shape

To specify average or peak rate traffic shaping, use the **shape** class-map configuration command. To remove traffic shaping, use the **no** form of this command.

shape {**average** | **peak**} *cir* [*bc*] [*be*]

no shape {**average** | **peak**} *cir* [*bc*] [*be*]

Syntax Description

average	Specifies average rate shaping.
peak	Specifies peak rate shaping.
cir	Specifies the committed information rate (CIR), in bits per second (bps).
bc	(Optional) Specifies the Committed Burst size, in bits.
be	(Optional) Specifies the Excess Burst size, in bits.

Defaults

This command has no default behavior or values.

Command Modes

Class-map configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

Traffic shaping limits the rate of transmission of data. In addition to using a specifically configured transmission rate, you can use Generic Traffic Shaping (GTS) to specify a derived transmission rate based on the level of congestion.

You can specify two types of traffic shaping; average rate shaping and peak rate shaping. Average rate shaping limits the transmission rate to the CIR. Using the CIR ensures that the average amount of traffic being sent conforms to the rate expected by the network.

Peak rate shaping configures the router to send more traffic than the CIR. To determine the peak rate, the router uses the following formula:

peak rate = CIR(1 + Be / Bc)

where:

- Be is the Excess Burst size.
- Bc is the Committed Burst size.

Peak rate shaping allows the router to burst higher than average rate shaping. However, using peak rate shaping, the traffic sent above the CIR (the delta) could be dropped if the network becomes congested.

If your network has additional bandwidth available (over the provisioned CIR) and the application or class can tolerate occasional packet loss, that extra bandwidth can be exploited through the use of peak rate shaping. However, there may be occasional packet drops when network congestion occurs. If the traffic being sent to the network must strictly conform to the configured network provisioned CIR, then you should use average traffic shaping.

Examples

The following example sets the uses average rate shaping to ensure a bandwidth of 256 kbps:

```
shape average 256000
```

The following example uses peak rate shaping to ensure a bandwidth of 300 kbps but allow throughput up to 512 kbps if enough bandwidth is available on the interface:

```
bandwidth 300
shape peak 512000
```

Related Commands

Command	Description
bandwidth	Specifies or modifies the bandwidth allocated for a class belonging to a policy map.
class (policy-map)	Specifies the name of the class whose policy you want to create or change, and the default class (commonly known as the class-default class) before you configure its policy.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
shape max-buffers	Specifies the maximum number of buffers allowed on shaping queues.

shape (policy-map class)

To shape traffic to the indicated bit rate according to the algorithm specified, use the **shape** policy-map class configuration command. To remove shaping and leaving the traffic unshapped, use the **no** form of this command.

shape [**average** | **peak**] *mean-rate* [[*burst-size*] [*excess-burst-size*]]

no shape [**average** | **peak**]

Syntax Description

average	(Optional) Committed Burst (Bc) is the maximum number of bits sent out in each interval.
peak	(Optional) Bc + Excess Burst (Be) is the maximum number of bits sent out in each interval.
mean-rate	(Optional) Also called committed information rate (CIR). Indicates the bit rate used to shape the traffic, in bits per second. When this command is used with backward explicit congestion notification (BECN) approximation, the bit rate is the upper bound of the range of bit rates that will be permitted.
burst-size	(Optional) The number of bits in a measurement interval (Bc).
excess-burst-size	(Optional) The acceptable number of bits permitted to go over the Be.

Defaults

When Be is not configured, the default value is equal to Bc. For more information about burst size defaults, see the "Usage Guidelines" section of this command.

Command Modes

Policy-map class configuration

Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines

The measurement interval is Bc divided by CIR. Bc cannot be set to 0. If the measurement interval is too large (greater than 128 milliseconds), the system subdivides it into smaller intervals.

If you do not specify Bc and Be, the algorithm decides the default values for the shape entity. The algorithm uses a 4 milliseconds measurement interval, so Bc will be CIR * (4 / 1000).

Burst sizes larger than the default Bc need to be explicitly specified. The larger the Bc, the longer the measurement interval. A long measurement interval may affect voice traffic latency, if applicable.

When Be is not configured, the default value is equal to Bc.

Examples

The following example configures a shape entity with a CIR of 1 Mbps and attaches the policy map called dts-interface-all-action to interface pos1/0/0:

```
policy-map dts-interface-all-action
 class class-interface-all
   shape average 1000000

    interface pos1/0/0
       service-policy output dts-interface-all-action
```

Related Commands

Command	Description
shape adaptive	Configures a Frame Relay interface or a point-to-point subinterface to estimate the available bandwidth by BECN integration while traffic shaping is enabled.
shape fecn-adapt	Configures a Frame Relay PVC to reflect received FECN bits as BECN bits in Q.922 TEST RESPONSE messages.

shape adaptive

To configure a Frame Relay interface or a point-to-point subinterface to estimate the available bandwidth by backward explicit congestion notification (BECN) integration while traffic shaping is enabled, use the **shape adaptive** policy-map class configuration command. If traffic shaping is not enabled, this command has no effect. To leave the available bandwidth unestimated, use the **no** form of this command.

shape adaptive *mean-rate-lower-bound*

no shape adaptive

Syntax Description

mean-rate-lower-bound	Specifies the lower bound of the range of permitted bit rates.

Defaults

This command has no default behavior or values.

Command Modes

Policy-map class configuration

Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines

When continuous BECN messages are received, the shape entity immediately decreases its maximum shape rate by one-fourth for each BECN message received until it reaches the lower bound committed information rate (CIR). If, after several intervals, the interface has not received another BECN and traffic is waiting in the shape queue, the shape entity increases the shape rate back to the maximum rate by 1/16 for each interval. A shape entity configured with the **shape adaptive** *lower CIR* command will always be shaped between the mean rate upper bound and the mean rate lower bound.

Examples

The following example configures a shape entity with CIR 128 kbps and sets the lower bound CIR to 64 kbps when BECN is received:

```
policy-map dts-p2p-all-action
  class class-p2p-all
    shape average 128000
    shape adaptive 64000
```

shape fecn-adapt

To configure a Frame Relay interface to reflect received forward explicit congestion notification (FECN) bits as backward explicit congestion notification (BECN) bits in Q.922 TEST RESPONSE messages, use the **shape fecn-adapt** policy-map class configuration command. To configure the Frame Relay interface to not reflect FECN as BECN, use the **no** form of this command.

shape fecn-adapt

no shape fecn-adapt

Syntax Description

This command has no arguments or keywords.

Defaults

This command has no default behavior or values.

Command Modes

Policy-map class configuration

Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines

When the downstream Frame Relay switch is congested, a Frame Relay interface or point-to-point interface receives a Frame Relay message with the FECN bit on. This message may be an indication that no traffic is waiting to carry a BECN to the far end (voice/multimedia traffic is one-way). When the **shape fecn-adapt** command is configured, a small buffer is allocated and a Frame Relay TEST RESPONSE is built on behalf of the Frame Relay switch. The Frame Relay TEST RESPONSE is equipped with the triggering data-link connection identifier (DLCI) of the triggering mechanism. It also sets the BECN bit and sends it out to the wire.

Examples

The following example configures a shape entity with a CIR of 1 Mbps and adapts the Frame Relay message with FECN to BECN:

```
policy-map dts-p2p-all-action
  class class-p2p-all
    shape average 1000000
    shape fecn-adapt
```

Related Commands

Command	Description
shape (policy-map class)	Configures an interface to shape traffic to an indicated bit rate.
shape adaptive	Configures a Frame Relay interface or a point-to-point subinterface to estimate the available bandwidth by BECN integration while traffic shaping is enabled.

shape max-buffers

To specify the maximum number of buffers allowed on shaping queues, use the **shape max-buffers** class-map configuration command. To remove the maximum number of buffers, use the **no** form of this command.

shape max-buffers *number-of-buffers*

no shape max-buffers *number-of-buffers*

Syntax Description

number-of-buffers	Specifies the maximum number of buffers. The minimum number of buffers is 1; the maximum number of buffers is 4096.

Defaults

The default setting is 1000 buffers.

Command Modes

Class-map configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

You can specify the maximum number of buffers allowed on shaping queues for each class configured to use Generic Traffic Shaping (GTS).

Examples

The following example configures shaping and sets the maximum buffer limit to 100:

```
shape average 350000
shape max-buffers 100
```

Related Commands

Command	Description
bandwidth	Specifies or modifies the bandwidth allocated for a class belonging to a policy map.
class (policy-map)	Specifies the name of the class whose policy you want to create or change, and the default class (commonly known as the class-default class) before you configure its policy.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
shape	Specifies average or peak rate traffic shaping.

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*]

Syntax Description

acl-index	(Optional) Rate-limit access list number from 1 to 299.

Command Modes

EXEC

Command History

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 18 describes the significant fields shown in the displays.

Table 18 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
access-list rate-limit	Configures an access list for use with CAR policies.
show access-lists	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

bundle-name	The name of the bundle whose member information is displayed. This is the bundle name specified by the **bundle** command when the bundle was created.

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** 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

                     Config. Active  Bumping    PG/ Peak  Avg/Min  Burst
Name       VPI/VCI   Preced. Preced. Predec./   PV  kbps  kbps     Cells  Status
                                     Accept

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

                     Config. Active  Bumping    pg/ Peak  Avg/Min  Burst
Name       VPI/VCI   Preced. Preced. Predec./   pv  kbps  kbps     Cells  Status
                                     Accept

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
```

```
san-francisco on atm1/0.1 Status: UP

                      Config. Active  Bumping    PG/ Peak  Avg/Min  Burst
Name        VPI/VCI   Preced. Preced. Predec./   PV  kbps  kbps     Cells  Status
                                      Accept

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
show atm bundle statistics	Displays statistics on the specified bundle.
show atm map	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

bundle-name	Specifies the name of the bundle whose member information is displayed. This is the bundle name specified by the **bundle** command when the bundle was created.
detail	(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
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, F4InAIS; 0, F4 InRDI: 0
F4 OutEndloop: 0, F4 OutSegloop: F4 OutRDI: 0
OAM cell drops: 0
Status: UP
```

Related Commands

Command	Description
show atm bundle	Displays the bundle attributes assigned to each bundle VC member and the current working status of the VC members.
show atm map	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, use the **show class-map** EXEC or privileged EXEC command.

show class-map [*class-map-name*]

Syntax Description

class-map-name	(Optional) Name of the class map.

Defaults

This command has 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 class-map** command to display all class maps and their matching criteria. If you enter the optional *class-map-name* argument, the specified class map and its matching criteria will be displayed.

Examples

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 Ethernet interface 1/0 belong to class c1. The output from the **show class-map** command shows the three defined class maps.

```
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
class-map	Creates a class map to be used for matching packets to a specified class.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.

show cops servers

To display the IP address and connection status of the policy servers for which the router is configured, use the **show cops servers** EXEC command. The display also tells you about the Common Open Policy Service (COPS) client on the router.

show cops servers

Syntax Description

This command has no keywords or arguments.

Defaults

This command has no default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.

Examples

In the following example, information is displayed about the current policy server and client. When Client Type appears followed by an integer, 1 stands for Resource Reservation Protocol (RSVP) and 2 stands for Differentiated Services Provisioning. (0 indicates keepalive.)

```
Router# show cops servers

COPS SERVER: Address: 161.44.135.172. Port: 3288. State: 0. Keepalive: 120 sec
    Number of clients: 1. Number of sessions: 1.
COPS CLIENT: Client type: 1.  State: 0.
```

Related Commands

Command	Description
show ip rsvp policy cops	Displays policy server address(es), ACL IDs, and current state of the router-server connection.

show interfaces fair-queue

To display information and statistics about weighted fair queueing (WFQ) 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

interface-type	(Optional) The type of the interface.
interface-number	(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 19 describes the significant fields shown in the display.

Table 19 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 19 show interfaces fair-queue Field Descriptions (continued)

Field	Description
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

Command	Description
show interfaces	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

interface-type	(Optional) The type of the interface.
interface-number	(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 20 describes the significant fields shown in the display.

Table 20 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 20 show interfaces random-detect Field Descriptions (continued)

Field	Description
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

Command	Description
random-detect (interface)	Enables WRED or DWRED.
random-detect flow	Enables flow-based WRED.
show interfaces	Displays statistics for all interfaces configured on the router or access server.
show queueing	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

interface-type	(Optional) The type of the interface.
interface-number	(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: 800000000 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 21 describes the significant fields shown in the display.

Table 21 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 **rate-limit** 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 **clear counters** 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
access-list rate-limit	Configures an access list for use with CAR policies.
clear counters	Clears the interface counters.
shape	Specifies average or peak rate traffic shaping.
show access-lists	Displays the contents of current IP and rate-limit access lists.
show interfaces	Displays statistics for all interfaces configured on the router or access server.

show ip nbar pdlm

To display the Packet Description Language Module (PDLM) in use by Network-Based Application Recognition (NBAR), use the **show ip nbar pdlm** privileged EXEC command.

show ip nbar pdlm

Syntax Description

This command has no arguments or keywords.

Defaults

This command has no default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)XE2	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines

This command is used to display a list of all the PDLMs that have been loaded into NBAR using the **ip nbar pdlm** command.

Examples

In this example of the **show ip nbar pdlm** command, the citrix.pdlm PDLM has been loaded from Flash memory:

```
Router# show ip nbar pdlm

The following PDLMs have been loaded:
flash://citrix.pdlm
```

Related Commands

Command	Description
ip nbar pdlm	Extends or enhances the list of protocols recognized by NBAR through a Cisco-provided PDLM.