sample output from the **show ip rsvp interface** command shows that for the AT3/0/0 interface RSVP has been configured to establish an SVC to service any reservations made on the interface. RSVP-ATM QoS Interworking has not been enabled for Et0/2.

```
Router# show ip rsvp interface

interface allocate i/f max flow max per/255 UDP IP UDP_IP UDP M/C
Et0/2 OM 7500K 7500K 0 /255 0 1 0 0
AT3/0/0 OM 112320K 112320K 0 /255 0 1 0 0 SVC
```

Table 19 describes significant fields shown in the displays.

**Table 19** *show ip rsvp interface Field Descriptions*

Field	Description
interface	Interface name.
allocate	Current allocation budget.
i/f max	Maximum allocatable bandwidth.
flow max	Largest single flow allocatable on this interface.
per /255	Percent of bandwidth utilized.
UDP	Number of neighbors sending User Datagram Protocol (UDP)-encapsulated RSVP.
IP	Number of neighbors sending IP-encapsulated RSVP.
UDP_IP	Number of neighbors sending both UDP- and IP-encapsulated RSVP.
UDP M/C	Is router configured for UDP on this interface?
SVC	Use of an SVC to service each reservation.
FLOW	RSVP is enabled to attach itself to NetFlow.

**Related Commands**

Command	Description
<b>ip rsvp flow-assist</b>	Enables RSVP to attach itself to NetFlow so that it can leverage NetFlow services.
<b>ip rsvp svc-required</b>	Enables creation of an SVC to service any new RSVP reservation made on the interface or subinterface.

# show ip rsvp neighbor

To display current Resource Reservation Protocol (RSVP) neighbors, use the **show ip rsvp neighbor EXEC** command.

```
show ip rsvp neighbor [interface-type interface-number]
```

## Syntax Description

<i>interface-type</i>	(Optional) The type of the interface.
<i>interface-number</i>	(Optional) The number of the interface.

## Command Modes

EXEC

## Command History

Release	Modification
11.2	This command was introduced.

## Usage Guidelines

Use this command to show the current RSVP neighbors and identify if the neighbor is using IP, User Datagram Protocol (UDP), or RSVP encapsulation for a specified interface or all interfaces.

## Examples

The following is sample output from the **show ip rsvp neighbor** command:

```
Router# show ip rsvp neighbor

Interface Neighbor      Encapsulation
Se1         132.240.1.49         RSVP
```

Table 20 describes significant fields shown in this display.

**Table 20** *show ip rsvp neighbor Field Descriptions*

Field	Description
Interface	Interface name.
Neighbor	IP address of the RSVP neighbor.
Encapsulation	The type of encapsulation the neighbor is using: IP, UDP, or RSVP.

# show ip rsvp request

To display Resource Reservation Protocol (RSVP)-related request information being requested upstream, use the **show ip rsvp request EXEC** command.

**show ip rsvp request [detail]**

<b>Syntax Description</b>	<b>detail</b> (Optional) Specifies additional request information.
---------------------------	--

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2	This command was introduced.

**Usage Guidelines** Use this command to show the RSVP reservations currently being requested upstream for a specified interface or all interfaces. The received reservations may differ from requests because of aggregated or refused reservations.

**Examples** The following is sample output from the **show ip rsvp request** command:

```
Router# show ip rsvp request
```

```
To          From          Pro DPort Sport Next Hop      I/F  Fi Serv
132.240.1.49 132.240.4.53  1  0    0    132.240.3.53 Et1  FF LOAD
```

Table 21 describes significant fields shown in this display.

**Table 21** *show ip rsvp request Field Descriptions*

<b>Field</b>	<b>Description</b>
To	IP address of the receiver.
From	IP address of the sender.
Pro	Protocol code. Code 1 indicates Internet Control Message Protocol (ICMP).
DPort	Destination port number.
Sport	Source port number.
Next Hop	IP address of the next hop.
I/F	Interface of the next hop.
Fi	Filter (Wild Card Filter, Shared Explicit, or Fixed Filter).
Serv	Service (value can be <b>rate</b> or <b>load</b> ).

# show ip rsvp reservation

To display Resource Reservation Protocol (RSVP)-related receiver information currently in the database, use the **show ip rsvp reservation** EXEC command.

**show ip rsvp reservation [detail]**

<b>Syntax Description</b>	<b>detail</b> (Optional) Specifies additional reservation information.
---------------------------	--

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2	This command was introduced.

<b>Usage Guidelines</b>	Use this command to show the current receiver (RESV) information in the database for a specified interface or all interfaces. This information includes reservations aggregated and forwarded from other RSVP routers.
-------------------------	--

<b>Examples</b>	The following is sample output from the <b>show ip rsvp reservation</b> command:
-----------------	--

```
Router# show ip rsvp reservation
```

```
To          From          Pro DPort Sport Next Hop      I/F  Fi Serv
132.240.1.49 132.240.4.53 1  0    0    132.240.1.49 Se1  FF LOAD
```

Table 22 describes significant fields shown in this display.

**Table 22** *show ip rsvp reservation Field Descriptions*

Field	Descriptions
To	IP address of the receiver.
From	IP address of the sender.
Pro	Protocol code. Code 1 indicates Internet Control Message Protocol (ICMP).
DPort	Destination port number.
Sport	Source port number.
Next Hop	IP address of the next hop.
I/F	Interface of the next hop.
Fi	Filter (Wild Card Filter, Shared Explicit, or Fixed Filter).
Serv	Service (value can be <b>rate</b> or <b>load</b> ).

# show ip rsvp sbm

To display information about a Subnetwork Bandwidth Manager (SBM) configured for a specific Resource Reservation Protocol (RSVP) enabled interface or for all RSVP-enabled interfaces on the router, use the **show ip rsvp sbm** EXEC command.

```
show ip rsvp sbm [detail] [interface-name]
```

Syntax Description	detail	(Optional) Detailed SBM configuration information, including values for the NonResvSendLimit object.
	<i>interface-name</i>	(Optional) Name of the interface for which you want to display SBM configuration information.

Command Modes	EXEC
---------------	------

Command History	Release	Modification
	12.0(5)T	This command was introduced.
	12.1(1)	The <b>detail</b> keyword was added.

**Usage Guidelines**

To obtain SBM configuration information about a specific interface configured to use RSVP, specify the interface name with the **show ip rsvp sbm** command. To obtain information about all interfaces enabled for RSVP on the router, use the **show ip rsvp sbm** command without specifying an interface name.

To view the values for the NonResvSendLimit object, use the **detail** keyword.

**Examples**

The following example displays information for the two RSVP-enabled Ethernet interfaces Et1 and Et2 on router1:

```
router1# show ip rsvp sbm
Interface DSBM Addr      DSBM Priority    DSBM Candidate   My Priority
Et1      1.1.1.1           70              yes              70
Et2      10.2.2.150       100             yes              100
```

The following example displays information about the RSVP-enabled Ethernet interface e2 on router1:

```
router1# show ip rsvp sbm e2
Interface DSBM Addr      DSBM Priority    DSBM candidate   My Priority
e2      10.2.2.150       100             yes              100
```

Table 23 identifies the fields and their values displayed as output of the **show ip rsvp sbm** command.

**Table 23** show ip rsvp sbm Field Descriptions

Field	Description
Interface	Name of the Designated Subnetwork Bandwidth Manager (DSBM) candidate interface on the router.
DSBM Addr	IP address of the DSBM.
DSBM Priority	Priority of the DSBM.
DSBM Candidate	Yes if the <b>ip rsvp dsbm candidate</b> command was issued for this SBM to configure it as a DSBM candidate. No if it was not so configured.
My Priority	Priority configured for this interface.

The following example displays information about the RSVP-enabled Ethernet interface Ethernet2 on router1. In the left column, the local SBM configuration is shown; in the right column, the corresponding information for the current DSBM is shown. In this example, the information is the same because the DSBM won election.

```
router1# show ip rsvp sbm detail
```

```
Interface:Ethernet2
Local Configuration                Current DSBM
IP Address:10.2.2.150             IP Address:10.2.2.150
DSBM candidate:yes               I Am DSBM:yes
Priority:100                      Priority:100
Non Resv Send Limit              Non Resv Send Limit
Rate:500 Kbytes/sec              Rate:500 Kbytes/sec
Burst:1000 Kbytes                Burst:1000 Kbytes
Peak:500 Kbytes/sec              Peak:500 Kbytes/sec
Min Unit:unlimited                Min Unit:unlimited
Max Unit:unlimited                Max Unit:unlimited
```

Table 24 identifies the fields and their values displayed as output of the **show ip rsvp sbm detail** command.

**Table 24** show ip rsvp sbm detail Field Descriptions

Field	Description
Local Configuration	The local DSBM candidate configuration.
Current DSBM	The current DSBM configuration.
Interface	Name of the DSBM candidate interface on the router.
IP Address	IP address of the local DSBM candidate or the current DSBM.
DSBM candidate	Yes if the <b>ip rsvp dsbm candidate</b> command was issued for this SBM to configure it as a DSBM candidate. No if it was not so configured.
I am DSBM	Yes if the local candidate is the DSBM. No if the local candidate is not the DSBM.
Priority	Priority configured for the local DSBM candidate or the current SBM.
Rate	The average rate (in kbps) for the DSBM candidate.

**Table 24** *show ip rsvp sbm detail Field Descriptions (continued)*

Field	Description
Burst	The maximum burst size (in KB) for the DSBM candidate.
Peak	The peak rate (in kbps) for the DSBM candidate.
Min Unit	The minimum policed unit (in bytes) for the DSBM candidate.
Max Unit	The maximum packet size (in bytes) for the DSBM candidate.

**Related Commands**

Command	Description
<b>ip rsvp dsbm candidate</b>	Configures an interface as a DSBM candidate.
<b>ip rsvp dsbm non-resv-send-limit</b>	Configures the NonResvSendLimit object parameters.

# show ip rsvp sender

To display Resource Reservation Protocol (RSVP) PATH-related sender information currently in the database, use the **show ip rsvp sender** EXEC command.

**show ip rsvp sender [detail]**

<b>Syntax Description</b>	<b>detail</b> (Optional) Specifies additional sender information.
---------------------------	---

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2	This command was introduced.

**Usage Guidelines** Use this command to show the RSVP sender (PATH) information currently in the database for a specified interface or all interfaces.

**Examples** The following is sample output from the **show ip rsvp sender** command:

```
Router# show ip rsvp sender
```

```
To          From          Pro DPort Sport Prev Hop      I/F
132.240.1.49 132.240.4.53  1  0    0    132.240.3.53  Et1
132.240.2.51 132.240.5.54  1  0    0    132.240.3.54  Et1
```

Table 25 describes the fields shown in this display.

**Table 25** *show ip rsvp sender* Field Descriptions

<b>Field</b>	<b>Description</b>
To	IP address of the receiver.
From	IP address of the sender.
Pro	Protocol code. Code 1 indicates Internet Control Message Protocol (ICMP).
DPort	Destination port number.
Sport	Source port number.
Prev Hop	IP address of the previous hop.
I/F	Interface of the previous hop.

# show policy-map

To display the configuration of all classes comprising the specified service policy map or all classes for all existing policy maps, use the **show policy-map** EXEC or privileged EXEC command.

**show policy-map** [*policy-map*]

## Syntax Description

<i>policy-map</i>	(Optional) The name of the service policy map whose complete configuration is to be displayed.
-------------------	--

## Defaults

All existing policy map configurations are displayed.

## Command Modes

EXEC or privileged EXEC

## Command History

Release	Modification
12.0(5)T	This command was introduced.

## Usage Guidelines

The **show policy-map** command displays the configuration of a service policy map created using the **policy-map** command. You can use the **show policy-map** command to display all class configurations comprising any existing service policy map, whether or not that service policy map has been attached to an interface.

## Examples

The following example displays the contents of the service policy map called po1:

```
Router# show policy-map po1
Policy Map po1
  Weighted Fair Queueing
    Class class1
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class2
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class3
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class4
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class5
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class6
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class7
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class8
      Bandwidth 937 (kbps) Max thresh 64 (packets)
```

The following example displays the contents of all policy maps on the router:

```
Router# show policy-map
Policy Map poH1
  Weighted Fair Queueing
    Class class1
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class2
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class3
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class4
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class5
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class6
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class7
      Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class8
      Bandwidth 937 (kbps) Max thresh 64 (packets)
Policy Map policy2
  Weighted Fair Queueing
    Class class1
      Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class2
      Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class3
      Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class4
      Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class5
      Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class6
      Bandwidth 300 (kbps) Max thresh 64 (packets)
```

#### Related Commands

Command	Description
<b>show policy-map class</b>	Displays the configuration for the specified class of the specified policy map.
<b>show policy-map interface</b>	Displays the configuration of classes configured for service policies on the specified interface or PVC.

# show policy-map class

To display the configuration for the specified class of the specified policy map, use the **show policy-map class** EXEC or privileged EXEC command.

**show policy-map** *policy-map* **class** *class-name*

Syntax Description		
<i>policy-map</i>		The name of a policy map that contains the class configuration to be displayed.
<i>class-name</i>		The name of the class whose configuration is to be displayed.

**Defaults** No default behavior or values.

**Command Modes** EXEC or privileged EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.

**Usage Guidelines** You can use the **show policy-map class** command to display any single class configuration for any service policy map, whether or not the specified service policy map has been attached to an interface.

**Examples** The following example displays configurations for the class called class7 that belongs to the policy map po1:

```
Router# show policy-map po1 class class7
Class class7
  Bandwidth 937 (kbps) Max Thresh 64 (packets)
```

Related Commands	Command	Description
	<b>show policy-map</b>	Displays the configuration of all classes comprising the specified service policy map or all classes for all existing policy maps.
	<b>show policy-map interface</b>	Displays the configuration of classes configured for service policies on the specified interface or PVC.

# show policy-map interface

To display the configuration of all classes configured for all service policies on the specified interface or to display the classes for the service policy for a specific permanent virtual circuit (PVC) on the interface, use the **show policy-map interface** EXEC or privileged EXEC command.

```
show policy-map interface interface-name [vc [vpi] vci] {input | output}
```

Syntax Description	
<i>interface-name</i>	Name of the interface or subinterface whose policy configuration is to be displayed.
<b>vc</b>	(Optional) For ATM interfaces only, shows the policy configuration for a specified PVC. The name can be up to 16 characters long.
<i>vpi</i>	(Optional) ATM network virtual path identifier (VPI) for this PVC. The absence of the “/” and a <i>vpi</i> value defaults the <i>vpi</i> value to 0.  On the Cisco 7200 and 7500 series routers, this value ranges from 0 to 255.  The <i>vpi</i> and <i>vci</i> arguments cannot both be set to 0; if one is 0, the other cannot be 0.  If this value is omitted, information for all VCs on the specified ATM interface or subinterface is displayed.
<i>vci</i>	(Optional) ATM network virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the <b>atm vc-per-vp</b> command. Typically, lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance (OAM), switched virtual circuit (SVC) signalling, Integrated Local Management Interface (ILMI), and so on) and should not be used.  The VCI is a 16-bit field in the header of the ATM cell. The VCI value is unique only on a single link, not throughout the ATM network, because it has local significance only.  The <i>vpi</i> and <i>vci</i> arguments cannot both be set to 0; if one is 0, the other cannot be 0.
<b>input</b>	(Optional) Indicates that the statistics for the attached input policy will be displayed.
<b>output</b>	(Optional) Indicates that the statistics for the attached output policy will be displayed.

**Defaults** There is no default behavior.

**Command Modes** EXEC or privileged EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.

### Usage Guidelines

This command displays the configuration for classes on the specified interface or the specified PVC only if a service policy has been attached to the interface or the PVC.

You can use the *pvc-name* argument to display output for a PVC only for Enhanced ATM port adapters (PA-A3) that support per-VC queueing.

The counters displayed after the **show policy-map interface** command is entered are updated only if congestion is present on the interface.

### Examples

The following example displays configurations for classes on the output interface e1/1:

```
Router# show policy-map interface output e1/1
Ethernet1/1 output : pol
  Weighted Fair Queueing
    Class class1
      Output Queue: Conversation 264
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11548/0/0
    Class class2
      Output Queue: Conversation 265
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11546/0/0
    Class class3
      Output Queue: Conversation 266
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11546/0/0
    Class class4
      Output Queue: Conversation 267
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11702/0/0
    Class class5
      Output Queue: Conversation 268
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11701/0/0
    Class class6
      Output Queue: Conversation 269
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11702/0/0
    Class class7
      Output Queue: Conversation 270
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11857/0/0
    Class class8
      Output Queue: Conversation 271
      Bandwidth 937 (kbps) Max Threshold 64 (packets)
      (total/discards/tail drops) 11858/1/0
```

The following example displays configurations for classes comprising the service policy for the output VC 0/101 on the output interface atm2/0.6:

```
Router# show policy-map interface atm2/0.6
ATM2/0.6: VC 0/101 - output : p1
Weighted Fair Queueing
Class c-vc1-c1
  Output Queue: Conversation 264
  Bandwidth 31 (kbps)
  mean queue depth: 1
  drops: class random tail min-th max-th mark-prob
         0      0      0    100   200   1/10
         1      0      0    105   200   1/10
         2      0      0    110   200   1/10
         3      0      0    115   200   1/10
         4      0      0    120   200   1/10
         5      0      0    125   200   1/10
         6      0      0    130   200   1/10
         7      0      0    135   200   1/10
         rsvp  0      0    140   200   1/10
Class c-vc1-c2
  Output Queue: Conversation 265
  Bandwidth 54 (kbps)
  mean queue depth: 1
  drops: class random tail min-th max-th mark-prob
         0      0      0     60   100   1/10
         1      0      0     65   100   1/10
         2      0      0     70   100   1/10
         3      0      0     75   100   1/10
         4      0      0     80   100   1/10
         5      0      0     83   100   1/10
         6      0      0     85   100   1/10
         7      0      0     87   100   1/10
         rsvp  0      0     90   100   1/10
Class c-vc1-c3
  Output Queue: Conversation 266
  Bandwidth 77 (kbps)
  mean queue depth: 0
  drops: class random tail min-th max-th mark-prob
         0      0      0      1    10   1/10
         1      0      0      2    10   1/10
         2      0      0      3    10   1/10
         3      0      0      4    10   1/10
         4      0      0      5    10   1/10
         5      0      0      6    10   1/10
         6      0      0      7    10   1/10
         7      0      0      7    10   1/10
         rsvp  0      0      7    10   1/10
Class c-vc1-c4
  Output Queue: Conversation 267
  Bandwidth 100 (kbps)
  mean queue depth: 9
  drops: class random tail min-th max-th mark-prob
         0      0      0      1    10   1/10
         1      9      220    2    10   1/10
         2     24     645    3    10   1/10
         3     22     844    4    10   1/10
         4      0      0      5    10   1/10
         5     23     351    6    10   1/10
         6     28     213    7    10   1/10
         7     59     540    7    10   1/10
         rsvp  0      0      7    10   1/10
```

```

Class c-vc1-c5
  Output Queue: Conversation 268
    Bandwidth 123 (kbps)
  mean queue depth: 150
  drops: class  random  tail    min-th  max-th  mark-prob
         0      120    1777   50     150    1/50
         1      136    1549   60     150    1/50
         2       88    2354   70     150    1/50
         3      121    1569   80     150    1/50
         4      122    1717   80     150    1/50
         5       0      0      90     150    1/50
         6       0      0     100    150    1/50
         7      105    2058  110    150    1/50
         rsvp   0      0     120    150    1/50

Class c-vc1-c6
  Output Queue: Conversation 269
    Bandwidth 146 (kbps) Max Threshold 64 (packets)
  (total/discards/tail drops) 50216/32696/0

Class c-vc1-c7
  Output Queue: Conversation 270
    Bandwidth 216 (kbps) Max Threshold 64 (packets)
  (total/discards/tail drops) 74577/51994/0

Class class-default
  Flow Based Fair Queueing
  Number of Hashed Queues 256
  drops: class  random  tail    min-th  max-th  mark-prob
         0      101    828   50     150    1/50
         1       87    1154   60     150    1/50
         2      115    476   70     150    1/50
         3      116    444   80     150    1/50
         4      123    338   80     150    1/50
         5       92    1042   90     150    1/50
         6       79    1068  100    150    1/50
         7      110    740   110    150    1/50
         rsvp   0      0     120    150    1/50

```

**Related Commands**

Command	Description
<b>show policy-map</b>	Displays the configuration of all classes comprising the specified service policy map or all classes for all existing policy maps.
<b>show policy-map class</b>	Displays the configuration for the specified class of the specified policy map.

# show queue

To display the contents of packets inside a queue for a particular interface or virtual circuit (VC), use the **show queue** privileged EXEC command.

```
show queue interface-name interface-number [vc [vpi] vci]
```

## Syntax Description

<i>interface-name</i>	The name of the interface.
<i>interface-number</i>	The number of the interface.
<b>vc</b>	(Optional) For ATM interfaces only, shows the fair queueing configuration for a specified permanent virtual circuit (PVC). The name can be up to 16 characters long.
<i>vpi</i>	(Optional) ATM network virtual path identifier (VPI) for this PVC. The absence of the “/” and a <i>vpi</i> value defaults the <i>vpi</i> value to 0.  On the Cisco 7200 and 7500 series routers, this value ranges from 0 to 255.  The <i>vpi</i> and <i>vci</i> arguments cannot both be set to 0; if one is 0, the other cannot be 0.  If this value is omitted, information for all VCs on the specified ATM interface or subinterface is displayed.
<i>vci</i>	(Optional) ATM network virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the <b>atm vc-per-vp</b> command. Typically, lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance (OAM), switched virtual circuit (SVC) signalling, Integrated Local Management Interface (ILMI), and so on) and should not be used.  The VCI is a 16-bit field in the header of the ATM cell. The VCI value is unique only on a single link, not throughout the ATM network, because it has local significance only.  The <i>vpi</i> and <i>vci</i> arguments cannot both be set to 0; if one is 0, the other cannot be 0.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
10.2	This command was introduced.

## Usage Guidelines

This command displays the contents of packets inside a queue for a particular interface or VC.

This command does not support VIP-Distributed WRED (DWRED). You can use the **vc** keyword and its arguments to display output for a PVC only on Enhanced ATM port adapters (PA-A3) that support per-VC queueing.

**Examples**

The following examples show sample output when the **show queue** command is entered and either weighted fair queuing (WFQ), random early detection (WRED), or flow-based WRED are configured.

**WFQ Example**

The following is sample output from the **show queue** command for PVC 33 on the atm2/0.33 ATM subinterface. Two conversations are active on this interface. WFQ ensures that both data streams receive equal bandwidth on the interface while they have messages in the pipeline.

```
Router# show queue atm2/0.33 vc 33

Interface ATM2/0.33 VC 0/33
  Queueing strategy: weighted fair
  Total output drops per VC: 18149
  Output queue: 57/512/64/18149 (size/max total/threshold/drops)
    Conversations 2/2/256 (active/max active/max total)
    Reserved Conversations 3/3 (allocated/max allocated)

    (depth/weight/discards/tail drops/interleaves) 29/4096/7908/0/0
    Conversation 264, linktype: ip, length: 254
    source: 10.1.1.1, destination: 10.0.2.20, id: 0x0000, ttl: 59,
    TOS: 0 prot: 17, source port 1, destination port 1

    (depth/weight/discards/tail drops/interleaves) 28/4096/10369/0/0
    Conversation 265, linktype: ip, length: 254
    source: 10.1.1.1, destination: 10.0.2.20, id: 0x0000, ttl: 59,
    TOS: 32 prot: 17, source port 1, destination port 2
```

Table 26 describes the fields shown in this display.

**Table 26** *show queue Field Descriptions for WFQ*

Field	Description
Input Queue	Input queue size (in packets).
Total output drops per VC	Total output packet drops.
Queueing strategy	Type of queueing active on this interface.
Output queue	Output queue size (in packets).
Conversations	WFQ conversation number.
Reserved Conversations	Total number of reserved WFQ conversations. Default is 256.
depth	Queue depth for the conversation (in packets).
weight	Weight used in WFQ.
discards	Number of packet discards for the conversation.
tail drops	Number of tail drop packets for the conversation.
interleaves	Number of packets interleaved.
linktype	Protocol name.
length	Packet length.
source	Source IP address.
destination	Destination IP address.
id	Packet ID.
ttl	Time to live count.

**Table 26** *show queue Field Descriptions for WFQ (continued)*

Field	Description
TOS	IP type of service.
prot	Layer 4 protocol number.

**Flow-Based WRED Example**

The following is sample output from the **show queue** command issued for the Serial1 interface on which flow-based WRED is configured. The output shows information for each packet in the queue; the data identifies the packet by number, the flow-based queue to which the packet belongs, the protocol used, and so forth.

```
Router# show queue Serial1
Output queue for Serial1 is 2/0

Packet 1, flow id:160, linktype:ip, length:118, flags:0x88
source:10.1.3.4, destination:10.1.2.2, id:0x0000, ttl:59,
TOS:32 prot:17, source port 1, destination port 515
data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
      0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B

Packet 2, flow id:161, linktype:ip, length:118, flags:0x88
source:10.1.3.5, destination:10.1.2.2, id:0x0000, ttl:59,
TOS:64 prot:17, source port 1, destination port 515
data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
      0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B
```

Table 27 describes the fields shown in this display.

**Table 27** *show queue Field Descriptions for Flow-Based WRED*

Field	Description
Packet	Packet number.
flow id	Flow-based WRED number.
linktype	Protocol name.
length	Packet length.
flags	Internal version-specific flags.
source	Source IP address.
destination	Destination IP address.
id	Packet ID.
ttl	Time to live count.
prot	Layer 4 protocol number.
data	Packet data.

**WRED Example**

The following is sample output from the **show queue** command issued for the Serial3 interface on which WRED is configured. The output has been truncated to show only two of the 24 packets.

```
Router# show queue Serial3
Output queue for Serial3 is 24/0

Packet 1, linktype:ip, length:118, flags:0x88
source:10.1.3.25, destination:10.1.2.2, id:0x0000, ttl:59,
TOS:192 prot:17, source port 1, destination port 515
data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
      0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B

Packet 2, linktype:ip, length:118, flags:0x88
source:10.1.3.26, destination:10.1.2.2, id:0x0000, ttl:59,
TOS:224 prot:17, source port 1, destination port 515
data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
      0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B
```

**Related Commands**

Command	Description
<b>custom-queue-list</b>	Assigns a custom queue list to an interface.
<b>fair-queue (class-default)</b>	Specifies the number of dynamic queues to be reserved for use by the class-default class as part of the default class policy.
<b>fair-queue (WFQ)</b>	Enables WFQ for an interface.
<b>priority-group</b>	Assigns the specified priority list to an interface.
<b>random-detect (interface)</b>	Enables WRED or DWRED.
<b>random-detect flow</b>	Enables flow-based WRED.
<b>show interfaces fair-queue</b>	Displays information and statistics about WFQ for a VIP-based interface.
<b>show queueing</b>	Lists all or selected configured queueing strategies.

# show queueing

To list all or selected configured queueing strategies, use the **show queueing** privileged EXEC command.

```
show queueing [custom | fair | priority | random-detect [interface atm-subinterface
               [vc [[vpi/] vci]]]]
```

Syntax Description	
<b>custom</b>	(Optional) Status of the custom queueing list configuration.
<b>fair</b>	(Optional) Status of the fair queueing configuration.
<b>priority</b>	(Optional) Status of the priority queueing list configuration.
<b>random-detect</b>	(Optional) Status of the Weighted Random Early Detection (WRED) and VIP-Distributed WRED (DWRED) configuration, including configuration of flow-based WRED.
<b>interface</b> <i>atm-subinterface</i>	(Optional) Displays the WRED parameters of every virtual circuit (VC) with WRED enabled on the specified ATM subinterface.
<b>vc</b>	(Optional) Displays the WRED parameters associated with a specific VC. If desired, both the virtual path identifier (VPI) and virtual circuit identifier (VCI) values, or just the VCI value, can be specified.
<i>vpi/</i>	(Optional) Specifies the VPI. If the <i>vpi</i> argument is omitted, 0 is used as the VPI value for locating the permanent virtual circuit (PVC). If the <i>vpi</i> argument is specified, the / separator is required.
<i>vci</i>	(Optional) Specifies the VCI.

**Defaults** If no keyword is entered, this command shows the configuration of all interfaces.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.3	This command was introduced.
	12.0(4)T	The <b>red</b> keyword was changed to <b>random-detect</b> .

**Examples**

The following is sample output from the **show queueing** command. There are two active conversations in the serial interface 0. Weighted fair queueing ensures that both of these IP data streams—both using TCP—receive equal bandwidth on the interface while they have messages in the pipeline, even though there is more FTP data in the queue than remote-procedure call (RCP) data.

```
Router# show queueing

Current fair queue configuration:
Interface          Discard    Dynamic    Reserved
                   threshold  queue count queue count
Serial0            64         256        0
Serial1            64         256        0
Serial2            64         256        0
Serial3            64         256        0

Current priority queue configuration:
List Queue Args
1     high  protocol cdp
2     medium interface Ethernet1

Current custom queue configuration:

Current random-detect configuration:
Serial5
  Queueing strategy:random early detection (WRED)
  Exp-weight-constant:9 (1/512)
  Mean queue depth:40

Class  Random      Tail   Minimum  Maximum  Mark
      drop      drop  threshold threshold probability
0      1401      9066      20      40      1/10
1         0         0       22      40      1/10
2         0         0       24      40      1/10
3         0         0       26      40      1/10
4         0         0       28      40      1/10
5         0         0       31      40      1/10
6         0         0       33      40      1/10
7         0         0       35      40      1/10
rsvp    0         0       37      40      1/10
```

Table 28 describes the significant fields shown in this display.

**Table 28** *show queueing Field Descriptions*

Field	Description
Discard threshold	Number of messages allowed in each queue.
Dynamic queue count	Number of dynamic queues used for best-effort conversations.
Reserved queue count	Number of reservable queues used for reserved conversations.
List	Custom queueing—Number of the queue list. Priority queueing—Number of the priority list.
Queue	Custom queueing—Number of the queue. Priority queueing—Priority queue level ( <b>high</b> , <b>medium</b> , <b>normal</b> , or <b>low</b> ).
Args	Packet matching criteria for that queue.
Exp-weight-constant	Exponential weight factor.

**Table 28** *show queueing Field Descriptions (continued)*

Field	Description
Mean queue depth	Average queue depth. It is calculated based on the actual queue depth on the interface and the exponential weighting constant. It is a moving average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
Class	IP Precedence value.
Random drop	Number of packets randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP Precedence value.
Tail drop	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP Precedence value.
Minimum threshold	Minimum WRED threshold in number of packets.
Maximum threshold	Maximum WRED threshold in number of packets.
Mark probability	Fraction of packets dropped when the average queue depth is at the maximum threshold.

**Custom Queueing Example**

The following is sample output from the **show queueing custom** command:

```
Router# show queueing custom

Current custom queue configuration:
List  Queue  Args
3     10     default
3     3      interface Tunnel3
3     3      protocol ip
3     3      byte-count 444 limit 3
```

**Flow-Based WRED Example**

The following is sample output from the **show queueing random-detect** command. The output shows that the interface is configured for flow-based WRED to ensure fairness among flows in regard to packet drop. The **random-detect flow average-depth-factor** command was used to configure a scaling factor of 8 for this interface. The scaling factor is used to scale the number of buffers available per flow and

to determine the number of packets allowed in the output queue of each active flow before the queue is susceptible to packet drop. As the output shows, the maximum flow count for this interface was set to 16 by the **random-detect flow count** command.

```
Router# show queueing random-detect
```

```
Current random-detect configuration:
```

```
Serial1
  Queueing strategy:random early detection (WRED)
  Exp-weight-constant:9 (1/512)
  Mean queue depth:29
  Max flow count:16      Average depth factor:8
  Flows (active/max active/max):39/40/16
```

Class	Random drop	Tail drop	Minimum threshold	Maximum threshold	Mark probability
0	31	0	20	40	1/10
1	33	0	22	40	1/10
2	18	0	24	40	1/10
3	14	0	26	40	1/10
4	10	0	28	40	1/10
5	0	0	31	40	1/10
6	0	0	33	40	1/10
7	0	0	35	40	1/10
rsvp	0	0	37	40	1/10

### DWRED Example

The following is sample output from the **show queueing random-detect** command for DWRED:

```
Current random-detect configuration:
```

```
FastEthernet2/0/0
  Queueing strategy:fifo
  Packet drop strategy:VIP-based random early detection (DWRED)
  Exp-weight-constant:9 (1/512)
  Mean queue depth:0
  Queue size:0      Maximum available buffers:6308
  Output packets:5 WRED drops:0 No buffer:0
```

Class	Random drop	Tail drop	Minimum threshold	Maximum threshold	Mark probability	Output Packets
0	0	0	109	218	1/10	5
1	0	0	122	218	1/10	0
2	0	0	135	218	1/10	0
3	0	0	148	218	1/10	0
4	0	0	161	218	1/10	0
5	0	0	174	218	1/10	0
6	0	0	187	218	1/10	0
7	0	0	200	218	1/10	0

### Related Commands

Command	Description
<b>custom-queue-list</b>	Assigns a custom queue list to an interface.
<b>exponential-weighting-constant</b>	Configures the exponential weight factor for the average queue size calculation for a WRED parameter group.
<b>fair-queue (WFQ)</b>	Enables WFQ for an interface.
<b>precedence</b>	Configures a WRED group for a particular IP Precedence.
<b>priority-group</b>	Assigns the specified priority list to an interface.

<b>Command</b>	<b>Description</b>
<b>priority-list interface</b>	Establishes queueing priorities on packets entering from a given interface.
<b>priority-list queue-limit</b>	Specifies the maximum number of packets that can be waiting in each of the priority queues.
<b>queue-list interface</b>	Establishes queueing priorities on packets entering on an interface.
<b>queue-list queue byte-count</b>	Specifies how many bytes the system allows to be delivered from a given queue during a particular cycle.
<b>random-detect (interface)</b>	Enables WRED or DWRED.
<b>random-detect flow average-depth-factor</b>	Sets the multiplier to be used in determining the average depth factor for a flow when flow-based WRED is enabled.
<b>random-detect flow count</b>	Sets the flow count for flow-based WRED.
<b>show interfaces</b>	Displays the statistical information specific to a serial interface.
<b>show queue</b>	Displays the contents of packets inside a queue for a particular interface or VC.
<b>show queueing interface</b>	Displays the queueing statistics of an interface or VC.

# show queueing interface

To display the queueing statistics of an interface or a virtual circuit (VC), use the **show queueing interface** privileged EXEC command.

```
show queueing interface interface-number [vc [[vpi/] vci]]
```

Syntax Description		
<i>interface-number</i>		Specifies the number of the interface.
<b>vc</b>		(Optional) Shows the weighted fair queueing (WFQ) and Weighted Random Early Detection (WRED) parameters associated with a specific VC. If desired, both the virtual path identifier (VPI) and virtual channel identifier (VCI) values, or just the VCI value, can be specified.
<i>vpi/</i>		(Optional) Specifies the VPI. If the <i>vpi</i> argument is omitted, 0 is used as the VPI value for locating the permanent virtual circuit (PVC). If the <i>vpi</i> argument is specified, the / separator is required.
<i>vci</i>		(Optional) Specifies the VCI.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.1(22)CC	This command was introduced.

## Examples

The following is sample output from the **show queueing interface** command:

```
Router# show queueing interface atm2/0
Interface ATM2/0 VC 201/201
Queueing strategy:random early detection (WRED)
Exp-weight-constant:9 (1/512)
Mean queue depth:49
Total output drops per VC:759

Class    Random    Tail    Minimum    Maximum    Mark
         drop     drop  threshold threshold probability
0         165      26      30         50         1/10
1         167      12      32         50         1/10
2         173      14      34         50         1/10
3         177      25      36         50         1/10
4          0        0       38         50         1/10
5          0        0       40         50         1/10
6          0        0       42         50         1/10
7          0        0       44         50         1/10
rsvp     0         0       46         50         1/10
```

<b>Related Commands</b>		
	<b>custom-queue-list</b>	Assigns a custom queue list to an interface.
	<b>fair-queue (class-default)</b>	Specifies the number of dynamic queues to be reserved for use by the class-default class as part of the default class policy.
	<b>fair-queue (WFQ)</b>	Enables WFQ for an interface.
	<b>priority-group</b>	Assigns the specified priority list to an interface.
	<b>random-detect (interface)</b>	Enables WRED or DWRED.
	<b>random-detect (per VC)</b>	Enables per-VC WRED or per-VC DWRED.
	<b>random-detect flow</b>	Enables flow-based WRED.
	<b>show interfaces fair-queue</b>	Displays information and statistics about WFQ for a VIP-based interface.
	<b>show policy-map interface</b>	Displays the configuration of classes configured for service policies on the specified interface or PVC.
	<b>show queueing</b>	Lists all or selected configured queueing strategies.

# show tech-support rsvp

To generate a report of all Resource Reservation Protocol (RSVP)-related information, use the **show tech-support rsvp** privileged EXEC command.

**show tech-support rsvp**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines** This command is not required for normal use of the operating system. This command is useful when you contact technical support personnel with questions regarding RSVP. The **show tech-support rsvp** command generates a series of reports that can be useful to technical support personnel attempting to solve problems.

Any issues or caveats that apply to the **show tech-support** command also apply to this command. For example, the enable password, if configured, is not displayed in the output of the **show running-config** command.

The **show tech-support rsvp** command is equivalent to issuing the following commands:

- **show ip rsvp installed**
- **show ip rsvp interface**
- **show ip rsvp neighbor**
- **show ip rsvp request**
- **show ip rsvp reservation**
- **show ip rsvp sender**
- **show running-config**
- **show version**

Refer to the displays and descriptions for the individual commands listed above for information about the **show tech-support rsvp** command display.

# show traffic-shape

To display the current traffic-shaping configuration, use the **show traffic-shape** EXEC command.

```
show traffic-shape [interface-type interface-number]
```

Syntax Description	Parameter	Description
	<i>interface-type</i>	(Optional) The type of the interface. If no interface is specified, traffic-shaping details for all configured interfaces are shown.
	<i>interface-number</i>	(Optional) The number of the interface.

**Command Modes** EXEC

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines** You must have first enabled traffic shaping using the **traffic-shape rate**, **traffic-shape group**, or **frame-relay traffic-shaping** command to display traffic-shaping information.

**Examples** The following is sample output from the **show traffic-shape** command:

```
Router# show traffic-shape

Interface Fa0/0
          Access Target   Byte   Sustain   Excess   Interval   Increment   Adapt
VC      List   Rate   Limit  bits/int  bits/int  (ms)      (bytes)    Active
-                1000000 6250   25000    25000    25        3125      -
```

Table 29 describes the fields shown in this display.

**Table 29** *show traffic-shape Field Descriptions*

Field	Description
Interface	Interface type and number.
VC	Virtual circuit. <b>Note</b> If you configure traffic shaping at a VC level instead of an interface level, a number appears in this field.
access list	Number of the access list, if one is configured.
Target Rate	Rate that traffic is shaped to (in bits per second).
Byte Limit	Maximum number of bytes sent per internal interval.
Sustain bits/int	Configured sustained bits per interval.
Excess bits/int	Configured excess bits in the first interval.

**Table 29** *show traffic-shape Field Descriptions (continued)*

Field	Description
Interval (ms)	Interval (in milliseconds) being used internally, which may be smaller than the committed burst divided by the committed information rate, if the router determines that traffic flow will be more stable with a smaller configured interval.
Increment (bytes)	Number of bytes that will be sustained per internal interval.
Adapt Active	Contains “BECN” if Frame Relay has backward explicit congestion notification (BECN) adaptation configured.

**Related Commands**

Command	Description
<b>frame-relay cir</b>	Specifies the incoming or outgoing committed information rate (CIR) for a Frame Relay virtual circuit.
<b>frame-relay traffic-rate</b>	Configures all the traffic-shaping characteristics of a virtual circuit (VC) in a single command.
<b>frame-relay traffic-shaping</b>	Enables both traffic shaping and per-VC queueing for all PVCs and SVCs on a Frame Relay interface.
<b>show traffic-shape queue</b>	Displays information about the elements queued by traffic shaping at the interface level or the DLCI level.
<b>show traffic-shape statistics</b>	Displays the current traffic-shaping statistics.
<b>traffic-shape adaptive</b>	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
<b>traffic-shape fecn-adapt</b>	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
<b>traffic-shape group</b>	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
<b>traffic-shape rate</b>	Enables traffic shaping for outbound traffic on an interface.

# show traffic-shape queue

To display information about the elements queued by traffic shaping at the interface level or the data-link connection identifier (DLCI) level, use the **show traffic-shape queue** EXEC mode.

**show traffic-shape queue** [*interface-number* [**dlci** *dlci-number*]]

Syntax Description		
<i>interface-number</i>	(Optional)	The number of the interface.
<b>dlci</b>	(Optional)	The specific DLCI for which you wish to display information about queued elements.
<i>dlci-number</i>	(Optional)	The number of the DLCI.

**Command Modes** EXEC

Command History	Release	Modification
	11.2	This command was introduced.
	12.0(3)XG	The <i>dlci</i> argument was added.
	12.0(4)T	The <i>dlci</i> argument was added.
	12.0(5)T	This command was modified to include information on the special voice queue that is created using the <b>queue</b> keyword of the <b>frame-relay voice bandwidth</b> command.

**Usage Guidelines** When no parameters are specified with this command, the output displays information for all interfaces and DLCIs containing queued elements. When a specific interface and DLCI are specified, information is displayed about the queued elements for that DLCI only.

**Examples** The following is sample output for the **show traffic-shape queue** command when weighted fair queueing is configured on the map class associated with DLCI 16:

```
router# show traffic-shape queue Serial11/1 dlci 16
Traffic queued in shaping queue on Serial1.1 dlci 16
Queueing strategy: weighted fair
Queueing Stats: 1/600/64/0 (size/max total/threshold/drops)
  Conversations 0/16 (active/max total)
  Reserved Conversations 0/2 (active/allocated)
(depth/weight/discards) 1/4096/0
Conversation 5, linktype: ip, length: 608

source: 172.21.59.21, destination: 255.255.255.255, id: 0x0006, ttl: 255,
TOS: 0 prot: 17, source port 68, destination port 67
```

The following is sample output for the **show traffic-shape queue** command when priority queuing is configured on the map class associated with DLCI 16:

```
router# show traffic-shape queue Serial1/1 dlci 16
Traffic queued in shaping queue on Serial1.1 dlci 16
  Queueing strategy: priority-group 4
  Queueing Stats: low/1/80/0 (queue/size/max total/drops)

Packet 1, linktype: cdp, length: 334, flags: 0x10000008
```

The following is sample output for the **show traffic-shape queue** command when first-come, first-serve queuing is configured on the map class associated with DLCI 16:

```
router# show traffic-shape queue Serial1/1 dlci 16
Traffic queued in shaping queue on Serial1.1 dlci 16
  Queueing strategy: fcfs
  Queueing Stats: 1/60/0 (size/max total/drops)

Packet 1, linktype: cdp, length: 334, flags: 0x10000008
```

The following is sample output for the **show traffic-shape queue** command displaying statistics for the special queue for voice traffic that is created automatically when the **frame-relay voice bandwidth** command is entered:

```
Router# show traffic-shape queue serial 1 dlci 45
Voice queue attached to traffic shaping queue on Serial1 dlci 45
~~~~~
  Voice Queueing Stats: 0/100/0 (size/max/dropped)
  ~~~~~
Traffic queued in shaping queue on Serial1 dlci 45
Queueing strategy: weighted fair
Queueing Stats: 0/600/64/0 (size/max total/threshold/drops)
  Conversations 0/16 (active/max total)
  Reserved Conversations 0/2 (active/allocated)
```

Table 30 describes the significant fields shown in these displays.

**Table 30** *show traffic-shape queue Field Descriptions*

Field	Description
Queueing strategy	When Frame Relay traffic shaping is configured, the queuing type can be weighted fair, custom-queue, priority-group, or fcfs (first-come-first-serve), depending on what is configured on the Frame Relay map class for this DLCI. The default is fcfs for Frame Relay traffic shaping. When generic traffic shaping is configured, the only queuing type available is weighted fair queuing.
Queueing Stats	Statistics for the configured queuing strategy, as follows: <ul style="list-style-type: none"> <li>size—Current size of the queue.</li> <li>max total—Maximum number of packets of all types that can be queued in all queues.</li> <li>threshold—For weighted fair queuing, the number of packets in the queue after which new packets for high-bandwidth conversations will be dropped.</li> <li>drops—Number of packets discarded during this interval.</li> </ul>
Conversations active	Number of currently active conversations.
Conversations max total	Maximum allowed number of concurrent conversations.

**Table 30** *show traffic-shape queue Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Reserved Conversations active	Number of currently active conversations reserved for voice.
Reserved Conversations allocated	Maximum configured number of conversations reserved.
depth	Number of packets currently queued.
weight	Number used to classify and prioritize the packet.
discards	Number of packets discarded from queues.
Packet	Number of queued packet.
linktype	Protocol type of the queued packet. (cdp = Cisco Discovery Protocol)
length	Number of bytes in the queued packet.
flags	Number of flag characters in the queued packet.
source	Source IP address.
destination	Destination IP address.
id	Packet ID.
ttl	Time to live count.
TOS	IP type of service.
prot	Layer 4 protocol number. Refer to RFC 943 for a list of protocol numbers. (17 = User Datagram Protocol (UDP))
source port	Port number of source port.
destination port	Port number of destination port.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show frame-relay fragment</b>	Displays Frame Relay fragmentation details.
<b>show frame-relay pvc</b>	Displays statistics about PVCs for Frame Relay interfaces.
<b>show frame-relay vofr</b>	Displays details about FRF.11 subchannels being used on Voice over Frame Relay DLCIs.
<b>show traffic-shape</b>	Displays the current traffic-shaping configuration.
<b>show traffic-shape statistics</b>	Displays the current traffic-shaping statistics.

# show traffic-shape statistics

To display the current traffic-shaping statistics, use the **show traffic-shape statistics** EXEC command.

```
show traffic-shape statistics [interface-type interface-number]
```

Syntax Description	Parameter	Description
	<i>interface-type</i>	(Optional) The type of the interface. If no interface is specified, traffic-shaping statistics for all configured interfaces are shown.
	<i>interface-number</i>	(Optional) The number of the interface.

**Command Modes** EXEC

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines** You must have first enabled traffic shaping using the **traffic-shape rate**, **traffic-shape group**, or **frame-relay traffic-shaping** command to display traffic-shaping information.

**Examples** The following is sample output from the **show traffic-shape statistics** command:

```
Router# show traffic-shape statistics

      Access Queue   Packets   Bytes   Packets   Bytes   Shaping
I/F    List  Depth      Delayed  Delayed  Delayed  Delayed  Active
Et0    101    0         2        180     0        0        no
Et1           0         0         0         0        0        0        no
```

Table 31 describes the fields shown in this display.

**Table 31** *show traffic-shape statistics* Field Descriptions

Field	Description
I/F	Interface.
Access List	Number of the access list.
Queue Depth	Number of messages in the queue.
Packets	Number of packets sent through the interface.
Bytes	Number of bytes sent through the interface.
Packets Delayed	Number of packets sent through the interface that were delayed in the traffic-shaping queue.
Bytes Delayed	Number of bytes sent through the interface that were delayed in the traffic-shaping queue.
Shaping Active	Contains “yes” when timers indicate that traffic shaping is occurring and “no” if traffic shaping is not occurring.

Related Commands	Command	Description
	<b>frame-relay traffic-shaping</b>	Enables both traffic shaping and per-VC queueing for all PVCs and SVCs on a Frame Relay interface.
	<b>show interfaces</b>	Displays statistics for all interfaces configured on the router or access server.
	<b>show ip rsvp neighbor</b>	Displays RSVP-related interface information.
	<b>traffic-shape adaptive</b>	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
	<b>traffic-shape group</b>	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
	<b>traffic-shape rate</b>	Enables traffic shaping for outbound traffic on an interface.

# traffic-shape adaptive

To configure a Frame Relay subinterface to estimate the available bandwidth when backward explicit congestion notification (BECN) signals are received, use the **traffic-shape adaptive** interface configuration command. To stop adapting to congestion signals, use the **no** form of this command.

**traffic-shape adaptive** *bit-rate*

**no traffic-shape adaptive**

<b>Syntax Description</b>	<i>bit-rate</i>	Lowest bit rate that traffic is shaped to, in bits per second. The default <i>bit rate</i> value is 0.
---------------------------	-----------------	--

**Defaults** This command is not enabled by default.

**Command Modes** Interface configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2	This command was introduced.

**Usage Guidelines** This command specifies the boundaries in which traffic will be shaped when BECN signals are received. You must enable traffic shaping on the interface with the **traffic-shape rate** or **traffic-shape group** command before you can use the **traffic-shape adaptive** command.

The bit rate specified for the **traffic-shape rate** command is the upper limit, and the bit rate specified for the **traffic-shape adaptive** command is the lower limit to which traffic is shaped when BECN signals are received on the interface. The rate actually shaped to will be between these two bit rates.

You should configure this command and the **traffic-shape fecn-adapt** command on both ends of the connection to ensure adaptive traffic shaping over the connection, even when traffic is flowing primarily in one direction. The **traffic-shape fecn-adapt** command configures the router to reflect forward explicit congestion notification (FECN) signals as BECN signals.

**Examples** The following example configures traffic shaping on serial interface 0.1 with an upper limit of 128 kbps and a lower limit of 64 kbps. This configuration allows the link to run from 64 to 128 kbps, depending on the congestion level.

```
interface serial 0
 encapsulation-frame-relay
interface serial 0.1
 traffic-shape rate 128000
 traffic-shape adaptive 64000
 traffic-shape fecn-adapt
```

Related Commands	Command	Description
	<b>show traffic-shape</b>	Displays the current traffic-shaping configuration.
	<b>show traffic-shape statistics</b>	Displays the current traffic-shaping statistics.
	<b>traffic-shape fecn-adapt</b>	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
	<b>traffic-shape group</b>	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
	<b>traffic-shape rate</b>	Enables traffic shaping for outbound traffic on an interface.

# traffic-shape fecn-adapt

To reply to messages with the forward explicit congestion notification (FECN) bit (which are set with TEST RESPONSE messages with the BECN bit set), use the **traffic-shape fecn-adapt** interface configuration command. To stop backward explicit congestion notification (BECN) signal generation, use the **no** form of this command.

**traffic-shape fecn-adapt**

**no traffic-shape fecn-adapt**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** Traffic shaping is disabled.

---

**Command Modes** Interface configuration

---

Release	Modification
11.2	This command was introduced.

---

---

**Usage Guidelines**

Enable traffic shaping on the interface with the **traffic-shape rate** or **traffic-shape group** command. FECN is available only when traffic shaping is configured.

Use this command to reflect FECN bits as BECN bits to notify the other DTE that it is sending too fast. Use the **traffic-shape adaptive** command to configure the router to adapt its transmission rate when it receives BECN signals.

You should configure this command and the **traffic-shape adaptive** command on both ends of the connection to ensure adaptive traffic shaping over the connection, even when traffic is flowing primarily in one direction.

---

**Examples** The following example configures traffic shaping on serial interface 0.1 with an upper limit of 128 kbps and a lower limit of 64 kbps. This configuration allows the link to run from 64 to 128 kbps, depending on the congestion level. The router reflects FECN signals as BECN signals.

```
interface serial 0
 encapsulation-frame-relay
interface serial 0.1
 traffic-shape rate 128000
 traffic-shape adaptive 64000
 traffic-shape fecn-adapt
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show traffic-shape</b>	Displays the current traffic-shaping configuration.
	<b>show traffic-shape statistics</b>	Displays the current traffic-shaping statistics.
	<b>traffic-shape adaptive</b>	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
	<b>traffic-shape group</b>	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
	<b>traffic-shape rate</b>	Enables traffic shaping for outbound traffic on an interface.

# traffic-shape group

To enable traffic shaping based on a specific access list for outbound traffic on an interface, use the **traffic-shape group** interface configuration command. To disable traffic shaping on the interface for the access list, use the **no** form of this command.

**traffic-shape group** *access-list* *bit-rate* [*burst-size* [*excess-burst-size*]]

**no traffic-shape group** *access-list*

## Syntax Description

<i>access-list</i>	Number of the access list that controls the packets that traffic shaping is applied to on the interface.
<i>bit-rate</i>	Bit rate that traffic is shaped to (in bits per second). This is the access bit rate that you contract with your service provider, or the service levels you intend to maintain.
<i>burst-size</i>	(Optional) Sustained number of bits that can be sent per interval. On Frame Relay interfaces, this is the committed burst size contracted with your service provider.
<i>excess-burst-size</i>	(Optional) Maximum number of bits that can exceed the burst size in the first interval in a congestion event. On Frame Relay interfaces, this is the excess burst size contracted with your service provider. The default is equal to the <i>burst-size</i> argument.

## Defaults

Traffic shapping is not on by default.

## Command Modes

Interface configuration

## Command History

Release	Modification
11.2	This command was introduced.

## Usage Guidelines

Generic traffic shaping is not supported on ISDN and dialup interfaces. Is is also not supported on non-generic routing encapsulation (GRE) tunnel interfaces. Traffic shaping is not supported with flow switching.

Traffic shaping uses queues to limit surges that can congest a network. Data is buffered and then sent into the network in regulated amounts to ensure that traffic will fit within the promised traffic envelope for the particular connection.

The **traffic-shape group** command allows you to specify one or more previously defined access list to shape traffic to on the interface. You must specify one **traffic-shape group** command for each access list on the interface.

The **traffic-shape group** command supports both standard and extended access lists.

Use traffic shaping if you have a network with differing access rates or if you are offering a subrate service. You can configure the values according to your contract with your service provider or the service levels you intend to maintain.

An interval is calculated as follows:

- If the *burst-size* is not equal to zero, the interval is the *burst-size* divided by the *bit-rate*.
- If the *burst-size* is zero, the interval is the *excess-burst-size* divided by the *bit-rate*.

Traffic shaping is supported on all media and encapsulation types on the router. To perform traffic shaping on Frame Relay virtual circuits, you can also use the **frame-relay traffic-shaping** command. For more information on Frame Relay traffic shaping, refer to the “Configuring Frame Relay” chapter in the *Cisco IOS Wide-Area Networking Configuration Guide*.

If traffic shaping is performed on a Frame Relay network with the **traffic-shape rate** command, you can also use the **traffic-shape adaptive** command to specify the minimum bit rate to which the traffic is shaped.

### Examples

The following example enables traffic that matches access list 101 to be shaped to a certain rate and traffic matching access list 102 to be shaped to another rate on the interface:

```
interface serial 1
 traffic-shape group 101 128000 16000 8000
 traffic-shape group 102 130000 10000 1000
```

### Related Commands

Command	Description
<b>access-list (IP Standard)</b>	Defines a standard IP access list.
<b>show traffic-shape</b>	Displays the current traffic-shaping configuration.
<b>show traffic-shape statistics</b>	Displays the current traffic-shaping statistics.
<b>traffic-shape adaptive</b>	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
<b>traffic-shape fecn-adapt</b>	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
<b>traffic-shape rate</b>	Enables traffic shaping for outbound traffic on an interface.

# traffic-shape rate

To enable traffic shaping for outbound traffic on an interface, use the **traffic-shape rate** interface configuration command. To disable traffic shaping on the interface, use the **no** form of this command.

**traffic-shape rate** *bit-rate* [*burst-size* [*excess-burst-size*]]

**no traffic-shape rate**

Syntax Description		
<i>bit-rate</i>		Bit rate that traffic is shaped to (in bits per second). This is the access bit rate that you contract with your service provider, or the service levels you intend to maintain.
<i>burst-size</i>		(Optional) Sustained number of bits that can be sent per interval. On Frame Relay interfaces, this is the committed burst size contracted with your service provider.
<i>excess-burst-size</i>		(Optional) Maximum number of bits that can exceed the burst size in the first interval in a congestion event. On Frame Relay interfaces, this is the excess burst size contracted with your service provider. The default is equal to the <i>burst-size</i> argument.

**Defaults** Traffic shaping is disabled.

**Command Modes** Interface configuration

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines** Generic traffic shaping is not supported on ISDN and dialup interfaces. It is also not supported on non-generic routing encapsulation (GRE) tunnel interfaces. Traffic shaping is not supported with flow switching.

Traffic shaping uses queues to limit surges that can congest a network. Data is buffered and then sent into the network in regulated amounts to ensure that traffic will fit within the promised traffic envelope for the particular connection.

Use traffic shaping if you have a network with differing access rates or if you are offering a subrate service. You can configure the values according to your contract with your service provider or the service levels you intend to maintain.

An interval is calculated as follows:

- If the *burst-size* is not equal to zero, the interval is the *burst-size* divided by the *bit-rate*.
- If the *burst-size* is zero, the interval is the *excess-burst-size* divided by the *bit-rate*.

Traffic shaping is supported on all media and encapsulation types on the router. To perform traffic shaping on Frame Relay virtual circuits, you can also use the **frame-relay traffic-shaping** command. For more information on Frame Relay traffic shaping, refer to the “Configuring Frame Relay” chapter in the *Cisco IOS Wide-Area Networking Configuration Guide*.

If traffic shaping is performed on a Frame Relay network with the **traffic-shape rate** command, you can also use the **traffic-shape adaptive** command to specify the minimum bit rate to which the traffic is shaped.

---

### Examples

The following example enables traffic shaping on serial interface 0 using the bandwidth required by the service provider:

```
interface serial 0
 traffic-shape rate 128000 16000 8000
```

---

### Related Commands

Command	Description
<b>show traffic-shape</b>	Displays the current traffic-shaping configuration.
<b>show traffic-shape statistics</b>	Displays the current traffic-shaping statistics.
<b>traffic-shape adaptive</b>	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
<b>traffic-shape fecn-adapt</b>	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
<b>traffic-shape group</b>	Enables traffic shaping based on a specific access list for outbound traffic on an interface.