



## Cable Commands: show m through show z

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### New Commands

| Command                              | Cisco IOS Software Release |
|--------------------------------------|----------------------------|
| show pxf cable controller            | 12.3(23)BC1                |
| show pxf cpu queue wb-spa            | 12.3(23)BC                 |
| show redundancy config-sync          | 12.2(33)SCA                |
| show redundancy platform             | 12.2(33)SCA                |
| show pxf cable multicast             | 12.2(33)SCB                |
| show pxf cpu drl-trusted-site        | 12.2(33)SCB                |
| show packetcable gate ipv6           | 12.2(33)SCE                |
| show packetcable gate multimedia     | 12.2(33)SCE                |
| show pxf cpu statistics drl ipv4     | 12.2(33)SCE                |
| show pxf cpu statistics drl ipv6     | 12.2(33)SCE                |
| show pxf cpu statistics drl us-cable | 12.2(33)SCE                |
| show packetcable cms                 | 12.2(33)SCF                |

### Modified Commands

| Command                          | Cisco IOS Software Release |
|----------------------------------|----------------------------|
| show pxf cpu queue               | 12.3(23)BC1                |
| show pxf cable                   | 12.2(33)SCB                |
| show pxf cable controller        | 12.2(33)SCB                |
| show pxf cpu queue               | 12.2(33)SCB                |
| show pxf cpu statistics          | 12.2(33)SCB                |
| show upgrade fpd file            | 12.2(33)SCB                |
| show upgrade fpd package default | 12.2(33)SCB                |
| show upgrade fpd progress        | 12.2(33)SCB                |

| <b>Command</b>                             | <b>Cisco IOS Software Release</b> |
|--|-----------------------------------|
| <b>show upgrade fpd table</b>              | 12.2(33)SCB                       |
| <b>show tech support</b>                   | 12.2(33)SCB1                      |
| <b>show tech support</b>                   | 12.3(23)BC7                       |
| <b>show processes cpu</b>                  | 12.2(33)SCB3                      |
| <b>show pxf cpu statistics</b>             | 12.2(33)SCE                       |
| <b>show running-config interface cable</b> | 12.2(33)SCE                       |

# show nls

To display the Network Layer Signalling (NLS) functionality state, use the **show nls** command in privileged EXEC mode.

```
show nls
```

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**Command Default** Information for the NLS state is displayed.

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**Command Modes** Privileged EXEC

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| Command History | Release      | Modification                 |
|-----------------|--------------|------------------------------|
|                 | 12.3(21a)BC3 | This command was introduced. |

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**Examples** The following example shows the output of the show cpd command:

```
Router# show nls
NLS enabled
NLS Authentication enabled
NLS resp-timeout 45
```

---

| Related Commands | Command | Description  |
|------------------|---------|--------------|
|                  | cpd     | Enables CPD. |

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# show nls ag-id

To display authorization group ID information, use the **show nls ag-id** command in privileged EXEC mode.

**show nls ag-id**

## Command Default

Authorization group ID information is displayed. The authentication key is saved encrypted and is not displayed.

## Command Modes

Privileged EXEC

## Command History

| Release      | Modification                 |
|--------------|------------------------------|
| 12.3(21a)BC3 | This command was introduced. |

## Examples

The following example shows the output of the **show nls-sg-id** command:

```
Router# show nls ag-id
Auth Group Id
12345
```

## Related Commands

| Command | Description  |
|---------|--------------|
| cpd     | Enables CPD. |

# show nls flow

To display NLS active flow information, use the **show nls flow** command in privileged EXEC mode.

**show nls flow**

**Command Default** Information for NLS active flows are displayed.

**Command Modes** Privileged EXEC

| Command History | Release      | Modification                 |
|-----------------|--------------|------------------------------|
|                 | 12.3(21a)BC3 | This command was introduced. |

**Examples** The following example shows the output of the show cpd command:

```
Router# show nls flow
NLS flowid CPE IP CR Type CR ID NLS State
4294967295 16.16.1.1 1 1 PEND_B_RESP
```

| Related Commands | Command | Description  |
|------------------|---------|--------------|
|                  | cpd     | Enables CPD. |

# show packetcable cms

To display all gate controllers that are connected to the PacketCable client, use the **show packetcable cms** command in privileged EXEC mode.

**show packetcable cms** [**all** | **verbose**]

| Syntax Description | all            | (Optional) Specifies all gate controllers including the Common Open Policy Service (COPS) servers for which the PacketCable connection is gone down. |
|--------------------|----------------|--|
|                    | <b>verbose</b> | (Optional) Provides detailed output with statistics for all gate controllers that are connected to the PacketCable client.                           |

**Command Default** All gate controllers currently connected to the PacketCable client are displayed.

**Command Modes** Privileged EXEC (#)

| Command History | Release                       | Modification                 |
|-----------------|-------------------------------|------------------------------|
|                 | Cisco IOS Release 12.2(33)SCF | This command was introduced. |

**Usage Guidelines** The **show packetcable cms** command displays various PacketCable counters including message exchanges and error frequency details to help detect any PacketCable errors. This command output can be periodically monitored to validate the overall health of a PacketCable solution.

In normal circumstances, the output of the **show packetcable cms all** command is not different from the output of the **show packetcable cms** command (default form of the command). However, the **show packetcable cms** command with the **all** keyword is used to capture all COPS servers including the servers for which the PacketCable connection is gone down.

**Examples** The following is a sample output of the **show packetcable cms** command that shows all gate controllers that are currently connected to the PacketCable client in Cisco IOS Release 12.2(33)SCF:

```
Router# show packetcable cms

GC-Addr      GC-Port  Client-Addr  COPS-handle  Version  PSID  Key  PDD-Cfg
1.100.30.2   47236    2.39.34.1    0x2FF9E268/1  4.0     0     0     0
2.39.26.19   55390    2.39.34.1    0x2FF9D890/1  1.0     0     0     2
```

The following is a sample output of the **show packetcable cms** command with the **all** keyword in Cisco IOS Release 12.2(33)SCF:

```
Router# show packetcable cms all

GC-Addr      GC-Port  Client-Addr  COPS-handle  Version  PSID  Key  PDD-Cfg
1.100.30.2   47236    2.39.34.1    0x2FF9E268/1  4.0     0     0     0
2.39.26.19   55390    2.39.34.1    0x2FF9D890/1  1.0     0     0     2
1.10.30.22   42307    2.39.34.1    0x0           /0      4.0     0     0     0
```

The following is a sample output of the **show packetcable cms** command with the **verbose** keyword. This output provides additional information with statistics for all gate controllers that are connected to the PacketCable client.

```
Router# show packetcable cms verbose

Gate Controller
  Addr      : 1.100.30.2
  Port      : 47236
  Client Addr : 2.39.34.1
  COPS Handle : 0x2FF9E268
  Version    : 4.0
  Statistics :
    gate del = 0 gate del ack = 0 gate del err = 0
    gate info = 0 gate info ack = 0 gate info err = 0
    gate open = 0 gate report state = 0
    gate set = 0 gate set ack = 0 gate set err = 0
    gate alloc = 0 gate alloc ack = 0 gate alloc err = 0
    gate close = 0

Gate Controller
  Addr      : 2.39.26.19
  Port      : 55390
  Client Addr : 2.39.34.1
  COPS Handle : 0x2FF9D890
  Version    : 1.0
  Statistics :
    gate del = 0 gate del ack = 0 gate del err = 0
    gate info = 0 gate info ack = 0 gate info err = 0
    gate open = 0 gate report state = 0
    gate set = 2 gate set ack = 2 gate set err = 0
  PCMM Timers Expired
  Timer T1 = 0 Timer T2 = 0 Timer T3 = 0 Timer T4 = 0

GC-Addr      GC-Port  Client-Addr  COPS-handle  Version  PSID  Key  PDD-Cfg
1.100.30.2   47236    2.39.34.1    0x2FF9E268/1  4.0     0     0     0
2.39.26.19   55390    2.39.34.1    0x2FF9D890/1  1.0     0     0     2
```

[Table 1](#) describes the significant fields shown in the **show packetcable cms** command display.

**Table 1** *show packetcable cms* Field Descriptions

| Field       | Description  |
|-------------|--|
| GC-Addr     | Gate controller IP address.  |
| GC-Port     | Port number of the gate controller.                                      |
| Client-Addr | PacketCable client IP address.   |
| COPS-handle | Unique value to identify a Common Open Policy Service (COPS) connection. |
| PSID        | Policy server ID.  |

| Related Commands | Command                                   | Description  |
|------------------|---|--|
|                  | <b>cable dynamic-qos trace</b>            | Enables call trace functionality on the Cisco CMTS router for PacketCable or PacketCable Multimedia gates.       |
|                  | <b>debug cable dynamic-qos subscriber</b> | Enables debugging of the call trace functionality on the Cisco CMTS router for a particular subscriber.          |
|                  | <b>debug cable dynamic-qos trace</b>      | Enables call trace debugging on the Cisco CMTS router for all the subscribers for whom call trace is configured. |
|                  | <b>show cable dynamic-qos trace</b>       | Displays the number of subscribers for whom call trace is configured on the Cisco CMTS router.                   |

# show packetcable event

To display information the PacketCable event message (EM) server, use the **show packetcable event** command in user EXEC or privileged EXEC mode.

```
show packetcable event {df-group | radius-server | rks-group}
```

| Syntax Description | df-group   | radius-server  | rks-group  |
|--------------------|--|--|--|
|                    | Displays information about the Communications Assistance for Law Enforcement Act (CALEA) Delivery Function (DF) server groups that are configured on the router. | Displays information about the EM Remote Authentication Dial In User Service (RADIUS) servers that are configured on the router. | Displays information about the Record Keeping Server (RKS) groups that are configured on the router. |

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.2(15)BC2 | This command was introduced for the Cisco uBR7246VXR and Cisco uBR10012 universal broadband routers. |

**Usage Guidelines** This command displays information about the authentication, authorization, and accounting (AAA) servers that are configured on the Cisco CMTS router for PacketCable operations. These include DF servers (used for CALEA redirection of event messages and traffic), RADIUS servers (used for authentication), and RKS servers (used for billing).

**Examples** The following example shows typical output for the **show packetcable event df-group** command, which shows the IP address and UDP port of the DF server to which event messages are being forwarded for CALEA electronic surveillance.

```
Router# show packetcable event df-group
```

```
CDC-address      CDC-port
1.9.62.12        1816
```

```
Router#
```

The following example shows a typical display for the **show packetcable event radius-server** command, which shows the IP address for each RADIUS server that is configured on the router for PacketCable operations, along with the UDP port number that it is using.

```
Router# show packetcable event radius-server
```

```
\
Server-address  Port
10.9.62.12     1816
10.9.62.20     1813
10.9.62.12     1813
```

## show packetcable event

Router#

The following example shows a typical display for the **show packetcable event rks-group** command.

Router# **show packetcable event rks-group**

```
Pri-addr      Pri-port  Sec-addr      Sec-port  Ref-cnt  Batch-cnt
1.9.62.12     1813     1.9.62.20     1813     2        0
```

Router#

Table 0-2 describes the major fields shown in the **show packetcable event rks-group** display.

**Table 0-2 show packetcable event rks-group Field Display**

| Field     | Description   |
|-----------|---|
| Pri-addr  | IP address for the primary RKS server.  |
| Pri-port  | UDP port for the primary RKS server.  |
| Sec-addr  | IP address for the secondary RKS server.  |
| Sec-port  | UDP port for the secondary RKS server.  |
| Ref-cnt   | Number of times that the router send single event messages to the RKS server.   |
| Batch-cnt | Number of times that the router sent batch messages (multiple Event Messages within a single RADIUS message) to the RKS server. |



### Tip

For complete information about PacketCable event messaging, see the *PacketCable Event Messages Specification*, which is available at the PacketCable Event Messages Specification PacketCable web site at the following URL:

<http://www.packetcable.com>

### Related Commands

| Command                                      | Description  |
|--|--|
| <b>clear packetcable gate counter commit</b> | Resets the counters that track the total number of committed gates.                                    |
| <b>packetcable</b>                           | Enables PacketCable operations on the Cisco CMTS.  |
| <b>show packetcable gate counter commit</b>  | Displays the total number of committed gates since system reset or since the counter was last cleared. |
| <b>show packetcable global</b>               | Displays the current PacketCable configuration.  |

# show packetcable gate

To display information about one or more gates in the gate database, use the **show packetcable gate** command in user EXEC or privileged EXEC mode.

**show packetcable gate** [**downstream** | **upstream**] {**summary** | *gate-id*}

| Syntax Description |            |  |
|--------------------|------------|--|
| <b>downstream</b>  | (Optional) | Display information only for gates in the downstream direction.  |
| <b>upstream</b>    | (Optional) | Display information only for gates in the upstream direction.  |
| <b>summary</b>     |            | Display a summary containing the gate ID, subscriber ID, subscriber IP address, and current state information. |
| <i>gate-id</i>     |            | Display information for a specific gate ID. The valid range is 0 to 4294967295.                                |

**Command Default** Displays information about gates on both upstreams and downstreams, if **upstream** or **downstream** is not specified.

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.2(8)BC2  | This command was introduced for the Cisco uBR7200 series universal broadband router.   |
|                 | 12.2(11)BC3 | The output for the <b>summary</b> option was enhanced to display the cable interface and service flow IDs (SFIDs) associated with each PacketCable gate. |
|                 | 12.2(15)BC1 | Support was added for the Cisco uBR10012 router.   |

**Usage Guidelines** This command displays information about one or more gates in the gate database on the Cisco CMTS. You can display a summary for all currently active gates, for all downstream or all upstream gates, or you can display detailed information about a specific gate.

**Examples** The following example shows typical output for the **show packetcable gate summary** command, which displays all current gates on the CMTS:

```
Router# show packetcable gate summary

GateID      Slot SubscriberID  GC-Addr      State  SFID  SFID
           (us)         (ds)
-----
2566        2/0  3.18.1.4        172.22.87.45 COMMIT  9     10
18950       2/0  3.18.1.5        172.22.87.45 COMMIT  7     8

Total number of gates = 2
Total Gates committed(since bootup or clear counter) = 2
```

The following example shows a typical display for a specific gate. Both downstream and upstream gates are shown unless you also specify either the **downstream** or **upstream** option.

```
Router# show packetcable gate 196

GateID                : 196
Subscriber ID         : 4.4.1.22
GC Address            : 192.168.80.15
State                 : COMMITTED
Gate specs [UPSTREAM]
  Gate classifier     : [protocol 17,
                        src addr/port 4.4.1.22/0,
                        dest addr/port 3.3.1.3/3456
  diffserv dscp      : 0x6000000
  timer t1(ms)       : 180000
  timer t2(ms)       : 2000
  commit flags       : 0x0
  session class      : 0x1
  flowspec # 1       : [r/b/p/m/M 1176256512/1128792064/1176256512/200/200]
                        [R/S: 1176256512/0]
Gate specs [DOWNSTREAM]
  Gate classifier     : [protocol 17,
                        src addr/port 3.3.1.3/0,
                        dest addr/port 4.4.1.22/0
  diffserv dscp      : 0x9000000
  timer t1(ms)       : 180000
  timer t2(ms)       : 2000
  commit flags       : 0x0
  session class      : 0x1
  flowspec # 1       : [r/b/p/m/M 1176256512/1128792064/1176256512/200/200]
                        [R/S: 1176256512/0]
Remote Gate
  address/port        : 172.22.79.22/1812
  gate coord flag     : 2
  algo                : 100
  security key[16]    : 30 31 32 33 34 35 36 37 38 39 30 31 32 33 34 35
Billing Info
  primary RKS         : [addr/port 1.9.62.12/1813]
  secondary RKS       : [addr/port 255.255.255.255/65535]
  flags               : 0
  billing corr ID     : [3D 38 96 CC 20 20 20 20 31 30 20 30 00 00 00 41 ]
```

Table 0-3 describes the major fields shown in the **show packetcable gate** display.

**Table 0-3** show packetcable gate Field Display

| Field         | Description   |
|---------------|---|
| GateID        | Unique number identifying the local gate.                             |
| Slot          | Cable interface on the Cisco CMTS.                                    |
| Subscriber ID | IP address for the subscriber for this service request.               |
| GC-Addr       | IP address for the gate controller that is responsible for this gate. |

**Table 0-3** show packetcable gate Field Display (continued)

| Field                 | Description   |
|-----------------------|---|
| State                 | <p>Describes the current state of the gate in both the upstream and downstream directions. The possible state values are:</p> <ul style="list-style-type: none"> <li>• <b>ALLOC</b> = The CMTS has received a Gate-Alloc command from the gate controller and has created the gate in response. The CMTS must now wait for the request to be authorized.</li> <li>• <b>AUTH</b> = The CMTS has received a Gate-Set command from the gate controller that authorizes the resources needed for the gate request. The CMTS must now wait for the actual resources to be reserved.</li> <li>• <b>RSVD</b> = All required resources for the gate have been reserved.</li> <li>• <b>COMMIT</b> = All resources have been committed at both the local CMTS and remote CMTS. The local CMTS has also received a commit notification from the local MTA and has finished all gate coordination with the remote end. The gate can now pass traffic.</li> <li>• <b>INVLD</b> = The gate is invalid, typically because of an error condition or lack of resources. The CMTS will eventually delete the gate.</li> <li>• <b>UNKWN</b> = The gate is an unknown state.</li> </ul> |
| SFID (us)             | SFID for the upstream associated with this PacketCable gate.  |
| SFID (ds)             | SFID for the downstream associated with this PacketCable gate.  |
| Total number of gates | Displays the total number of gates that are currently allocated, authorized, reserved, or committed.  |
| Total Gates committed | Displays the total number of gates that the CMTS has committed since the CMTS was last reset or since the counters were last cleared.   |

**Tip**

For complete information about the State field, see section 5.4, Gate Control Protocol Operation, in the *PacketCable Dynamic Quality-of-Service Specification* (PKT-SP-DQOS-I03-020116).

**Related Commands**

| Command                                      | Description  |
|--|--|
| <b>clear packetcable gate counter commit</b> | Resets the counters that track the total number of committed gates.                                    |
| <b>packetcable</b>                           | Enables PacketCable operations on the Cisco CMTS.  |
| <b>show packetcable gate counter commit</b>  | Displays the total number of committed gates since system reset or since the counter was last cleared. |
| <b>show packetcable global</b>               | Displays the current PacketCable configuration.  |

# show packetcable gate counter commit

To display the total number of gates that the CMTS has put into the COMMITTED state since the CMTS was last reset or since the counter was last cleared, use the **show packetcable gate counter commit** command in user EXEC or privileged EXEC mode.

**show packetcable gate counter commit**

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

**Command Default** No default behavior or values.

**Command Modes** User EXEC, Privileged EXEC

## Command History

| Release     | Modification   |
|-------------|--|
| 12.2(8)BC2  | This command was introduced for the Cisco uBR7200 series universal broadband router. |
| 12.2(15)BC1 | Support was added for the Cisco uBR10012 router.                                     |

## Usage Guidelines

This command displays the total number of gates that have been committed since the Cisco uBR7200 series router was restarted or since the counter was last cleared with the **clear packetcable gate counter commit** command.



### Note

This command displays only the count of committed gates. It does not include gates that were allocated, authorized, and reserved but that were not put into the COMMITTED state.

## Examples

The following example shows that 132 gates have been committed since the Cisco CMTS was last reset or since the counters were last cleared:

```
Router# show packetcable gate counter commit

Total Gates committed (since bootup or clear counter) = 132
Router#
```

## Related Commands

| Command                                      | Description   |
|--|---|
| <b>clear packetcable gate counter commit</b> | Resets the counters that track the total number of committed gates. |
| <b>packetcable</b>                           | Enables PacketCable operations on the Cisco CMTS.                   |

| Command                        | Description  |
|--------------------------------|--|
| <b>show packetcable gate</b>   | Displays information about one or more gates in the gate database. |
| <b>show packetcable global</b> | Displays the current PacketCable configuration.                    |

# show packetcable gate ipv6

To display information about one or more PacketCable gates associated with IPv6 subscriber IDs in the gate database, use the **show packetcable gate ipv6** command in privileged EXEC mode.

```
show packetcable gate ipv6 summary [downstream {gate-id | ipv6 summary}] [upstream
{gate-id | ipv6 summary}]
```

| Syntax Description | Parameter                        | Description   |
|--------------------|----------------------------------|---|
|                    | <b>ipv6</b>                      | Specifies IPv6 subscriber IDs.  |
|                    | <b>summary</b>                   | Displays a summary of gates containing the gate ID, subscriber ID, subscriber IPv6 address, and the state information.          |
|                    | <b>downstream</b> <i>gate-id</i> | (Optional) Displays information for the specified gate ID in the downstream direction. The valid range is from 0 to 4294967295. |
|                    | <b>upstream</b> <i>gate-id</i>   | (Optional) Displays information for the specified gate ID in the upstream direction. The valid range is from 0 to 4294967295.   |

**Command Default** None

**Command Modes** Privileged EXEC(#)

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCE | This command was introduced. |

**Usage Guidelines** This command provides a summary of all active gates (downstream or upstream gates) for IPv6 subscribers.

**Examples** The following is a sample output of the **show packetcable gate ipv6** command that shows a summary of all the active downstream and upstream gates for IPv6 subscribers on a Cisco CMTS router:

```
Router# show packetcable gate ipv6 summary

GateID      i/f                SubscriberID          State  SFID(us)  SFID(ds)
-----
13582       Ca8/1/0            2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  74
29962       Ca8/1/0            2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  73
46354       Ca8/1/0            2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  72
62738       Ca8/1/0            2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT                      69
```

```
TTotal number of gates = 4
```

```
Total Gates committed(since bootup or clear counter) = 8
```

The following is a sample output of the **show packetcable gate ipv6** command that shows a summary of all downstream gates for IPv6 subscribers on a Cisco CMTS router:

```
Router# show packetcable gate downstream ipv6 summary
```

```
GateID      i/f                SubscriberID          State  SFID(us) SFID(ds)
62738      Ca8/1/0           2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  69
```

```
Total number of DS gates = 1
```

```
Total Gates committed(since bootup or clear counter) = 8
```

The following is a sample output of the **show packetcable gate ipv6** command that shows a summary of all upstream gates for IPv6 subscribers on the Cisco CMTS router:

```
Router# show packetcable gate upstream ipv6 summary
```

```
GateID      i/f                SubscriberID          State  SFID(us) SFID(ds)
13582      Ca8/1/0           2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  74
29962      Ca8/1/0           2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  73
46354      Ca8/1/0           2001:40:1:42:C0B4:84E5:5081:9B5C  COMMIT  72
```

```
Total number of US gates = 3
```

```
Total Gates committed(since bootup or clear counter) = 8
```

[Table 0-3](#) describes the significant fields shown in the command display.

**Table 4** *show packetcable gate Field Display*

| Field         | Description  |
|---------------|--|
| GateID        | Unique number identifying the local gate.  |
| i/f           | Cable interface on the Cisco CMTS.   |
| Subscriber ID | IPv6 address of the subscriber for this service request.   |
| State         | Describes the state of the gate in both the upstream and downstream directions. The possible state values are: <ul style="list-style-type: none"> <li>• <b>ALLOC</b>—The CMTS has received a Gate-Alloc command from the gate controller and has created the gate in response. The CMTS must now wait for the request to be authorized.</li> <li>• <b>AUTH</b>—The CMTS has received a Gate-Set command from the gate controller that authorizes the resources needed for the gate request. The CMTS must now wait for the actual resources to be reserved.</li> <li>• <b>RSVD</b>—All required resources for the gate have been reserved.</li> <li>• <b>COMMIT</b>—All resources are committed at both the local CMTS and remote CMTS. The local CMTS has also received a commit notification from the local MTA and has completed all gate coordination with the remote end. The gate can now pass traffic.</li> <li>• <b>INVLD</b>—The gate is invalid, typically because of an error condition or lack of resources. The CMTS will eventually delete the gate.</li> <li>• <b>UNKWN</b>—The gate is in an unknown state.</li> </ul> |
| SFID (us)     | SFID for the upstream associated with this PacketCable gate.   |
| SFID (ds)     | SFID for the downstream associated with this PacketCable gate.   |

**Table 4** *show packetcable gate Field Display (continued)*

| Field   | Description  |
|---|--|
| Total number of gates                                 | Displays the total number of PCMM gates that are allocated, authorized, reserved, or committed.  |
| Total Gates committed (since bootup or clear counter) | Displays the total number of PCMM gates that the CMTS has committed since the CMTS was last reset or since the counters were last cleared. |

**Related Commands**

| Command                                     | Description  |
|---|--|
| <b>packetcable</b>                          | Enables PacketCable operations on a Cisco CMTS router.   |
| <b>show packetcable gate</b>                | Displays information about one or more PacketCable gates in the gate database.                                     |
| <b>show packetcable gate counter commit</b> | Displays the total number of committed PacketCable gates since system reset or since the counter was last cleared. |
| <b>show packetcable global</b>              | Displays the PacketCable configuration.  |

# show packetcable gate multimedia

To display information about the total number of PacketCable Multimedia (PCMM) multicast gates, use the **show packetcable gate multimedia** command in privileged EXEC mode.

## show packetcable gate multimedia multicast summary

| Syntax Description | multicast | Displays PCMM multicast information.   |
|--------------------|-----------|--|
|                    | summary   | Provides a summary of PCMM multicast gate ID, subscriber ID, gate controller address, and current state information. |

**Command Default** None

**Command Modes** Privileged EXEC (#)

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCE | This command was introduced. |

### Examples

The following is a sample output of the **show packetcable gate multimedia** command on a Cisco CMTS router:

```
Router# show packetcable gate multimedia multicast summary
```

```
GateID      i/f          SubscriberID GC-Addr      State      Type  SFID(us) SFID(ds)
134         Ca5/0/0     60.1.1.202  2.39.26.19  COMMIT    MM    4         4
```

```
Total number of Multimedia-MCAST gates = 1
```

```
Total Gates committed(since bootup or clear counter) = 1
```

[Table 0-3](#) describes the significant fields shown in the display.

**Table 5** *show packetcable gate multimedia Field Descriptions*

| Field         | Description   |
|---------------|---|
| GateID        | Unique number identifying the local PCMM multicast gate.            |
| i/f           | Cable interface on the Cisco CMTS router.                           |
| Subscriber ID | IP address of the subscriber for this service request.              |
| GC-Addr       | IP address of the gate controller that is responsible for the gate. |

**Table 5** *show packetcable gate multimedia Field Descriptions (continued)*

| Field   | Description  |
|---|--|
| State   | <p>Describes the current state of the gate in the downstream direction. The possible state values are:</p> <ul style="list-style-type: none"> <li>• <b>ALLOC</b>—The CMTS has received a Gate-Alloc command from the gate controller and has created the gate in response. The CMTS must now wait for the request to be authorized.</li> <li>• <b>AUTH</b>—The CMTS has received a Gate-Set command from the gate controller that authorizes the resources needed for the gate request. The CMTS must now wait for the actual resources to be reserved.</li> <li>• <b>RSVD</b>—All required resources for the gate have been reserved.</li> <li>• <b>COMMIT</b>—All resources are committed at both the local CMTS and remote CMTS. The local CMTS has also received a commit notification from the local MTA and has completed all gate coordination with the remote end. The gate can now pass traffic.</li> <li>• <b>INVLD</b>—The gate is invalid, typically because of an error condition or lack of resources. The CMTS will eventually delete the gate.</li> <li>• <b>UNKWN</b>—The gate is in an unknown state.</li> </ul> |
| SFID (us)   | Service flow ID (SFID) for the upstream associated with this PCMM multicast gate.  |
| SFID (ds)   | SFID for the downstream associated with this PCMM multicast gate.  |
| Total number of Multimedia-MCAST gates                | Total number of PCMM multicast gates that are currently allocated, authorized, reserved, or committed.   |
| Total Gates committed (since bootup or clear counter) | Total number of PCMM multicast gates that are committed since the Cisco CMTS router was last reset or since the counters were last cleared.  |

**Related Commands**

| Command                        | Description   |
|--------------------------------|---|
| <b>cable multicast source</b>  | Configures a multicast session range for a PCMM multicast group on a Cisco CMTS router. |
| <b>show cable multicast db</b> | Displays the contents of the multicast explicit tracking database.                      |

# show packetcable global

To display the current PacketCable configuration, including the maximum number of gates, the Element ID, and the DQoS timer values, use the **show packetcable global** command in user EXEC or privileged EXEC mode.

## show packetcable global

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

**Command Default** No default behavior or values.

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.2(8)BC2  | This command was introduced for the Cisco uBR7200 series universal broadband router.   |
|                 | 12.2(11)BC1 | Support was added to display the Element ID for the CMTS.  |
|                 | 12.2(11)BC2 | Support was added to display whether non-PacketCable UGS service flows are authorized or not. The T2 and T5 timers were removed from the display to conform to the requirements of the PacketCable DQoS Engineering Change Notice (ECN) 02148. |
|                 | 12.2(15)BC1 | Support was added for the Cisco uBR10012 router.   |

**Examples** The following example shows a typical PacketCable configuration that is enabled and has the default values for all configurable parameters, except for the Element ID:

```
Router# show packetcable global

Packet Cable Global configuration:
Enabled      : Yes
Element ID: 12456
Max Gates   : 1048576
Allow non-PacketCable UGS
Default Timer value -
  T0        : 30000 msec
  T1        : 300000 msec

Router#
```

[Table 0-6](#) describes the fields shown in the **show packetcable global** display.

**Table 0-6** show packetcable global Field Display

| Field  | Description  |
|--|--|
| Enabled  | Displays whether PacketCable operation is enabled or disabled. (See the <b>packetcable</b> command.)   |
| Element ID   | Displays the Element ID for the CMTS. If you do not manually configure this parameter with the <b>packetcable element-id</b> command, it defaults to a random value between 0 and 99,999 when PacketCable operations is enabled.   |
| Max Gates  | Displays the maximum number of gates that the CMTS supports. (See the <b>packetcable gate maxcount</b> command.)   |
| Allow non-PacketCable UGS or Not Allow non-PacketCable UGS | Displays whether non-PacketCable, DOCSIS-style UGS service flows are allowed when PacketCable operations are enabled. (See the <b>packetcable authorize vanilla-docsis-mta</b> command.)   |
| Default Timer value  | Displays the current values of the following DQoS timers that the CMTS maintains. (See the <b>packetcable timer</b> command.)  |
| <b>T0</b>  | T0 specifies the amount of time that a gate ID can remain allocated without any specified gate parameters. The timer begins counting when a gate is allocated with a Gate-Alloc command. The timer stops when a Gate-Set command marks the gate as Authorized. If the timer expires without a Gate-Set command being received, the gate is deleted.<br><br>The valid range is 1 to 1,000,000,000 milliseconds, with a default value of 30000 milliseconds (30 seconds).  |
| <b>T1</b>  | T1 specifies the amount of time that an authorization for a gate can remain valid. It begins counting when the CMTS creates a gate with a Gate-Set command and puts the gate in the Authorized state. The timer stops when the gate is put into the committed state. If the timer expires without the gate being committed, the CMTS must close the gate and release all associated resources.<br><br>The valid range is 1 to 1,000,000,000 milliseconds, with a default value of 200000 milliseconds (200 seconds). |

**Related Commands**

| Command   | Description  |
|---|--|
| <b>packetcable</b>                              | Enables PacketCable operations on the Cisco CMTS.  |
| <b>packetcable authorize vanilla-docsis-mta</b> | Allows Unsolicited Grant Service (UGS) service flows without a proper PacketCable gate ID when PacketCable operations are enabled on the Cisco CMTS. |
| <b>packetcable element-id</b>                   | Configures the PacketCable Event Message Element ID on the Cisco CMTS.   |
| <b>packetcable gate maxcount</b>                | Changes the maximum number of PacketCable gate IDs in the gate database on the Cisco CMTS.   |
| <b>packetcable timer</b>                        | Changes the value of the different PacketCable DQoS timers.  |
| <b>show packetcable gate</b>                    | Displays information about one or more gates in the gate database.   |
| <b>show packetcable gate counter commit</b>     | Displays the total number of committed gates since system reset or since the counter was last cleared.   |

# show pxf cable

To display information about the multicast echo, packet intercept, or source-verify features for one or all cable interfaces, use the **show pxf cable** command in user EXEC or privileged EXEC mode.

```
show pxf cable { feature-table [ cx/y/z ] | mactable cx/y/z [sid] |
multicast-echo ds-group | multicast-echo mcast-addr | source-verify [ip address] }
```

| Syntax Description                            |  |   |
|---|--|---|
| <b>feature-table</b> [ <i>cx/y/z</i> ]        |  | Displays the multicast echo and packet intercept status on the PXF processor. If given without any options, displays the status for all cable interfaces and subinterfaces. If given with an optional cable interface, displays the status for that particular interface. |
| <b>mactable</b> <i>cx/y/z</i> [ <i>sid</i> ]  |  | Displays memory and service ID (SID) information for a particular cable interface. If the optional <i>sid</i> parameter is specified, displays information for that particular SID.   |
| <b>multicast-echo ds-group</b>                |  | Displays the cable interfaces that are associated with each downstream group, where each downstream group is a unique DOCSIS MAC domain. (Interfaces that are bundled together are considered one MAC domain.)  |
| <b>multicast-echo</b><br><i>mcast-addr</i>    |  | Displays the service flow ID (SFID) information for all multicast addresses that hash to the same index as the specified multicast IP address.  |
| <b>source-verify</b><br>[ <i>ip-address</i> ] |  | Displays the interface and SFID mapping tables that are maintained by the source-verify feature. If the optional <i>ip-address</i> parameter is specified, displays information only for that particular IP address.  |

## Defaults

No default behavior or values.

## Command Modes

User EXEC (>)  
Privileged EXEC (#)

## Command History

| Release                | Modification   |
|------------------------|--|
| 12.2(11)CY,12.2(11)BC2 | This command was introduced as <b>show hardware pxf cable</b> for the Cisco uBR10012 router. |
| 12.2(15)BC2            | This command was renamed from <b>show hardware pxf cable</b> to <b>show pxf cable</b> .      |
| 12.3BC                 | This command was integrated into Cisco IOS release 12.3BC.                                   |
| 12.2(33)SCA            | This command was integrated into Cisco IOS release 12.2(33)SCA.                              |
| 12.2(33)SCB            | The command was modified and <b>verbose</b> option was removed.                              |

## Usage Guidelines

The **show pxf cable** command displays information about whether multicast echo and packet intercept are enabled on the cable interfaces. It can also be used to display the service flow ID (SFID) used for each multicast address that is being processed by the router.

**Note** The **source-verify** option is not supported on the PRE-2 module. Instead, use the **show pxf cpu cef verbose** command to display the primary SID information on the PRE-2 module.

## Examples

The following example shows a typical display for the **show pxf cable feature-table** command for all cable interfaces:

```
Router# show pxf cable feature-table
```

| Interface    | SWInterface | VCCI | McastEcho | Intercept | DSGroup | InterceptGroup |
|--------------|-------------|------|-----------|-----------|---------|----------------|
| Cable5/0/0   | Cable5/0/0  | 3    | On        | On        | 0       | 0              |
| Cable5/0/0.1 | Cable5/0/0  | 9    | On        | On        | 0       | 0              |
| Cable5/0/1   | Cable5/0/1  | 4    | On        | Off       | 255     | -              |
| Cable6/0/0   | Cable6/0/0  | 5    | On        | Off       | 255     | -              |
| Cable6/0/1   | Cable6/0/1  | 6    | On        | Off       | 255     | -              |
| Cable7/0/0   | Cable7/0/0  | 7    | On        | Off       | 1       | -              |
| Cable7/0/1   | Cable7/0/1  | 8    | On        | Off       | 2       | -              |

The following example shows a typical display for the **show pxf cable feature-table** option for a particular cable interface:

```
Router# show pxf cable feature-table c5/0/0
```

| Interface    | SWInterface | VCCI | McastEcho | Intercept | DSGroup | InterceptGroup |
|--------------|-------------|------|-----------|-----------|---------|----------------|
| Cable5/0/0   | Cable5/0/0  | 3    | On        | On        | 0       | 0              |
| Cable5/0/0.1 | Cable5/0/0  | 9    | On        | On        | 0       | 0              |

The following example shows a typical display for the **show pxf cable feature-table** option when a cable interface has a bundle interface configured without a corresponding master interface:

```
Router# show pxf cable feature-table
```

| Interface  | SWInterface                         | VCCI | McastEcho | Intercept | DSGrp | InterceptGrp |
|------------|-------------------------------------|------|-----------|-----------|-------|--------------|
| Cable5/0/0 | <No Cable Bundle Master Configured> |      |           |           |       |              |
| Cable5/0/1 | Cable5/0/1                          | 4    | On        | Off       | 11    | -            |
| Cable5/1/0 | <No Cable Bundle Master Configured> |      |           |           |       |              |
| Cable5/1/1 | Cable5/1/1                          | 6    | On        | Off       | 15    | -            |
| Cable6/0/0 | Cable6/0/0                          | 7    | On        | Off       | 0     | -            |
| Cable6/0/1 | Cable6/0/1                          | 8    | On        | Off       | 1     | -            |
| Cable6/1/0 | Cable6/1/0                          | 9    | On        | Off       | 6     | -            |
| Cable6/1/1 | Cable6/1/1                          | 10   | On        | Off       | 7     | -            |
| Cable7/0/0 | Cable7/0/0                          | 11   | On        | Off       | 8     | -            |
| Cable7/0/1 | Cable7/0/1                          | 12   | On        | Off       | 9     | -            |
| Cable7/1/0 | Cable7/1/0                          | 13   | On        | Off       | 4     | -            |
| Cable7/1/1 | Cable7/1/1                          | 14   | On        | Off       | 5     | -            |
| Cable8/0/0 | Cable8/0/0                          | 15   | On        | Off       | 255   | -            |
| Cable8/0/1 | Cable8/0/1                          | 16   | On        | Off       | 3     | -            |
| Cable8/1/0 | Cable8/1/0                          | 17   | On        | Off       | 12    | -            |
| Cable8/1/1 | Cable8/1/1                          | 18   | On        | Off       | 13    | -            |

[Table 0-7](#) describes the fields shown by both forms of the **show pxf cable feature-table** command:

**Table 0-7** show pxf cable feature-table Field Descriptions

| Field       | Description  |
|-------------|--|
| Interface   | Identifies the cable interface or subinterface.                    |
| SWInterface | Identifies the master cable interface for bundled interfaces.      |
| McastEcho   | Displays whether multicast echo is enabled (On) or disabled (Off). |

**Table 0-7** show pxf cable feature-table Field Descriptions (continued)

| Field          | Description  |
|----------------|--|
| VCCI           | Displays the Virtually Cool Common Index (VCCI) for this cable interface or subinterface. The VCCI is an index that uniquely identifies every interface or subinterface on the PXF processor, and that quickly maps that interface to the appropriate set of services and features.  |
| Intercept      | Displays whether packet intercept, as per the Communications Assistance of Law Enforcement Act (CALEA), is enabled (On) or disabled (Off).   |
| DSGroup        | Displays the downstream group (unique MAC domain) that is associated with this interface or subinterface. Interfaces that are bundled together are considered one MAC domain.<br><br><b>Note</b> A downstream group number of 255 indicates that the CMTS has not assigned the interface to a MAC domain, typically because the interface is shutdown. |
| InterceptGroup | Displays the intercept packet group assigned to this cable interface.  |

The following example shows a typical display for the **show pxf cable mactable** command for a particular cable interface:

```
Router# show pxf cable mactable c5/1/0
```

```
SID   VCCI   FIB Index   SrcVfy   Pri SID   CM IP Address
1     3      0           On       1        10.10.11.31
2     3      0           On       2        10.10.11.129
```

[Table 0-8](#) describes the fields shown by the **show pxf cable mactable** command:

**Table 0-8** show pxf cable mactable Field Descriptions

| Field         | Description   |
|---------------|---|
| SID           | Identifies the service ID (SID).  |
| VCCI          | Displays the Virtually Cool Common Index (VCCI) for this cable interface or subinterface. The VCCI is an index that uniquely identifies every interface or subinterface on the PXF processor, and that quickly maps that interface to the appropriate set of services and features. |
| FIB Index     | Identifies the forwarding information base (FIB) being used.  |
| SrcVfy        | Identifies whether the source-verify feature (enabled with the <b>cable source-verify</b> command) is On or Off for this SID and interface.   |
| Pri SID       | Identifies the primary SID associated with this SID, in case this SID is a secondary or dynamic SID.  |
| CM IP Address | Displays the IP address for the CM that is associated with this SID.  |

The following example shows a typical display for the **show pxf cable multicast-echo ds-group** command, listing each downstream multicast group and its associated cable interface:

```
Router# show pxf cable multicast-echo ds-group
```

```
DS Group      Interface
0             Cable5/0/0
1             Cable7/0/0
```

2

Cable7/0/1

The following example shows a typical display for the **show pxf cable multicast-echo** command for a particular multicast address:

```
Router# show pxf cable multicast-echo 230.1.1.1
```

```
Src          I/f          SFID    DS Jib Header          Packets    Bytes
230.1.1.1   Cable7/0/1  16385  0x0000 0000 1000 0001 1000          321       2160
```

Table 0-9 describes the fields shown by the **show pxf cable multicast-echo** command:

**Table 0-9 show pxf cable multicast-echo Field Descriptions**

| Field         | Description  |
|---------------|--|
| Src           | Multicast address being displayed.   |
| I/F           | Cable interface being used for this multicast address.   |
| SFID          | Displays the service flow ID (SFID) for this particular multicast address.   |
| DS Jib Header | Shows the bitmask used for this multicast address on the PRE's MAC-layer processor. The bitmask consists of ten hexadecimal bytes in the following format (reading left to right, from most significant to least significant bit): <ul style="list-style-type: none"> <li>• Bytes 9:8 = Specifies the key index for the downstream.</li> <li>• Bytes 7:6 = Identifies the rule number used for packet header suppression (if enabled)</li> <li>• Byte 5 = Bitmask that defines the type of packet transmitted: <ul style="list-style-type: none"> <li>– Bit 4 = 1 if padding CRC for data packets, 0 if not padding the CRC</li> <li>– Bit 3 = 1 if inserting an extended header (EH) for PHS processing</li> <li>– Bit 2 = 1 if inserting an extended header (EH) for BPI+ processing</li> <li>– Bits 1:0 = Specifies the packet type: <ul style="list-style-type: none"> <li>00 = Data packet</li> <li>01 = MAC management message for transmitted packets</li> <li>10 = Internal MAP message on upstream</li> <li>11 = Special packet</li> </ul> </li> </ul> </li> <li>• Byte 4 = Bitmask that identifies the type of map control and key sequence for the packet: <ul style="list-style-type: none"> <li>– Bits 6:4 = Destination upstream for the MAP message</li> <li>– Bits 3:0 = BPI Key Sequence number</li> </ul> </li> <li>• Bytes 3:2 = Index to obtain the downstream modem statistics.</li> <li>• Byte 1 = Specifies the assumed minimum size of a packet data unit. Multiply this byte by 4 to get the actual minimum size in bytes.</li> <li>• Byte 0 = Specifies the DOCSIS header size, with a maximum value of 0xE0 (248 decimal).</li> </ul> |
| Packets       | Number of packets sent to this address.  |
| Bytes         | Number of bytes sent to this address.  |

The following example shows a typical display for the **show pxf cable source-verify** command:

```
Router# show pxf cable source-verify

IP Address      Interface      Fib Index      Mac-Domain      SID
50.1.1.3        Cable5/0/0    0              0              1
50.1.1.29       Cable5/0/0    0              0              2
50.1.1.32       Cable5/0/0    0              0              2
50.1.2.6        Cable8/0/0    0              6              1
50.1.2.19       Cable8/0/0    0              6              1
```

Table 0-10 describes the fields shown by the **show pxf cable source-verify** command:

**Table 0-10 show pxf cable source-verify Field Descriptions**

| Field      | Description   |
|------------|---|
| IP Address | Identifies the IP addresses that have been verified by the source-verify feature. |
| Interface  | Identifies the cable interface or subinterface used for this IP address.          |
| FIB Index  | Identifies the forwarding information base (FIB) being used.                      |
| Mac-Domain | Identifies the MAC DOCSIS downstream domain for this IP address.                  |
| SID        | Identifies the service ID (SID).  |

#### Related Commands

| Command                         | Description  |
|---------------------------------|--|
| <b>cable source-verify</b>      | Enables verification of IP addresses for CMs and CPE devices on the upstream.  |
| <b>clear pxf</b>                | Clears the direct memory access (DMA) and error checking and correcting (ECC) error counters on the PXF processor.           |
| <b>debug pxf</b>                | Enables debugging of the PXF subsystems on the active PRE1 module on the Cisco uBR10012 router.                              |
| <b>show pxf cable interface</b> | Displays display DOCSIS-related information about a particular service ID (SID) on a particular cable interface.             |
| <b>show pxf cpu</b>             | Displays the display different statistics about the operation of the CPU processor during PXF processing.                    |
| <b>show pxf microcode</b>       | Displays identifying information for the microcode being used on the processor.  |
| <b>show pxf xcm</b>             | Displays the current state of error checking and correcting (ECC) for the External Column Memory (XCM) on the PXF processor. |

# show pxf cable controller

To display information about radio frequency (RF) channel Versatile Traffic Management System (VTMS) links and link queues, use the **show pxf cable controller** command in privileged EXEC mode.

**show pxf cable controller modular-cable** *slot/subslot/unit* **rf-channel** *channel* [**link queues**]

| Syntax Description | modular-cable            | Specifies the modular cable interface.  |
|--------------------|--------------------------|---|
|                    | <i>slot/subslot/unit</i> | Identifies a cable interface on the Cisco uBR10012 router. The following are valid values: <ul style="list-style-type: none"> <li>• <i>slot</i>—1 or 3</li> <li>• <i>subslot</i>—0 or 1</li> <li>• <i>unit</i>—0</li> </ul> |
|                    | <b>rf-channel</b>        | Specifies the RF channel physical port on the Wideband SPA field-programmable gate array (FPGA).  |
|                    | <i>channel</i>           | Specifies the number of the RF channel. The range is 0 to 23.   |
|                    | <b>link queues</b>       | (Optional) Displays the link queue information for the specified RF channel.  |

**Command Modes** Privileged EXEC (#)

| Command History | Release     | Modification  |
|-----------------|-------------|---|
|                 | 12.3(23)BC1 | This command was introduced.                                    |
|                 | 12.2(33)SCB | This command was integrated into Cisco IOS Release 12.2(33)SCB. |

**Usage Guidelines** The **show pxf cable controller** command displays information about VTMS link queues only on the Cisco uBR10012 universal broadband router.

**Examples** The following example using the **show pxf cable controller** command, omitting the **link queues** option, displays only VTMS-related output:

```
Router# show pxf cable controller modular-cable 1/0/0 rf-channel 3

Link ID is 32259
      link next_send: 0x00000000   channel number: 0
      temporary bgbw: 0x00000000   reserved bgbw: 0x00000000
col.6 link bandwidth mult: 55778   shift: 18
col.7 link bandwidth mult: 55778   shift: 18
      link aggregate cir: 0x00000000   aggregate eir: 0x00000000
      bw reclaimed/trunc eir: 0/0     link cir_max: 0xFFFF
      link cir_sum: 70               link eir_sum: 2
      link bw_sum: 0                 act. link q num: 0
```

The following example using the **show pxf cable controller** command including the **link queues** option, displays VTMS-related output as well as link queue-related output:

```
Router# show pxf cable controller modular-cable 1/0/0 rf-channel 3 link-queues
```

```
Link ID is 32259
      link next_send:    0x00000000    channel number:    0
      temporary bgbw:   0x00000000    reserved bgbw:    0x00000000
col.6 link bandwidth mult: 55778                shift:    18
col.7 link bandwidth mult: 55778                shift:    18
      link aggregate cir: 0x00000000    aggregate eir:    0x00000000
      bw reclaimed/trunc eir: 0/0                link cir_max:    0xFFFF
      link cir_sum:      70                link eir_sum:    2
      link bw_sum:      0                act. link q num: 0
```

Link Queues :

| QID | CIR(act/conf) | EIR | MIR         | WB Chan. | Status   |
|-----|---------------|-----|-------------|----------|----------|
| 420 | 13107/13107   | 1/1 | 65535/65535 | 0        | Inactive |
| 423 | 32768/32768   | 1/1 | 65535/65535 | 2        | Inactive |

See [Table 11](#) for descriptions of link queue fields.

**Table 11** *show pxf cable controller Link Queue Field Descriptions*

| Field          | Description   |
|----------------|---|
| QID            | Displays the identification number of the link queue.   |
| CIR (act/conf) | Displays the information for the committed information rate (CIR) of link queues on this RF channel. <ul style="list-style-type: none"> <li>The first number, <i>act</i>, indicates the parameter that a link queue is actually using.</li> <li>The second number, <i>conf</i>, indicates the parameter that is configured for a link queue.</li> </ul> |
| EIR            | Displays the information for the excess information rate (EIR) of link queues on this RF channel. <ul style="list-style-type: none"> <li>The first number in the output indicates the parameter that a link queue is actually using.</li> <li>The second number in the output indicates the parameter that is configured for a link queue.</li> </ul>   |
| MIR            | Displays the information for the maximum information rate (MIR) of link queues on this RF channel. <ul style="list-style-type: none"> <li>The first number in the output indicates the parameter that a link queue is actually using.</li> <li>The second number in the output indicates the parameter that is configured for a link queue.</li> </ul>  |
| WB Chan        | The number of the wideband cable channel.   |
| Status         | Displays the state of the link queue.   |

■ show pxf cable controller

| Related Commands | Command                             | Description  |
|------------------|-------------------------------------|--|
|                  | <b>debug cr10k-rp<br/>dbs-queue</b> | Displays debug information for dynamic bandwidth sharing (DBS) on the Cisco uBR10012 universal broadband router. |
|                  | <b>show pxf cpu queue</b>           | Displays parallel express forwarding (PXF) queueing and link queue statistics.                                   |

# show pxf cable feature

To display multicast echo, packet intercept, or source-verify features for one or all cable interfaces, to include information for virtual interface bundles, use the **show pxf cable feature** command in privileged EXEC mode.

## show pxf cable feature

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

**Command Default** Display output without page breaks and remove passwords and other security information.

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release    | Modification  |
|-----------------|------------|---|
|                 | 12.3(21)BC | This command was introduced to support Multicast with Virtual Interface Bundling on the Cisco CMTS. |

**Usage Guidelines** Refer to the following document on Cisco.com for additional information about cable interface bundling and virtual interface bundling on the Cisco CMTS:

- *Cable Interface Bundling and Virtual Interface Bundling on the Cisco CMTS*

**Examples** The following example illustrates Multicast Echo and virtual interface bundling information on the Cisco uBR10012 router.

```
Router# show pxf cable feature
Interface  SWInterface  VCCI  McastEcho  Intercept  SrcVfy  DHCP  DSGrp  InterceptGrp
Cable5/0/0  Bundle1     36    On          Off        On      On     On      0
Cable5/0/1  Cable5/0/1  15    On          Off        Off     Off    Off     11
Cable5/1/0  Bundle1     36    On          Off        On      On     On      0
Cable5/1/1  Cable5/1/1  17    On          Off        Off     Off    Off     9
Cable6/0/0  Bundle1     36    On          Off        On      On     On      0
Cable6/0/1  Cable6/0/1  19    On          Off        Off     Off    Off     12
Cable6/1/0  Cable6/1/0  20    On          Off        Off     Off    Off     7
Cable6/1/1  Cable6/1/1  21    On          Off        Off     Off    Off     8
Cable7/0/0  Cable7/0/0  22    On          Off        Off     Off    Off     255
Cable7/0/0  Cable7/0/0.1  42    On          Off        Off     Off    Off     255
Cable7/0/1  Bundle200   38    On          Off        Off     Off    Off     3
```

■ show pxf cable feature

**Related Commands**

| <b>Command</b>                             | <b>Description</b>   |
|--|--|
| <b>cable bundle</b>                        | Configures a cable interface to belong to an interface bundle or virtual interface bundle.   |
| <b>show arp</b>                            | Displays the entries in the router's ARP table.  |
| <b>show cable bundle forwarding-table</b>  | Displays the MAC forwarding table for the specified bundle, showing the MAC addresses of each cable modem in a bundle and the physical cable interface that it is currently using. |
| <b>show cable modem</b>                    | Displays the cable modems that are online both before and after cable interface bundling has been configured.  |
| <b>show running-config interface cable</b> | Displays the configuration for the specified cable interface.  |

# show pxf cable interface

To display information about a particular service ID (SID) on a particular cable interface, use the **show pxf cable** command in user EXEC or privileged EXEC mode.

```
show pxf cable interface cable x/y/z sid {classifiers | mac-rewrite | queue | service-flow ds |
service-flow us}
```

| Syntax Description        |  |   |
|---------------------------|--|---|
| <b>cable</b> <i>x/y/z</i> |  | Identifies the cable interface for which information should be displayed.   |
| <i>sid</i>                |  | Identifies the service ID (SID) for which information should be displayed. The valid range is 1 to 8191.            |
| <b>classifiers</b>        |  | Displays the packet classifiers used for this SID.  |
| <b>mac-rewrite</b>        |  | Displays the CPE MAC information for this SID.  |
| <b>queue</b>              |  | Displays the status of the queues being used by this SID.   |
| <b>service-flow ds</b>    |  | Displays the service flow IDs (SFID) associated with the given SID on the downstream for the given cable interface. |
| <b>service-flow us</b>    |  | Displays the SFIDs associated with the given SID on the upstream for the given cable interface.                     |

**Command Default** No default behavior or values.

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification  |
|-----------------|-------------|---|
|                 | 12.2(11)BC2 | This command was introduced as <b>show hardware pxf cable</b> for the Cisco uBR10012 router.                |
|                 | 12.2(15)BC2 | This command was renamed from <b>show hardware pxf cable interface</b> to <b>show pxf cable interface</b> . |

**Usage Guidelines** The **show pxf cable interface** command displays the DOCSIS-related information for a particular service ID (SID) on a particular cable interface.

**Examples** The following example shows a typical display for SID 1 on cable interface c8/0/0 for the **show pxf cable interface classifiers** command:

```
Router# show pxf cable interface c8/0/0 1 classifiers
CM Classifiers:
Mac Rw Index: 18          CCB Index: 47
id=1, sfid=91 CFR Index 16461 RP sfindex 16461,
prio=7, sip=0.0.0.0, sip mask=0.0.0.0
dip=0.0.0.0, dip mask=0.0.0.0, prot=17, tos=0,FF
sport = 0,65535, dport = 0,65535 matches = 0
```

## show pxf cable interface

```
id=2, sfid=92 CFR Index 16462 RP sfindex 16462,
  prio=6, sip=0.0.0.0, sip mask=0.0.0.0
  dip=1.11.22.2, dip mask=255.255.255.255, prot=256, tos=0,FF
  sport = 0,65535, dport = 0,65535 matches = 0

id=0, sfid=0 CFR Index 0 RP sfindex 0,
  prio=0, sip=0.0.0.0, sip mask=0.0.0.0
  dip=0.0.0.0, dip mask=0.0.0.0, prot=0, tos=2,1
  sport = 1000,500, dport = 1000,500 matches = 0

id=0, sfid=0 CFR Index 0 RP sfindex 0,
  prio=0, sip=0.0.0.0, sip mask=0.0.0.0
  dip=0.0.0.0, dip mask=0.0.0.0, prot=0, tos=2,1
  sport = 1000,500, dport = 1000,500 matches = 0
-----
```

Router#



### Note

For a description of the fields that are displayed by this command, see section C.2.1., Packet Classification Encodings, in Appendix C of the DOCSIS 1.1 specification (*Data-Over-Cable Service Interface Specifications Radio Frequency Interface Specification, SP-RFIV1.1-I08-020301*).

The following example shows a typical display for SID 1 on cable interface c8/0/0 for the **show pxf cable interface mac-rewrite** command:

```
Router# show pxf cable interface c8/0/0 1 mac-rewrite
```

```
CPE Information for Interface Cable8/0/0 SID 1:
  Link Table Slot: 18 Mac-rw-index: 18
```

Router#

The following example shows a typical display for SID 1 on cable interface c8/0/0 for the **show pxf cable interface queue** command:

```
Router# show pxf cable interface c8/0/0 1 queue
```

```
RP SFID 16460 LC SFID 4
Queue Index: 281          QID 281 VCCI 6161          ClassID 9          Refcount 1
  Priority: Lo          Rates:(Act/Conf) CIR 0/0 MIR 0/16383 EIR 0/431
  Statistics: Length 0 Pkts 0 Octets 0 TailDrops 0 BufferDrops 0

RP SFID 16461 LC SFID 91
Queue Index: 282          QID 282 VCCI 6161          ClassID 10         Refcount 1
  Priority: Lo          Rates:(Act/Conf) CIR 0/0 MIR 0/16383 EIR 0/431
  Statistics: Length 0 Pkts 0 Octets 0 TailDrops 0 BufferDrops 0

RP SFID 16462 LC SFID 92
Queue Index: 283          QID 283 VCCI 6161          ClassID 11         Refcount 1
  Priority: Lo          Rates:(Act/Conf) CIR 0/0 MIR 0/16383 EIR 0/431
  Statistics: Length 0 Pkts 0 Octets 0 TailDrops 0 BufferDrops 0

RP SFID 16463 LC SFID 93
Queue Index: 284          QID 284 VCCI 6161          ClassID 12         Refcount 1
  Priority: Lo          Rates:(Act/Conf) CIR 0/0 MIR 0/16383 EIR 0/431
  Statistics: Length 0 Pkts 0 Octets 0 TailDrops 0 BufferDrops 0

RP SFID 16464 LC SFID 94
Queue Index: 285          QID 285 VCCI 6161          ClassID 13         Refcount 1
  Priority: Lo          Rates:(Act/Conf) CIR 0/0 MIR 0/16383 EIR 0/431
  Statistics: Length 0 Pkts 0 Octets 0 TailDrops 0 BufferDrops 0
```

Router#

The following example shows a typical display for SID 1 on cable interface c8/0/0 for the **show pxf cable interface service-flow ds** command:

Router# **show pxf cable interface c8/0/0 1 service-flow ds**

| RP SFID | LC SFID | Bytes | Packets | QID |
|---------|---------|-------|---------|-----|
| 16460   | 4       | 0     | 0       | 281 |
| 16461   | 91      | 0     | 0       | 282 |
| 16462   | 92      | 0     | 0       | 283 |
| 16463   | 93      | 0     | 0       | 284 |
| 16464   | 94      | 0     | 0       | 285 |

Router#

The following example shows a typical display for SID 1 on cable interface c8/0/0 for the **show pxf cable interface service-flow us** command:

Router# **show pxf cable interface c8/0/0 1 service-flow us**

| SFID | SID |
|------|-----|
| 3    | 1   |
| 90   | 21  |

Router#

#### Related Commands

| Command                   | Description  |
|---------------------------|--|
| <b>clear pxf</b>          | Clears the direct memory access (DMA) and error checking and correcting (ECC) error counters on the PXF processor.           |
| <b>debug pxf</b>          | Enables debugging of the PXF subsystems on the active PRE1 module on the Cisco uBR10012 router.                              |
| <b>show pxf cable</b>     | Displays information about the multicast echo and packet intercept features for one or all cable interfaces.                 |
| <b>show pxf cpu</b>       | Displays the display different statistics about the operation of the CPU processor during PXF processing.                    |
| <b>show pxf microcode</b> | Displays identifying information for the microcode being used on the processor.  |
| <b>show pxf xcm</b>       | Displays the current state of error checking and correcting (ECC) for the External Column Memory (XCM) on the PXF processor. |

# show pxf cable multicast

To display information about multicast routes (mroute) in the PXF processor for a specified group, use the **show pxf cable multicast** command in privileged EXEC mode.

```
show pxf cable multicast [multicast-group]
```

|                           |   |
|---------------------------|---|
| <b>Syntax Description</b> | <i>multicast-group</i> (Optional) Displays the name of the multicast group. |
|---------------------------|---|

|                        |                                |
|------------------------|--------------------------------|
| <b>Command Default</b> | No default behavior or values. |
|------------------------|--------------------------------|

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

| <b>Command History</b> | <b>Release</b> | <b>Modification</b>         |
|------------------------|----------------|-----------------------------|
|                        | 12.2(33)SCB    | The command was introduced. |

|                         |  |
|-------------------------|--|
| <b>Usage Guidelines</b> | The <b>show pxf cable multicast</b> command displays information about whether routes are enabled on the cable interfaces. |
|-------------------------|--|

|                 |   |
|-----------------|---|
| <b>Examples</b> | The following example shows a typical display for the <b>show pxf cable multicast</b> command for all cable interfaces: |
|-----------------|---|

```
Router# show pxf cable multicast multicast-group

MDB Flags: L - Local, F - Register flag, T - SPT-bit set, J - Join SPT
Z - Multicast Tunnel, N- No FastSwitching
OIF Flags: P - Prune Flag, A - Assert Flag
PXF multicast switching for vrf default is enabled.
Mdb at index= 3 hash= 0xE9F7:
next_mdb_idx: 0, fib_root: 0x0001, source_addr: 0.0.0.0, group_addr: 230.1.1.1
uses: 0, bytes: 0, vcci_in: 0, oif: 0x000002
rpf_failed: 0, drop_others: 0
rp_bit_mask:0x00, flags: [0xA0]
Ref Count=0, MDB Flags=0x0082, MDB FastFlags=0x10
```

| <b>Related Commands</b> | <b>Command</b>                  | <b>Description</b>   |
|-------------------------|---------------------------------|--|
|                         | <b>show pxf cable interface</b> | Displays display DOCSIS-related information about a particular service ID (SID) on a particular cable interface. |
|                         | <b>show pxf cpu</b>             | Displays the display different statistics about the operation of the CPU processor during PXF processing.        |

## show pxf cpu

To display the display different statistics about the operation of the CPU on the Performance Routing Engine (PRE1) module during Parallel eXpress Forwarding (PXF) processing, use the **show pxf cpu** command in user EXEC or privileged EXEC mode.

```
show pxf cpu {access-lists { qos | security } | buffers |
  cef [mem | verbose | vrf ip-address mask] | context | mroute [ipaddress1] [ipaddress2] |
  queue [interface] | schedule [interface | summary] | statistics [diversion [detail] | drop
  [interface] | ip | mlp] | subblocks [interface]}
```

| Syntax Description                               |   |  |
|--|---|--|
| <b>access-lists</b> { qos   security }           | Displays information for either quality of service (QoS) access lists (ACLs) or security access lists.  | <b>Note</b> The PRE module automatically compiles all access lists into the turbo ACL format, so that they can be efficiently processed by the PXF processors. The only exception are very simple access lists that would require more processing time to be compiled than to be executed. |
| <b>buffers</b>                                   | Displays information about buffer usage on the processor.   |  |
| <b>cef</b> [mem   verbose   vrf ip-address mask] | Displays information about the memory usage and routing tables in the PXF processors for Cisco Express Forwarding (CEF) operation. Optionally displays detailed information about memory usage and about a particular entry in the virtual private network (VPN) routing/forwarding (VRF) tables. |  |
| <b>context</b>                                   | Displays performance statistics on the processing of contexts on the processors. (A context is a unit of packet processing time on the PXF processor.)  | <b>Note</b> The <b>show pxf cpu context</b> command displays more useful information on the PXF processor's performance than the <b>show processor cpu command</b> that is used on other platforms.  |
| <b>mroute</b> [ipaddress1] [ipaddress2]          | Displays multicast static route (mroute) information for all groups, for one particular group, or for a range of groups.  | Displays information about IP multicast routes in the PXF processor for a specified IP prefix. For a more user-friendly display of the same information, use the <b>show ip mroute</b> command.  |
| <b>queue</b> [interface]                         | Displays queue drop counters for all interfaces, or optionally for one selected interface. This can be useful in determining if traffic is being properly distributed among the correct interfaces.   |  |
| <b>schedule</b> [interface   summary]            | Displays the timing wheel dequeue schedule counters for all interfaces, or optionally for one interface, or optionally a summary of all interfaces.   |  |

|   |   |
|---|---|
| <b>statistics</b><br>[ <b>diversion</b> [ <b>detail</b> ]  <br><b>drop</b> [ <i>interface</i> ]   <b>ip</b>  <br><b>mlp</b> ] | Displays statistics for the packets that the PXF has processed. The default is to display all packet statistics, or you can optionally specify one of the following keywords to display a particular type of statistics: <ul style="list-style-type: none"> <li>• <b>diversion</b>—(Optional) Displays packets that the PXF diverted to the main route processor for special handling. Use the detail keyword to break down the statistics by the particular reason for the diversion.</li> <li>• <b>drop</b> [<i>interface</i>]—(Optional) Displays dropped packets and bytes. You can also optionally display the dropped packets for a particular interface.</li> <li>• <b>ip</b>—(Optional) Displays statistics for the processing of IP and ICMP packets.</li> <li>• <b>mlp</b>—(Optional) Displays statistics for multilink point-to-point protocol (MLPPP) packets.</li> </ul> |
| <b>subblocks</b> [ <i>interface</i> ]   | Displays subblocks information for all interfaces, or optionally for one interface.   |

**Command Default** No default behavior or values

**Command Modes** User EXEC, Privileged EXEC

| Release     | Modification   |
|-------------|--|
| 12.2(1)XF1  | This command was introduced as <b>show hardware pxf cpu</b> for the Cisco uBR10012 router.   |
| 12.2(11)BC2 | The MAC domain was added to the display of the <b>show pxf cpu subblocks</b> command for a particular cable interface.   |
| 12.2(15)BC2 | This command was renamed from <b>show hardware pxf cpu</b> to <b>show pxf cpu</b> . In addition, the <b>cef</b> option was enhanced to display CEF tag adjacency information. The <b>verbose</b> option was also added to the <b>cef</b> option to display more detailed information about the Forwarding Information Base (FIB) tables being maintained by the CEF subsystem. |
| 12.3(X)BC   | The <b>detail</b> option and additional counters were added to the <b>show pxf cpu statistics diversion</b> command.   |

**Examples** See the following sections for typical displays for the different forms of the **show pxf cpu** command.

#### Access-Lists

The following example shows a typical display for the **access-list qos** option, which displays information about the processing of quality-of-service (QoS) access-lists:

```
Router# show pxf cpu access qos
```

```
PXF QoS ACL statistics:
ACL           State      Tables  Entries  Config  Fragment  Redundant  Memory
101           Operational  1        9        1        0          0          1Kb
First level lookup tables:
```

```

Block      Use                Rows      Columns  Memory used
 0  TOS/Protocol        1/128    0/32    16384
 1  IP Source (MS)     1/128    0/32    16384
 2  IP Source (LS)     1/128    0/32    16384
 3  IP Dest (MS)       1/128    0/32    16384
 4  IP Dest (LS)       1/128    0/32    16384
 5  TCP/UDP Src Port   1/128    0/32    16384
 6  TCP/UDP Dest Port  1/128    0/32    16384
 7  TCP Flags/Fragment 1/128    0/32    16384
Banknum    Heapsize    Freesize  %Free
 0         4172800    4172800   100
 1         4128768    4128768   100
 2         2818048    2818048   100
 3         4194304    4194304   100
 4         3342336    3309568   99
 5         3670016    3637248   99
 6         3342336    3309568   99
 7         3342336    3309568   99
Router#

```

The following example shows a typical display for the **access-list security** option:

```

Router# show pxf cpu access security

PXF Security ACL statistics:
ACL      State      Tables  Entries  Config  Fragment  Redundant  Memory
104      Operational  5       536     514     46        29        818Kb
105      Operational  1        4       6       0         3         7Kb
190      Operational  1        27     26      0         0         8Kb
cit01    Operational  1        26     24     12        11        9Kb
130      Unneeded
131      Unneeded
First level lookup tables:
Block      Use                Rows      Columns  Memory used
 0  TOS/Protocol        18/128    5/32    16384
 1  IP Source (MS)     27/128    5/32    16384
 2  IP Source (LS)     36/128    5/32    16384
 3  IP Dest (MS)       29/128    5/32    16384
 4  IP Dest (LS)       37/128    5/32    16384
 5  TCP/UDP Src Port   12/128    5/32    16384
 6  TCP/UDP Dest Port  10/128    5/32    16384
 7  TCP Flags/Fragment 13/128    5/32    16384
Banknum    Heapsize    Freesize  %Free
 0         4156416    3451904   83
 1         4194304    4180992   99
 2         4194304    4161536   99
 3         4194304    4107264   97
 4         3670016    3637248   99
 5         3670016    3637248   99
 6         3670016    3637248   99
 7         3670016    3637248   99
Router#

```

Table 0-12 describes the fields shown in the **show pxf cpu access-list** command:

**Table 0-12 Field Descriptions for the show pxf cpu access-list Command**

| Field                     | Description  |
|---------------------------|--|
| ACL                       | Identifies the access list (ACL) in use, by either name or number.   |
| State                     | Displays the current state of the access list: <ul style="list-style-type: none"> <li>• Copying—The ACL is in the process of being created or compiled.</li> <li>• Operational—ACL is active and filtering packets.</li> <li>• Out of acl private mem—ACL has run out of the private memory that was allocated exclusively to it.</li> <li>• Out of shared mem—ACL has run out of the memory that it shares with other ACLs.</li> <li>• Unknown Failure—ACL has failed because of an uncategorized reason.</li> <li>• Unneeded—ACL was allocated but is not currently in use.</li> </ul> |
| Tables                    | Displays the number of tables that the ACL is currently using.   |
| Entries                   | Displays the number of table entry slots for the fields or values that the ACL is currently using to match packets.  |
| Config                    | Displays the number of simple or extended entries for this ACL.  |
| Fragment                  | Displays the number of entries that were configured with the <b>fragments</b> keyword.   |
| Redundant                 | Displays the number of duplicate entries for this ACL.   |
| Memory                    | Displays the total amount of memory, rounded up to the nearest kilobyte, that the ACL is currently using.  |
| First level lookup tables | Describes the blocks of memory that store the IP fields that are used to match packets for access list processing.   |
| Block                     | Identifies the block of memory used for this particular lookup table.  |
| Use                       | Describes the IP packet field that is being matched.   |
| Rows                      | Describes the number of table rows currently in use and the total number of rows.  |
| Columns                   | Describes the number of table columns currently in use and the total number of columns.  |
| Memory used               | Describes the total amount of memory, in bytes, currently being used by the memory block.  |
| Banknum                   | Identifies the block of memory used for this particular lookup table.  |
| Heapsize                  | Identifies the total amount of memory, in bytes, allocated for this block of memory.   |
| Freesize                  | Identifies the amount of memory, in bytes, that is currently available for use by this block of memory.  |
| %Free                     | Identifies the percentage of memory that is free and available for use for this block of memory.   |

## Buffers

The following example shows a typical display for the **buffers** option:

```
Router# show pxf cpu buffers
```

```
FP buffers
  pool  size  # buffer  available  allocate failures
-----
  0     9216  3203     3203      0
  1     1536  6406     6406      0
  2      640  89432    89432     0
  3      256  76872    76872     0
  4       64 128120   128120     0
```

```
Router#
```

[Table 0-13](#) describes the fields shown in the **show pxf cpu buffers** command:

**Table 0-13 Field Descriptions for the show pxf cpu buffers Command**

| Field             | Description   |
|-------------------|---|
| pool              | Identifies the buffer pool.   |
| size              | Displays the size, in bytes, of each buffer in this particular pool.                        |
| # buffer          | Displays the total number of buffers in this particular pool.                               |
| available         | Displays the number of buffers that are currently available.                                |
| allocate failures | Displays the number of attempts to allocate a buffer that have failed since the last reset. |

## CEF

The following example shows a typical display for the **cef** option:

```
Router# show pxf cpu cef
```

```
Shadow 10-9-5-8 Toaster Mtrie:
 97 leaves, 3104 leaf bytes, 40 nodes, 41056 node bytes
141 invalidations
233 prefix updates
refcounts: 10293 leaf, 10144 node
```

```
Prefix/Length      Refcount  Parent
0.0.0.0/0          4512
1.10.0.0/16        1665     0.0.0.0/0
1.10.0.2/32        4        1.10.0.0/16
1.10.0.3/32        4        1.10.0.0/16
1.10.37.22/32     4        1.10.0.0/16
1.10.45.16/32     4        1.10.0.0/16
1.10.85.0/24      259     1.10.0.0/16
1.10.85.0/32      4        1.10.85.0/24
1.11.0.0/16       42      0.0.0.0/0
1.11.37.0/24      4        1.11.0.0/16
127.0.0.0/8       1601    0.0.0.0/0
127.0.0.0/32      4        127.0.0.0/8
144.205.188.0/24  259     0.0.0.0/0
144.205.188.0/32  4        144.205.188.0/24
144.205.188.1/32  4        144.205.188.0/24
144.205.188.2/32  4        144.205.188.0/24
144.205.188.255/32 4        144.205.188.0/24
```

## show pxf cpu

```

164.120.151.128/25 131      0.0.0.0/0
164.120.151.128/32 4       164.120.151.128/25
164.120.151.129/32 4       164.120.151.128/25
166.135.216.255/32 4       166.135.216.128/25
221.222.140.0/22  772    0.0.0.0/0
221.222.140.0/32  4       221.222.140.0/22
221.222.141.1/32  4       221.222.140.0/22
221.222.143.255/32 4       221.222.140.0/22
223.255.254.0/24  4       0.0.0.0/0
=====
26 routes with less specific overlapping parent route

```

FP CEF/MFIB/TFIB XCM Type usage:

| Type | Name | Col | Total  | Alloc | Size | Start    | End      | BitMap0  | BitMap1  | Error |
|------|------|-----|--------|-------|------|----------|----------|----------|----------|-------|
| 0    | Root | 1   | 1000   | 1000  | 4096 | 50003100 | 503EB100 | 713AC814 | 61DFB48C | 0     |
| 1    | Node | 1   | 2048   | 2009  | 2048 | 53000000 | 53400000 | 713AC8C0 | 61DFB538 | 0     |
| 2    | Node | 1   | 32768  | 2013  | 128  | 50864000 | 50C64000 | 713AC9F0 | 61DFB668 | 0     |
| 3    | Node | 1   | 4096   | 1021  | 1024 | 53864000 | 53C64000 | 713ADA20 | 61DFC698 | 0     |
| 4    | Leaf | 1   | 524288 | 8107  | 8    | 51064000 | 51464000 | 713ADC50 | 61DFC8C8 | 0     |
| 5    | Adj  | 1   | 524288 | 3046  | 8    | 51820000 | 51C20000 | 713BDC80 | 61E0C8F8 | 0     |
| 6    | Mac  | 5   | 524288 | 2040  | 8    | 58400000 | 58800000 | 713D12C4 | 61E1FF3C | 0     |
| 7    | Load | 1   | 110376 | 4052  | 76   | 52000000 | 527FFF00 | 713CDCB0 | 61E1C928 | 0     |
| 8    | Mdb  | 1   | 65536  | 1     | 4    | 53440000 | 53480000 | 61E66AAC | 714168CC | 0     |
| 9    | Midb | 1   | 262144 | 1     | 4    | 51C20000 | 51D20000 | 61E68ADC | 714188FC | 0     |
| 10   | TagI | 1   | 51200  | 1008  | 68   | 53480000 | 537D2000 | 714012EC | 61E4FF64 | 0     |
| 11   | TagR | 1   | 102400 | 2010  | 4    | 50800000 | 50864000 | 61E51894 | 71412C18 | 0     |

FP CEF state: 2

**Note**

If the value in the Alloc column is equal to the number in the Total column, then the PXF has run out of its allocated memory for that level and the CEF entries for that particular level have been exhausted.

Table 0-14 describes the fields shown in the **show pxf cpu cef** command:

**Table 0-14 Field Descriptions for the show pxf cpu cef Command**

| Field                            | Description  |
|----------------------------------|--|
| Shadow 10-9-5-8<br>Toaster Mtrie | Header for the memory used by the CEF switching tables, which use the optimized multiway tree (Mtrie) data structure format.   |
| leaves                           | Number of leaves in the CEF Mtrie table.   |
| leaf bytes                       | Number of bytes used by the leaves in the Mtrie table.   |
| nodes                            | Number of nodes in the Mtrie table.  |
| node bytes                       | Number of bytes used by the nodes in the Mtrie table.  |
| invalidations                    | Number of times an existing entry in the adjacency table was invalidated because of updated information.   |
| prefix updates                   | Number of updates made to the adjacency table.   |
| refcounts                        | Number of references (leaves and nodes) to an adjacency that are currently stored in the adjacency table. There is one reference for each corresponding entry in the CEF table, plus a few others for maintenance and system purposes. |
| Prefix/Length                    | IP prefix and length (IP network or host number, with subnet) that is in the CEF adjacency table.  |
| Refcount                         | Number of times this prefix is referenced in the adjacency table.  |

**Table 0-14 Field Descriptions for the show pxf cpu cef Command (continued)**

| Field   | Description   |
|---|---|
| Parent  | Parent of this prefix's leaf or node entry in the adjacency table.                  |
| <b>FP CEF/MFIB/TFIB XCM Type usage—The following fields display the memory usage of the shadow forwarding information base (FIB).</b> |   |
| Type  | Level number of this particular memory block.                                       |
| Name  | Identifier for this particular memory block.  |
| Total   | Total number of nodes available on each level and changes to other data structures. |
| Alloc   | Number of nodes currently allocated.  |
| Start, End  | Starting and ending addresses for the memory block.                                 |
| Error   | Number of errors discovered in the memory block.                                    |

**Context**

The following example shows a typical display for the **context** option, which displays performance statistics for the PXF processors over the past 1-minute, 5-minute, and 60-minute periods:

```
Router# show pxf cpu context
```

```

FP context statistics  count      rate
-----
  feed_back          2002946946  645161
  new_work           3992307360  1293715
  null               2261726736  708206
-----
                          2647082

FP average context/sec  1min      5min      60min
-----
  feed_back            679377    707217    191844    cps
  new_work             1358758   1414842   391367    cps
  null                 587560    520274    2171829   cps
-----
  Total                2625695   2642333   2755040   cps

FP context utilization  1min      5min      60min
-----
  Actual               77 %     80 %     21 %
  Theoretical          65 %     67 %     18 %
  Maximum              84 %     84 %     88 %

```

```
Router#
```

**Note**

The **show pxf cpu context** command displays more useful information on the processor's performance than the **show processor cpu command** that is used on other platforms.

This display shows statistics that are based on three counters on the PXF processors:

- **feed\_back**—Incremented each time the processor requires another processor cycle to process a packet. Each PXF processor contains 8 columns that perform different packet header processing tasks, such as ACL processing or QoS processing. A typical IP packet passes through all 8 columns

only once, but some types of packets can require more than one pass through these columns, and each additional pass through the PXF processor is referred to as feedback. This counter represents the amount of traffic that cannot be processed in an optimal manner.

- **new\_work**—Incremented for new packets that come into the PXF pipeline. This counter represents a snapshot of the amount of incoming traffic being processed by the processor.
- **null**—Incremented for every context during which the PXF pipe is not processing traffic. This counter represents the processor's potential to handle additional traffic. As the processor becomes more busy, the value for null decreases until it becomes 0, at which point the processor has reached its maximum usage.

Table 0-15 describes the fields shown in the **show pxf cpu context** command:

**Table 0-15 Field Descriptions for the show pxf cpu context Command**

| Field                         | Description  |
|-------------------------------|--|
| <b>FP context statistics</b>  |  |
| feed_back                     | Displays the current value for the feed_back counter and the rate that the counter is increasing per second (the difference between the current value and the previous value divided by the time period between the two).  |
| new_work                      | Displays the current value for the new_work counter and the rate that the counter is increasing per second (the difference between the current value and the previous value divided by the time period between the two).   |
| null                          | Displays the current value for the null counter and the rate that the counter is increasing per second (the difference between the current value and the previous value divided by the time period between the two).   |
| <b>FP average context/sec</b> |  |
| feed_back                     | Displays the rate, in terms of the number of contexts per second (cps) for the feed_back counter for the last 1-minute, 5-minute, and 60-minute time periods.  |
| new_work                      | Displays the rate, in terms of the number of contexts per second (cps) for the new_work counter for the last 1-minute, 5-minute, and 60-minute time periods.   |
| null                          | Displays the rate, in terms of the number of contexts per second (cps) for the null counter for the last 1-minute, 5-minute, and 60-minute time periods.   |
| <b>FP context utilization</b> |  |
| Actual                        | Displays the actual percentage of processor usage per second, compared to the theoretical maximum, for the last 1-minute, 5-minute, and 60-minute time periods. The value for Actual = $(\text{new\_work} + \text{feed\_back}) * 100 / (\text{new\_work} + \text{feed\_back} + \text{null})$ .                                 |
| Theoretical                   | Displays the percentage of processor usage compared to the ideal theoretical capacities for the last 1-minute, 5-minute, and 60-minute time periods. The value for Theoretical = $(\text{new\_work} + \text{feed\_back}) * 100 / 3125000$ . (The theoretical maximum for the PXF processors is 3,125,000 contexts per second.) |
| Maximum                       | Displays the actual maximum percentage of processor usage that has occurred for the last 1-minute, 5-minute, and 60-minute time periods. The value for Actual = $(\text{new\_work} + \text{feed\_back} + \text{null}) * 100 / 3125000$ .   |

## Mroute

The following example shows a typical display for the **mroute** option:

```
Router# show pxf cpu mroute

Shadow G/SG[5624]: s: 0.0.0.0 g: 224.0.1.40 uses: 0 bytes 0 flags: [D ] LNJ
Interface          vcci  offset  rw_index mac_header
In :                0      0x000004

Shadow G/SG[3195]: s: 0.0.0.0 g: 234.5.6.7 uses: 0 bytes 0 flags: [5 ] NJ
Interface          vcci  offset  rw_index mac_header
In :                0      0x000008
Out: Cable5/1/0    5      0x00002C 1B      00000026800001005E05060700010
Out: Cable6/1/1    9      0x000028 1A      00000026800001005E05060700010
Out: Cable6/0/0    6      0x000024 19      00000026800001005E05060700010
Out: Cable5/0/0    3      0x000020 18      00000026800001005E05060700010
Out: Cable7/0/0    A      0x00001C 17      00000026800001005E05060700010
Out: Cable7/1/1    C      0x000018 16      00000026800001005E05060700010
Out: Cable7/1/0    B      0x000014 15      00000026800001005E05060700010
Out: Cable6/1/0    8      0x000010 14      00000026800001005E05060700010
Out: Cable6/0/1    7      0x00000C 13      00000026800001005E05060700010
Out: Cable5/0/1    4      0x000008 12      00000026800001005E05060700010

Router#
```

[Table 0-16](#) describes the fields shown in the **show pxf cpu mroute** command:

**Table 0-16 Field Descriptions for the show pxf cpu mroute Command**

| Field      | Description  |
|------------|--|
| Interface  | Cable interface or subinterface.   |
| vcci       | Virtually Cool Common Index (VCCI) for this cable interface or subinterface. The VCCI is an index that uniquely identifies every interface or subinterface on the PXF processor, and that quickly maps that interface to the appropriate set of services and features. |
| rw index   | Index used to read and write into the multicast table for this entry.  |
| mac_header | MAC header that is used when rewriting the packet for output.  |

## Queue

The following example shows a typical display for the **queue** option, which displays the chassis-wide counters for the PXF pipeline counters that show drops on the output side of the processor:

```
Router# show pxf cpu queue

FP queue statistics for RP
Queue number 0 Shared
wq_avg_qlen          0          wq_flags_pd_offset    1B48001
wq_drop_factor       74
wq_buffer_drop       0          wq_limit_drop         0
wq_invalid_enq_wqb_drop 0          wq_invalid_deq_wqb_drop 0
wq_rnd_pkt_drop      0          wq_rnd_byte_drop      0
wq_static_qlen_drop  0
wq_len               0

Packet xmit          804833    Byte xmit             487438911
Queue number 15 Shared High priority
wq_avg_qlen          0          wq_flags_pd_offset    1BC8001
wq_drop_factor       174
```

## show pxf cpu

```

wq_buffer_drop          0          wq_limit_drop          0
wq_invalid_enq_wqb_drop 0          wq_invalid_deq_wqb_drop 0
wq_rnd_pkt_drop         0          wq_rnd_byte_drop      0
wq_static_qlen_drop     0
wq_len                  0

Packet xmit             69647      Byte xmit              41230926

```

Router#

The following example shows a typical display for the **queue** option for a particular cable interface:

Router# **show pxf cpu queue c6/0/0**

FP queue statistics for Cable5/0/0

FP queue statistics for Cable6/0/0

```

Queue algorithm 0x0
Queue number 0   Shared
wq_avg_qlen     0          wq_flags_pd_offset    18A0001
wq_drop_factor  40
wq_buffer_drop  0          wq_limit_drop         0
wq_invalid_enq_wqb_drop 0      wq_invalid_deq_wqb_drop 0
wq_rnd_pkt_drop 0          wq_rnd_byte_drop      0
wq_static_qlen_drop 0
wq_len          0

Packet xmit     56414      Byte xmit          14322357
Queue number 15 Shared High priority
wq_avg_qlen     0          wq_flags_pd_offset    18A8001
wq_drop_factor  1000
wq_buffer_drop  0          wq_limit_drop         0
wq_invalid_enq_wqb_drop 0      wq_invalid_deq_wqb_drop 0
wq_rnd_pkt_drop 0          wq_rnd_byte_drop      0
wq_static_qlen_drop 0
wq_len          0

Packet xmit     0          Byte xmit          0

```

Router#

**Schedule**

The following example shows a typical display for the **schedule summary** option:

Router# **show pxf cpu schedule summary**

```

FP average dequeue schedule rate in pps
Interface          Level 1   Level 2   maximum   1min     5min     60min
-----
Total              32 / 32   1 / 1     3125000   0 %      0 %      0 %

```

Router#

The following example shows a typical display for the **schedule** option for a particular interface:

Router# **show pxf cpu schedule c5/0/0**

```

FP average dequeue schedule rate in pps
Interface          Level 1   Level 2   maximum   1min     5min     60min
-----
Cable5/0/0        1 / 32   1 / 1     97656     0 %      0 %      0 %

```

Router#

Table 0-17 describes the fields shown in the **show pxf cpu schedule** command:

**Table 0-17 Field Descriptions for the show pxf cpu schedule Command**

| Field     | Description   |
|-----------|---|
| Interface | Identifies the cable interface or subinterface.   |
| Level 1   | Displays the number of occupied level 1 (port) wheel slots and the total number of wheel slots for this interface or subinterface.    |
| Level 2   | Displays the number of occupied level 2 (channel) wheel slots and the total number of wheel slots for this interface or subinterface. |
| maximum   | Displays the maximum number of packet dequeues per second.  |
| 1 min     | Displays the dequeue rate for the last 1-minute period.   |
| 5 min     | Displays the dequeue rate for the last 5-minute period.   |
| 60 min    | Displays the dequeue rate for the last 60-minute period.  |

### Statistics

The following example shows a typical display for the **statistics diversion** option, which shows chassis-wide statistics for PXF diversions, which occur whenever the PXF processor sends a packet to the main route processor for special processing (such as errored packets, address resolution protocol (ARP) packets, point-to-point protocol (PPP) control packets, an unsupported Layer 2 packet header, and so forth).

```
Router# show pxf cpu statistics diversion
```

```

Diversion Cause Stats:
  local      = 263171
  dest       = 0
  option     = 0
  protocol   = 0
  encap      = 541943
  oam f5 seg= 0
  oam f5 ete= 0
  oam f4 seg= 0
  oam f4 ete= 0
  atm ilmi   = 0
  fr_term    = 0
  comp       = 0
  ip_sanity  = 0
  ip_bcast   = 0
  ip_dest    = 0
  fib_punt   = 0
  mtu        = 0
  arp        = 127
  rarp       = 0
  icmp       = 0
  dsap_ssap  = 0
  acl        = 0
  divert     = 0
  no_group   = 0
  direct     = 0
  local_mem  = 0
  p2p_prune  = 0
  assert     = 0
  dat_prune  = 0

```

```

join_spt = 0
null_out = 0
igmp = 69
register = 0
no_fast = 136
ipc_resp = 0
keepalive = 0
min_mtu = 0
icmp_frag = 0
icmp_bad = 0
mpls_ttl = 0
tfib = 0
multicast = 69656
clns_isis = 0
fr_lmi = 0
ppp_cntrl = 0

```

## Interface specific To RP punt statistics

|                      |              |              |          |
|----------------------|--------------|--------------|----------|
| GigabitEthernet1/0/0 | 1000 packets | 113946 bytes | RP Rx    |
| GigabitEthernet1/0/0 | 1000 packets | 113946 bytes | Proc Enq |
| Cable5/1/0           | 0 packets    | 0 bytes      | RP Rx    |
| Cable5/1/0           | 0 packets    | 0 bytes      | Proc Enq |
| Cable5/1/1           | 0 packets    | 0 bytes      | RP Rx    |
| Cable5/1/1           | 0 packets    | 0 bytes      | Proc Enq |
| Cable6/0/0           | 32 packets   | 4509 bytes   | RP Rx    |
| Cable6/0/0           | 31 packets   | 3914 bytes   | Proc Enq |
| Cable6/0/1           | 3 packets    | 1234 bytes   | RP Rx    |
| Cable6/0/1           | 3 packets    | 1222 bytes   | Proc Enq |
| Cable6/0/2           | 0 packets    | 0 bytes      | RP Rx    |
| Cable6/0/2           | 0 packets    | 0 bytes      | Proc Enq |
| Cable6/0/3           | 0 packets    | 0 bytes      | RP Rx    |
| Cable6/0/3           | 0 packets    | 0 bytes      | Proc Enq |
| Cable6/0/4           | 0 packets    | 0 bytes      | RP Rx    |
| Cable6/0/4           | 0 packets    | 0 bytes      | Proc Enq |
| Cable7/0/0           | 0 packets    | 0 bytes      | RP Rx    |
| Cable7/0/0           | 0 packets    | 0 bytes      | Proc Enq |
| Cable8/0/0           | 0 packets    | 0 bytes      | RP Rx    |
| Cable8/0/0           | 0 packets    | 0 bytes      | Proc Enq |
| Cable8/0/1           | 0 packets    | 0 bytes      | RP Rx    |
| Cable8/0/1           | 0 packets    | 0 bytes      | Proc Enq |

Router#

**Note**

As shown in this display, the majority of dropped packets should typically be either local (sent to the router for routing), encap (encapsulated for another protocol), or multicast (IP multicast traffic). Also, the “Interface specific To RP punt statistics” counters appear only in Cisco IOS Release 12.3(X)BC and later releases.

The following example shows a typical display for the **statistics drop** option, which shows chassis-wide PXF drop statistics:

```
Router# show pxf cpu statistics drop
```

```

FP drop statistics
      packets      bytes
icmp_on_icmp      0          0
ipc_cmd_invalid   0          0
icmp_unrch_interval 294      31164
bad_tag_opcode    0          0
bad_ch_handle     0          0
no_touch_from_rp  0          0
dst_ip_is_mcast   0          0
ib_re_bit         0          0
encap_too_big     0          0
no_tfib_route     0          0
mc_disabled       0          0
mc_rpf_failed     0          0
mc_prune_rate_limit 0          0
mc_null_oif       0          0
bad_drop_code     0          0
cobalt_re[00]     0          0
    [01]          0          0
    [02]          0          0
    [03]          0          0
    [04]          0          0
    [05]          0          0
    [06]          0          0
    [07]          0          0
    [08]          0          0
    [09]          0          0
    [10]          0          0
    [11]          0          0
    [12]          0          0
    [13]          0          0
    [14]          0          0
    [15]          0          0
    [16]          0          0
    [17]          0          0
null_config[00]   0          0
    [01]          0          0
    [02]          0          0
    [03]          0          0
    [04]          0          0
    [05]          0          0
    [06]          0          0
    [07]          1          362
    [08]          0          0
    [09]          0          0
    [10]          0          0
    [11]          0          0
    [12]          0          0
    [13]          0          0
    [14]          0          0
    [15]          0          0
    [16]          0          0
    [17]          0          0
inval_ib_resource[00] 0          0
    [01]          0          0
    [02]          0          0
    [03]          0          0
    [04]          0          0
    [05]          0          0
    [06]          0          0
    [07]          0          0
    [08]          0          0
    [09]          0          0

```

```

[10] 0          0
[11] 0          0
[12] 0          0
[13] 0          0
[14] 0          0
[15] 0          0
[16] 0          0
[17] 0          0
[18] 0          0
[19] 0          0
[20] 0          0
[21] 0          0
[22] 0          0
[23] 0          0
[24] 0          0
[25] 0          0
[26] 0          0
[27] 0          0
[28] 0          0
[29] 0          0
[30] 0          0
[31] 0          0
master drop count 794

```

Router#

The following example shows a typical display for the **statistics drop** option for a particular cable interface, which shows the input-side drop statistics for that particular interface:

Router# **show pxf cpu statistics drop c7/1/0**

```

FP drop statistics for Cable7/1/0
      packets      bytes
vcci undefined      0          0
vcci B
  bad hdlc addr      0          0
  mac length mismatch 0          0
  bad ip checksum    0          0
  ip length mismatch 0          0
  ip length short    0          0
  ip length long     0          0
  ip version mismatch 0          0
  bad rpf            0          0
  acl failure        0          0
  police            0          0
  ttl               0          0
  unreachable       0          0
  mlp_frag_received 0          0
  mlp_unexpected_pkt 0          0
  df_multicast      0          0
  encap_not_supported 0          0
  mtu_too_wee       0          0
  mtu_too_big       0          0
  atm_fp_rx_cell_size_err 0          0

Data Received      0          0

```

Router#

The following example shows a typical display for the **statistics ip** option, which displays chassis-wide PXF forwarding statistics for IP, multicast, fragmented, and ICMP packets:

Router# **show pxf cpu statistics ip**

```

FP ip statistics
  dropped          0
  forwarded       1291
  punted          11393
  input_packets   14049
  icmps_created   1365
  noadjacency     0
  noroute         300
  unicast_rpf     0
  unresolved      0

FP ip multicast statistics
  mcast total     69665
  mcast drops     0
  mcast rpf       0
  mcast inputacl  0
  mcast outptacl 0
  mcast punts     69665
  mcast switched  0
  mcast failed    0

FP ip frag statistics
  packets         0
  fragments       0
  fragfail        0
  dontfrag        0
  mcdontfrag      0

FP icmp statistics
  unreachable     0
  ttlsent         0
  echorepnt       0
  echorcvcv       0
  checksumerr     0

Router#

```

**Note**

The `noroute` counter increases whenever the router drops a packet because its destination IP address is 0.0.0.0. This counter also increases whenever the Cisco Express Forwarding (CEF) adjacency tables drop a packet because it has a null, discard, or drop adjacency.

**Subblocks**

The following example shows a typical display for the `subblocks` option for all interfaces:

```

Router# show pxf cpu subblocks

Interface          Status  ICB   WQB_ID Fwding  Encap  VCCI map  VCCI
POS1/0/0           initiali 6000  6146  disable 5      81800000  E
GigabitEthernet3/0/0  reset   E000  6148  disable 1      81800004  1
GigabitEthernet4/0/0  up      12000 6150  PXF     1      81800008  2
Cable5/0/0          down    14000 4096  disable 59     81805400  3
Cable5/0/1          down    14100 4097  disable 59     81805C00  4
Cable5/1/0           up      16000 4098  PXF     59     81806400  5
Cable6/0/0           up      18000 4099  PXF     59     81806C00  6
Cable6/0/1           up      18100 4100  PXF     59     81807400  7
Cable6/1/0           up      1A000 4101  PXF     59     81807C00  8
Cable6/1/1           up      1A100 4102  PXF     59     81808400  9
Cable7/0/0           up      1C000 4103  PXF     59     81808C00  A
Cable7/1/0           up      1E000 4104  PXF     59     81809400  B
Cable7/1/1           up      1E100 4105  PXF     59     81809C00  C

```

```
Cable7/1/1.1          up          1E100 4105   PXF    59      8180A400  D
```

```
Router#
```

The following example shows a typical display for the **subblocks** option for a particular cable interface:

```
Router# show pxf cpu subblocks c7/1/1
```

```
Cable7/1/1 is up
  ICB = 1E100,  WQB_ID = 4105,  interface PXF,  enabled
  MAC Domain = 2
  IOS encapsulation type 59  MCNS
  Min mtu: 18      Max mtu: 1538
  VCCI mactable location = 81809C00
  VCCI C
    icmp ipaddress 0.0.0.0      timestamp 0
```

```
Router#
```

[Table 0-18](#) describes the fields shown in the display for the **show pxf cpu subblocks** command.

**Table 0-18 show pxf cpu subblocks Field Descriptions**

| Field      | Description   |
|------------|---|
| Interface  | Identifies the interface or subinterface.   |
| Status     | Displays the status of the interface: <ul style="list-style-type: none"> <li>Administ—The interface has been shut down and is in the administrative down state.</li> <li>Deleted—The subinterface has been removed from the router's configuration.</li> <li>Down—The interface is down because of a cable or other connectivity problem.</li> <li>Initiali—The interface is in the process of initializing.</li> <li>Reset—The interface is currently being reset.</li> <li>Up—The interface is up and passing traffic.</li> </ul> |
| ICB        | Displays the Interface Control Block (ICB) that is mapped to this interface.  |
| MAC Domain | Displays the DOCSIS-layer domain for this interface or subinterface.  |
| WQB_ID     | Displays the Work Queue Block (WQB) identifier for this interface.  |
| Fwding     | Displays whether traffic is being forwarded (PXF) or not (disable).   |

**Table 0-18 show pxf cpu subblocks Field Descriptions**

| Field    | Description   |
|----------|---|
| Encap    | <p>Identifies the type of encapsulation being used on the interface. The most common types of encapsulation are:</p> <ul style="list-style-type: none"> <li>0 = None</li> <li>1 = Ethernet ARPA</li> <li>2 = Ethernet SAP</li> <li>3 = 802.2 SNAP</li> <li>5 = Serial, raw HDLC</li> <li>8 = Serial, LAPB</li> <li>9 = Serial, X.25</li> <li>20 = Frame Relay</li> <li>21 = SMDS</li> <li>22 = MAC level packets</li> <li>27 = LLC 2</li> <li>28 = Serial, SDLC (primary)</li> <li>30 = Async SLIP encapsulation</li> <li>33 = ATM interface</li> <li>35 = Frame Relay with IETF encapsulation</li> <li>42 = Dialer encapsulation</li> <li>46 = Loopback interface</li> <li>51 = ISDN Q.921</li> <li>59 = DOCSIS (previously known as MCNS)</li> <li>61 = Transparent Mode</li> <li>62 = TDM clear channel</li> <li>64 = PPP over Frame Relay</li> <li>65 = IEEE 802.1Q</li> <li>67 = LAPB terminal adapter</li> <li>68 = DOCSIS Cable Modem</li> </ul> |
| VCCI map | Displays the memory address for the Virtually Cool Common Index (VCCI) map table for this particular VCCI. The VCCI is an index that uniquely identifies every interface or subinterface on the PXF processor and that quickly maps that interface to the appropriate set of services and features.   |
| VCCI     | Identifies the VCCI (in hexadecimal) that is assigned to the interface or subinterface.   |

**Related Commands**

| Command                         | Description  |
|---------------------------------|--|
| <b>clear pxf</b>                | Clears the direct memory access (DMA) and error checking and correcting (ECC) error counters on the PXF processor. |
| <b>debug pxf</b>                | Enables debugging of the PXF subsystems on the active PRE1 module on the Cisco uBR10012 router.                    |
| <b>show pxf cable</b>           | Displays information about the multicast echo and packet intercept features for one or all cable interfaces.       |
| <b>show pxf cable interface</b> | Displays information about a particular service ID (SID) on a particular cable interface.                          |
| <b>show pxf dma</b>             | Displays information for the current state of the PXF DMA buffers, error counters, and registers.                  |

| <b>Command</b>            | <b>Description</b>   |
|---------------------------|--|
| <b>show pxf microcode</b> | Displays identifying information for the microcode being used on the processor.              |
| <b>show pxf xcm</b>       | Displays the current state of ECC for the External Column Memory (XCM) on the PXF processor. |
| <b>show ip mroute</b>     | Displays the contents of the IP multicast routing table.                                     |

# show pxf cpu drl-trusted-sites

To display the configured Divert-Rate-Limit (DRL) trusted sites, use the **show pxf cpu drl-trusted-sites** command in privileged EXEC mode.

**show pxf cpu drl-trusted-sites**

## Syntax Description

This command has no keywords or arguments.

## Command Default

No default behavior or values

## Command Modes

Privileged EXEC (#)

## Command History

| Release     | Modification                 |
|-------------|------------------------------|
| 12.2(33)SCB | This command was introduced. |

## Usage Guidelines

Use this command to display the configured DRL trusted sites.

## Examples

The following example shows sample output for the **show pxf cpu drl-trusted-sites** command:

```
Router# show pxf cpu drl-trusted-sites
Divert-Rate-Limit Trusted-Site list
  IP-addr      IP-addr mask    ToS   ToS mask  VRF
  50.0.0.0     255.255.255.0  0x18  0xF8     global internet
  50.0.1.0     255.255.0.0    0x01  0xFF     all
  60.0.1.0     255.255.255.0  0x18  0xF8     blue
```

[Table 19](#) describes the significant fields shown in the display.

**Table 19** *show pxf cpu drl-trusted-sites Field Descriptions*

| Field        | Description   |
|--------------|---|
| IP-addr      | The IP address of the host or CM.   |
| IP-addr mask | The IP address mask of the host or CM.  |
| ToS          | Type of Service value to be matched by the filter.                            |
| ToS Mask     | Type of Service mask to be matched by the filter.                             |
| VRF          | Name of the virtual interface that has been configured for DRL trusted sites. |

## Related Commands

| <b>Command</b>                                      | <b>Description</b>   |
|---|--|
| <b>show pxf cpu statistics<br/>dnl cable-wan-ip</b> | This command displays the parallel express forwarding (PEF) DNL cable/wan-ip statistics table. |
| <b>show pxf cpu statistics<br/>dnl wan-non-ip</b>   | This command displays the PEF DNL wan-non-ip statistics.                                       |

# show pxf cpu queue

To display parallel express forwarding (PXF) queuing and link queue statistics, use the **show pxf cpu queue** command in privileged EXEC mode.

```
show pxf cpu queue [interface | QID | summary]
```

## Cisco uBR10012 Universal Broadband Router

```
show pxf cpu queue [interface | QID]
```

### Syntax Description

|                  |  |
|------------------|--|
| <i>interface</i> | (Optional) The interface for which you want to display PXF queuing statistics. This displays PXF queuing statistics for the main interface and all subinterfaces and permanent virtual circuits (PVCs). It also displays packets intentionally dropped due to queue lengths.             |
| <i>QID</i>       | (Optional) The queue identifier.   |
| <b>summary</b>   | (Optional) Displays queue scaling information such as: <ul style="list-style-type: none"> <li>• Number of queues and recycled queues.</li> <li>• Number of available queue IDs (QIDs).</li> <li>• Number of packet buffers, recycled packet buffers, and free packet buffers.</li> </ul> |

### Command Modes

Privileged EXEC (#)

### Command History

| Release     | Modification  |
|-------------|---|
| 12.2S       | This command was introduced.  |
| 12.2(28)SB  | This command was integrated into Cisco IOS Release 12.2(28)SB.  |
| 12.3(7)XI1  | This command was integrated into Cisco IOS Release 12.3(7)XI1.  |
| 12.3(23)BC1 | The “Link Queues” output field for dynamic bandwidth sharing-enabled modular cable and wideband cable interfaces was added on the Cisco uBR10012 universal broadband router.                      |
| 12.2(33)SB  | This command was modified for virtual access interfaces (VAIs) and the output was modified for the <b>summary</b> option, and implemented on the Cisco 10000 series router for the PRE3 and PRE4. |
| 12.2(33)SCB | The output of this command has been updated or re-arranged (compared to the VTMS version) for DOCSIS Weighted Fair Queuing (WFQ) Scheduler feature and implemented on the Cisco uBR10012 router.  |

### Usage Guidelines

When neither the interface or QID is specified, the command displays queuing statistics for the route processors (RPs).

### Cisco 10000 Series Router

The Cisco 10000 series router high-speed interfaces work efficiently to spread traffic flows equally over the queues. However, using single traffic streams in a laboratory environment might result in less-than-expected performance. To ensure accurate test results, test the throughput of the Gigabit Ethernet, OC-48 POS, or ATM uplink with multiple source or destination addresses. To determine if traffic is being properly distributed, use the **show pxf cpu queue** command.

In Cisco IOS Release 12.2(33)SB and later releases, the router no longer allows you to specify a virtual access interface (VAI) as **viX.Y** in the **show pxf cpu queue** command. Instead, you must spell out the VAI as **virtual-access**.

For example, the router accepts the following command:

```
Router# show pxf cpu queue virtual-access2.1
```

In releases prior to Cisco IOS Release 12.2(33)SB, the router accepts the abbreviated form of the VAI. For example, the router accepts the following command:

```
Router# show pxf cpu queue vi2.1
```

In Cisco IOS Release 12.2(33)SB and later releases, the output from the **show pxf cpu queue interface summary** command displays only the physical interface and the number of logical links. The output does not display the number of priority queues, class queues, and so on. This modification applies to the PRE3 and PRE4.

### Cisco uBR10012 Universal Broadband Router

If dynamic bandwidth sharing (DBS) is enabled, the link queue information that is displayed refers to the specific type of interface that is configured—modular cable or wideband cable. The **summary** keyword option is not supported for the Cisco uBR10012 universal broadband router for wideband cable or modular cable interfaces. The **ATM** interface output is not available for this router.

See [Table 20](#) for descriptions of the **interface** keyword fields.

**Table 20** *show pxf cpu queue Interface Option Field Descriptions*

| Field           | Description  |
|-----------------|--|
| <0-131071>      | QID (queue identifier)   |
| ATM             | Asynchronous transfer mode interface<br><b>Note</b> The ATM interface output is not available for the Cisco uBR10012 universal broadband router. |
| BVI             | Bridge-group virtual interface   |
| Bundle          | Cable virtual bundle interface   |
| CTunnel         | CTunnel interface  |
| Cable           | Cable modem termination service (CMTS) interface   |
| DTI             | Digital trunk interface  |
| Dialer          | Dialer interface   |
| Ethernet        | IEEE 802.3   |
| FastEthernet    | FastEthernet IEEE 802.3  |
| GigabitEthernet | GigabitEthernet IEEE 802.3z  |
| Group-Async     | Async group interface  |
| Loopback        | Loopback interface   |

**Table 20** show pxf cpu queue Interface Option Field Descriptions (continued)

| Field             | Description  |
|-------------------|--|
| MFR               | Multilink frame relay bundle interface               |
| Modular-Cable     | Modular cable interface                              |
| Multilink         | Multilink group interface                            |
| Null              | Null interface                                       |
| Port-channel      | Ethernet channel of interfaces                       |
| RP                | Forwarding path (FP) to route processing (RP) queues |
| Tunnel            | Tunnel interface                                     |
| Vif               | Pragmatic general multicast (PGM) host interface     |
| Virtual-Template  | Virtual template interface                           |
| Virtual-TokenRing | Virtual token ring                                   |
| WB-SPA            | line card to line card (LC-LC) queues                |
| Wideband-Cable    | Wideband CMTS interface                              |

**Examples**

The following example shows PXF queuing statistics for an ATM interface when a QID is not specified. The sample output includes the dropped and dequeued packets for the VCs, and for classes associated with sessions that inherit queues from VCs.

```
Router# show pxf cpu queue atm 5/0/2
```

```
VCCI 2517: ATM non-aggregated VC 1/229, VCD 1, Handle 1, Rate 500 kbps
```

| VCCI/ClassID | ClassName     | QID | Length/Max | Res | Dequeues | Drops |
|--------------|---------------|-----|------------|-----|----------|-------|
| 0 2517/0     | class-default | 269 | 0/4096     | 11  | 3        | 0     |
| 0 2517/31    | pak-priority  | 268 | 0/32       | 11  | 4        | 0     |

```
Queues Owned but Unused by VC (inheritable by sessions)
```

| ClassID | ClassName     | QID | Length/Max | Res | Dequeues | Drops |
|---------|---------------|-----|------------|-----|----------|-------|
| 0       | class-default | 275 | 0/32       | 11  | 100      | 0     |
| 31      | pak-priority  | 268 | 0/32       | 11  | 4        | 0     |

```
VCCI 2517: ATM non-aggregated VC 1/233, VCD 4, Handle 4, Rate 50 kbps
```

| VCCI/ClassID | ClassName     | QID | Length/Max | Res | Dequeues | Drops |
|--------------|---------------|-----|------------|-----|----------|-------|
| 0 2517/0     | class-default | 269 | 0/4096     | 11  | 3        | 0     |
| 0 2517/31    | pak-priority  | 268 | 0/32       | 11  | 4        | 0     |

```
Queues Owned but Unused by VC (inheritable by sessions)
```

| ClassID | ClassName     | QID | Length/Max | Res | Dequeues | Drops |
|---------|---------------|-----|------------|-----|----------|-------|
| 0       | class-default | 274 | 0/32       | 11  | 0        | 0     |
| 31      | pak-priority  | 268 | 0/32       | 11  | 4        | 0     |

```
VCCI 2520: ATM non-aggregated VC 1/232, VCD 3, Handle 3, Rate 500 kbps
```

| VCCI/ClassID | ClassName     | QID | Length/Max | Res | Dequeues | Drops |
|--------------|---------------|-----|------------|-----|----------|-------|
| 0 2520/0     | class-default | 273 | 0/32       | 11  | 0        | 0     |
| 0 2520/31    | pak-priority  | 268 | 0/32       | 11  | 4        | 0     |

VCCI 2519: ATM non-aggregated VC 1/231, VCD 2, Handle 2, Rate 500 kbps

| VCCI/ClassID | ClassName     | QID | Length/Max | Res | Dequeues | Drops |
|--------------|---------------|-----|------------|-----|----------|-------|
| 0 2519/0     | class-default | 272 | 0/32       | 11  | 0        | 0     |
| 0 2519/31    | pak-priority  | 268 | 0/32       | 11  | 4        | 0     |

The following example displays PXF queuing statistics for QID 267:

Router# **show pxf cpu queue 267**

```

ID : 267
Priority : Lo
CIR (in-use/configured) : 0/65535
EIR (in-use/configured) : 0/0
MIR (in-use/configured) : 0/65535
Maximum Utilization configured : no
Link : 2
Flowbit (period/offset) : 32768/32768
Burst Size : 1024 bytes
Bandwidth : 133920 Kbps
Channel : 0
Packet Descriptor Base : 0x00000100
ML Index : 0
Length/Average/Alloc : 0/0/32
Enqueues (packets/octet) : 293352/9280610
Dequeues (packets/octet) : 293352/9280610
Drops (tail/random/max_threshold) : 0/0/0
Drops (no_pkt_handle/buffer_low) : 0/0
WRED (weight/avg_smaller) : 0/0
WRED (next_qid/drop_factor) : 0/0
WRED (min_threshold/max_threshold/scale/slope) :
precedence 0 : 0/0/0/0
precedence 1 : 0/0/0/0
precedence 2 : 0/0/0/0
precedence 3 : 0/0/0/0
precedence 4 : 0/0/0/0
precedence 5 : 0/0/0/0
precedence 6 : 0/0/0/0
precedence 7 : 0/0/0/0

```

### Cisco uBR10012 Universal Broadband Router

The following examples show link queue information for specific wideband cable and modular cable interfaces when dynamic bandwidth sharing is enabled.

#### Modular Cable Interface

```

Router(config)# interface modular-cable 1/0/0:1
.
.
.

Router(config-if)# cable dynamic-bw-sharing
.
.
.

Router# show pxf cpu queue modular-cable 1/0/0:1

```

```

Link Queues :
QID   CIR(act/conf)   EIR           MIR           RF Chan.   Status

```

```
420 19661/19661 1/1 65535/65535 0 Inactive
```

### Wideband Cable Interface

```
Router(config)# interface wideband-cable 1/0/0:0
```

```
.
```

```
.
```

```
Router(config-if)# cable dynamic-bw-sharing
```

```
.
```

```
.
```

```
Router# show pxf cpu queue wideband-cable 1/0/0:0
```

```
Link Queues :
```

| QID | CIR(act/conf) | EIR | MIR         | RF Chan. | Status   |
|-----|---------------|-----|-------------|----------|----------|
| 419 | 32768/32768   | 1/1 | 65535/65535 | 0        | Inactive |
| 566 | 19661/19661   | 1/1 | 65535/65535 | 1        | Inactive |

The following example shows service flow queue information for modular cable interfaces.

```
Router# show pxf cpu queue modular-cable 1/2/0:0
```

```
Cable Interface Queues:
```

| QID    | Len/Max | Dequeues | TailDrops | MinRt<br>(Kbps) | Wt/Quantum | ShapeRt<br>(Kbps) | FlowId |
|--------|---------|----------|-----------|-----------------|------------|-------------------|--------|
| 131147 | 0/255   | 190      | 0         | 0               | 1/240      | 0                 | 58     |
| 131148 | 0/255   | 33820    | 0         | 0               | 1/10000    | 0                 | 32824  |

```
Cable Service Flow Queues:
```

```
* Best Effort Queues
```

| QID    | Len/Max | Dequeues | TailDrops | MinRt<br>(Kbps) | Wt/Quantum | ShapeRt<br>(Kbps) | FlowId |
|--------|---------|----------|-----------|-----------------|------------|-------------------|--------|
| 131241 | 0/255   | 0        | 0         | 0               | 1/240      | 0                 | 32881  |

```
* CIR Queues
```

| QID  | Len/Max | Dequeues | TailDrops | MinRt<br>(Kbps) | Wt/Quantum | ShapeRt<br>(Kbps) | FlowId |
|------|---------|----------|-----------|-----------------|------------|-------------------|--------|
| 2049 | 254/255 | 131018   | 485751    | 99              | 1/1920     | 0                 | 32880  |

```
* Low Latency Queues
```

| QID | Len/Max | Dequeues | TailDrops |
|-----|---------|----------|-----------|
|-----|---------|----------|-----------|

### Related Commands

| Command                              | Description   |
|--------------------------------------|---|
| <b>cable dynamic-bw-sharing</b>      | Enables DBS on a specific modular cable or wideband cable interface.  |
| <b>show pxf cable controller</b>     | Displays information about the RF channel VTMS links and link queues. |
| <b>show pxf cpu statistics queue</b> | Displays PXF CPU queuing counters for all interfaces.                 |

# show pxf cpu queue wb-spa

To send queue and service flow information to and from the uBR10-MC 5x20 line cards, use the **show pxf cpu queue wb-spa** command in privileged EXEC mode.

**show pxf cpu queue wb-spa**

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

**Command Default** No default behavior or values.

**Command Modes** Privileged EXEC

| Command History | Release    | Modification   |
|-----------------|------------|--|
|                 | 12.3(23)BC | This command was introduced for the uBR10012 router. |

**Usage Guidelines**

A virtual time management system (VTMS) link and two queues are set up for each Wideband SPA allowing MAC Management Messages (MMM) to be sent from the uBR10-MC 5x20 line card to the Wideband SPA, which in turn sends the messages to the appropriate RF channels.

In addition to this, another VTMS link and two queues are set up for each uBR10-MC 5x20 line card so that the SIP can send statistics IPC messages and cable monitor packets to the uBR10-MC 5x20 line card. The queue and service flow information for these data paths can be displayed by using the **show pxf cpu queue wb-spa** command.

The output of this command shows the two RP service flows for each SPA, including the RP service flow index and the associated queue ID. Refer to the **show pxf cpu queue qid** command for more information.

**Examples** The following is a sample output of the command for Wideband SPA port 1, slot 1 and bay 0:

```
Router# show pxf cpu queue wb-spa
SPA 1/0/0
MAP/UCD Service Flow Index: 32926
  Ironbus Channel: 0x8000 Queue ID: 266 Queue Flags: 0x2
LP-MMM Service Flow Index: 32768
  Ironbus Channel: 0x8000 Queue ID: 264 Queue Flags: 0x0

CableInternal5/1
Statistics Service Flow Index: 32887
  Ironbus Channel: 0x500 Queue ID: 504 Queue Flags: 0x0
Cable Monitor Service Flow Index: 129
  Ironbus Channel: 0x500 Queue ID: 505 Queue Flags: 0x0

CableInternal6/0
Statistics Service Flow Index: 32893
  Ironbus Channel: 0x500 Queue ID: 516 Queue Flags: 0x0
Cable Monitor Service Flow Index: 135
  Ironbus Channel: 0x500 Queue ID: 517 Queue Flags: 0x0
```

---

**Related Commands**

| <b>Command</b>                             | <b>Description</b>                                     |
|--|--|
| <code>show pxf cpu queue <i>qid</i></code> | Displays parallel express forwarding queue statistics. |

---

## show pxf cpu statistics

To display Parallel eXpress Forwarding (PXF) CPU statistics, use the **show pxf cpu statistics** command in privileged EXEC mode.

```
show pxf cpu statistics [atom | backwalk | clear | diversion | drop [interface | vcci] | ip | ipv6 |
l2tp | mlp | qos [interface] | queue | rx [vcci] | security | arp-filter | drl [ cable-wan-ip |
wan-non-ip ]]
```

### Cisco 10000 Series Router

```
show pxf cpu statistics diversion [ pxf [interface {interface | vcci}] | top number]
```

| Syntax                         | Description  |
|--------------------------------|--|
| <b>atom</b>                    | (Optional) Displays Any Transport over MPLS (AToM) statistics.   |
| <b>backwalk</b>                | (Optional) Displays backwalk requests statistics.  |
| <b>clear</b>                   | (Optional) Clears PXF CPU statistics.  |
| <b>diversion</b>               | (Optional) Displays packets that the PXF diverted to the Route Processor (RP) for special handling.  |
| <b>drop</b> [interface] [vcci] | (Optional) Displays packets dropped by the PXF for a particular interface or Virtual Circuit Connection Identifier (VCCI).   |
| <b>ip</b>                      | (Optional) Displays IP statistics.   |
| <b>ipv6</b>                    | (Optional) Displays IPv6 statistics.   |
| <b>l2tp</b>                    | (Optional) Displays packet statistics for an L2TP Access Concentrator (LAC) (Optional) and L2TP Network Server (LNS).  |
| <b>mlp</b>                     | (Optional) Displays multilink PPP (MLP) statistics.  |
| <b>pxf</b>                     | (Optional) Displays packets that the PXF diverted to the Route Processor (RP). Available on the Cisco 10000 series router only.  |
| <b>pxf interface</b> interface | (Optional) Displays per-interface PXF statistical information for the divert cause policer on a particular interface. Available on the Cisco 10000 series router only.                               |
| <b>pxf interface</b> vcci      | (Optional) Displays per-VCCI PXF statistical information for the divert cause policer on a particular Virtual Circuit Connection Identifier (VCCI). Available on the Cisco 10000 series router only. |
| <b>qos</b> [interface]         | (Optional) Displays match statistics for a service policy on an interface.   |
| <b>queue</b>                   | (Optional) Displays queueing counters for all interfaces.  |
| <b>rx</b> [vcci]               | (Optional) Displays receive statistics for a VCCI.   |
| <b>security</b>                | (Optional) Displays ACL matching statistics.   |
| <b>top number</b>              | (Optional) Displays PXF statistical information for the number of top punters you specify. Available on the Cisco 10000 series router only. Valid values are from 1 to 100.                          |
| <b>arp-filter</b>              | (Optional) Displays the ARP filter statistics.   |
| <b>drl</b>                     | (Optional) Displays the divert rate limit.   |
| <b>cable-wan-ip</b>            | (Optional) Displays cable / wan-ip statistics for dropped packets.   |
| <b>wan-non-ip</b>              | (Optional) Displays DRL wan-non-ip statistics for dropped packets.   |

**Command Modes** Privileged EXEC (#)

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.3(7)XI1  | This command was integrated into Cisco IOS Release 12.3(7)XI1.   |
|                 | 12.2(28)SB  | This command was introduced on the Cisco 10000 series router and integrated into Cisco IOS Release 12.2(28)SB.   |
|                 | 12.2(31)SB2 | This command was integrated into Cisco IOS Release 12.2(31)SB2.  |
|                 | 12.2(33)SB  | This command was enhanced to display per-interface or per-VCCI PXF statistical information for the divert cause policer on a particular interface or VCCI, to display the top punters on an interface, and to display the provisioned burst size for any divert causes. These enhancements were implemented on the Cisco 10000 series router for the PRE2, PRE3, and PRE4. |
|                 | 12.2(33)SCB | This command was integrated into Cisco IOS Release 12.2(33)SCB on the Cisco uBR7246VXR and Cisco uBR10012 universal broadband routers. Support for the Cisco uBR7225VXR router was added. The <b>arp-filter</b> , <b>drl</b> , <b>cable-wan-ip</b> , and <b>wan-non-ip</b> keywords were added .   |
|                 | 12.2(33)SCE | This command was modified in Cisco IOS Release 12.2(33)SCE. The <b>cable-wan-ip</b> keyword was removed.   |

### Usage Guidelines

#### Cisco 10000 Series Router Usage Guidelines

- The **show pxf cpu statistics diversion** command displays statistical information about diverted packets. Divert causes with the string "ipv6..." display as "v6..." in the output of all **show pxf cpu statistics diversion** commands
- The output from the **show pxf cpu statistics diversion pxf** command was enhanced in Cisco IOS Release 12.2(33)SB to display the provisioned burst size for any divert causes.
- The **show pxf cpu statistics diversion pxf interface interface** command displays statistical information about the divert cause policer on a specific interface. The output of this command is similar to the output displayed at the aggregated level. This command enables you to see the traffic types being punted from an inbound interface, subinterface, and session.
- The **show pxf cpu statistics diversion pxf interface vcci** command displays statistical information about the divert cause policer on a specific VCCI. The output of this command is similar to the output displayed at the aggregated level. This command enables you to see the traffic types being punted from an inbound interface, subinterface, and session.
- The **show pxf cpu statistics diversion top number** command displays the interfaces, subinterfaces, and sessions with the highest number of punter packets.

### Examples

The following example shows PXF queueing counters information. These are aggregate counters for all interfaces. The Total column is the total for all columns.

## show pxf cpu statistics

**Note**

If you are troubleshooting link utilization issues, the `deq_vtp_req`, `deq_flow_off`, and `deq_ocq_off` counters may indicate what is causing the versatile time management scheduler (VTMS) to slow down.

If you are troubleshooting overall PXF throughput issues, look at the High Next Time, Low Next Time, High Wheel Slot, and Low Wheel Slot counters.

Router# **show pxf cpu statistics queue**

Column 6 Enqueue/Dequeue Counters by Rows:

| dbg Counters                  | 0          | 1          | 2          | 3          | 4          | 5          | 6          | 7          |      |
|-------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
| Total                         |            |            |            |            |            |            |            |            |      |
| =====<br>=====                |            |            |            |            |            |            |            |            |      |
| enq_pkt<br>0x0007EE55         | 0x0000FD9B | 0x0000FC77 | 0x0000FE4A | 0x0000FF81 | 0x0000FC53 | 0x0000FD2E | 0x0000FF19 | 0x0000FDDE |      |
| tail_drop_pkt<br>0x00000000   | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| deq_pkt<br>0x0007EE55         | 0x0000FD47 | 0x0000FEF2 | 0x0000FCB3 | 0x0000FF65 | 0x0000FCE7 | 0x0000FC45 | 0x0000FEE7 | 0x0000FDF1 |      |
| deq_vtp_req<br>0x00000000     | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| deq_flow_off<br>0x00000000    | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| deq_ocq_off<br>0x00000000     | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| enqdeq_conflict<br>0x000001F0 | 0x0000003A | 0x00000043 | 0x0000004A | 0x00000039 | 0x0000003A | 0x0000004F | 0x00000036 | 0x00000031 |      |
| bndl_pkt<br>0x00000000        | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| frag_pkt<br>0x00000000        | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg_frag_drop<br>0x00000000   | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg_bndl_sem<br>0x00000000    | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| context_inhibit<br>0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| bfifo_enq_fail<br>0x00000000  | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg1<br>0x00000000            | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg2<br>0x00000000            | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg3<br>0x00000000            | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg4<br>0x00000000            | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg5<br>0x00000000            | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 | 0x00000000 |      |
| dbg6<br>0x0000                | 0x0000     | 0x0000     | 0x0000     | 0x0000     | 0x0000     | 0x0000     | 0x0000     | 0x0000     |      |
| dbg7                          | 0x00       | 0x00       | 0x00       | 0x00       | 0x00       | 0x00       | 0x00       | 0x00       | 0x00 |

Column 7 Rescheduling State Counters by Rows:

| dbg Counters | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------|---|---|---|---|---|---|---|---|
| Total        |   |   |   |   |   |   |   |   |

```

=====
=====
High Next Time 0x524E1100 0x524E1140 0x524E1140 0x524E1180 0x524E11C0 0x524E11C0 0x524E1200 0x524E1240 -
Low Next Time 0x524E1100 0x524E1140 0x524E1140 0x524E1180 0x524E11C0 0x524E1200 0x524E1200 0x524E1240 -
High Wheel Slot 0x00000844 0x00000845 0x00000846 0x00000846 0x00000847 0x00000848 0x00000848 0x00000849 -
Low Wheel Slot 0x00000844 0x00000845 0x00000846 0x00000846 0x00000847 0x00000848 0x00000848 0x00000849 -
DEQ_WHEEL 0x0001F5D0 0x0001F4BD 0x0001F56B 0x0001F6BF 0x0001F396 0x0001F3E8 0x0001F6BF 0x0001F4A7
0x000FA99B
DQ-lock Fails 0x0000039F 0x000003FD 0x000003B2 0x000003E1 0x000003CB 0x000003E2 0x000003FD 0x000003CD
0x00001EA6
TW_ENQ Fails 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
Q_SCHED 0x0000FACD 0x0000FC6B 0x0000FA38 0x0000FCE4 0x0000FA66 0x0000F994 0x0000FC62 0x0000FB8B
0x0007DA3B
FAST_SCHED 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
Q_DEACT 0x0000FB03 0x0000F852 0x0000FB33 0x0000F9DB 0x0000F930 0x0000FA54 0x0000FA5D 0x0000F91C
0x0007CF60
Q_ACTIVATE 0x0000F9B6 0x0000F8D4 0x0000FA6C 0x0000FBA9 0x0000F87E 0x0000F95B 0x0000FB0A 0x0000F9DE
0x0007CF60
Q_CHANGE 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
DEBUG1 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
DEBUG2 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
DEBUG3 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
DEBUG4 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000
DEBUG5 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
0x00000000

```

Table 21 describes the significant fields shown in the display.

**Table 21** show pxf cpu statistics queue Field Descriptions

| Field                                      | Description   |
|--|---|
| Column 6 Enqueue/Dequeue Counters by Rows: |   |
| enq_pkt                                    | Packets the PXF enqueued.   |
| tail_drop_pkt                              | Packets the PXF tails dropped.  |
| deq_pkt                                    | Packets the PXF dequeued.   |
| deq_vtp_req                                | Number of times a dequeue was inhibited due to the virtual traffic policer.   |
| deq_flow_off                               | Numbers of times a dequeue was inhibited due to a flowoff from the line card. |
| deq_ocq_off                                | Number of times a dequeue was inhibited due to link level flow control.       |
| enqdeq_conflict                            | Shows a dequeue failed due to an enqueue to the same queue in progress.       |
| bndl_pkt                                   | Count of packets that were fragmented.  |
| frag_pkt                                   | Count of fragments sent.  |
| dbg_frag_drop                              | Count of invalid multilink PPP (MLP) fragment handles.                        |
| dbg_bndl_sem                               | Count of semaphore collision (used for MLP).                                  |

**Table 21** show pxf cpu statistics queue Field Descriptions (continued)

| Field   | Description  |
|---|--|
| context_inhibit                               | Number of times multilink transmit fragment processing was inhibited due to a lack of DMA resources. |
| bfifo_enq_fail                                | Count of bundle FIFO (BFIFO) enqueue failures.   |
| Column 7 Rescheduling State Counters by Rows: |  |
| High Next Time                                | Current next send time for the high priority wheel.  |
| Low Next Time                                 | Current next send time for the low priority wheel.   |
| High Wheel Slot                               | Current high priority slot number.   |
| Low Wheel Slot                                | Current low priority slot number.  |
| DEQ_WHEEL                                     | Count of successful dequeues from the timing wheel.  |
| DQ-lock Fails                                 | Count of timing wheel dequeue failures (both queue empty and race conditions).                       |
| TW ENG Fails                                  | Timing wheel enqueue failures.   |
| Q_SCHED                                       | Count of queues scheduled/rescheduled onto the timing wheel.   |
| FAST_SCHED                                    | Count of queues fast scheduled/rescheduled onto the timing wheel.                                    |
| Q_DEACT                                       | Count of queue deactivations.  |
| Q_ACTIVATE                                    | Count of queue activations (activate state).   |
| Q_CHANGE                                      | Count of queue changes; for example, Route Processor (RP) inspired rates changes.                    |

The following example displays PXF L2TP packet statistics.

**Note**

For L2TP Access Concentrator (LAC) operation, all statistics are applicable. For L2TP Network Server (LNS) operation, only the PPP Control Packets, PPP Data Packets, and PPP Station Packets statistics are meaningful.

```
Router# show pxf cpu statistics l2tp

LAC Switching Global Debug Statistics:
  PPP Packets          51648
  PPP Control Packets  51647
  PPP Data Packets     1
  Not IPv4 Packets    1
  IP Short Hdr Packets 1
  IP Valid Packets     0
  IP Invalid Packets   1
  DF Cleared Packets  0
  Path MTU Packets     0
  No Path MTU Packets 0
  Within PMTU Packets 0
  Fraggable Packets    0
  PMTU Pass Packets    0
  PMTU Fail Packets    0
  Encapped Packets     51648
```

L2TP Classification Global Debug Statistics:

```
LAC or Multihop Packets 151341
Multihop Packets        0
PPP Control Packets     51650
PPP Data Packets        99691
PPP Station Packets     151341
```

The following example displays match statistics for the police\_test policy on an ATM interface. The Classmap Index differentiates classes within a policy while the Match Number differentiates match statements within a class.

Router# **show pxf cpu statistics qos atm 6/0/0.81801**

| Classmap Index                        | Match Number | Pkts Matched | Bytes Matched |
|---------------------------------------|--------------|--------------|---------------|
| police_test (Output) service-policy : |              |              |               |
| police_class (0)                      | 0            | 0            | 0             |
|                                       | 1            | 0            | 0             |
|                                       | 2            | 0            | 0             |
|                                       | 3            | 0            | 0             |
| class-default (1)                     | 0            | 0            | 0             |

### Cisco 10000 Series Router

The following example displays the top 10 packet types diverted to the RP. The output displays the top punters by interface and by Layer 2 packet flow.

Router# **show pxf cpu statistics diversion top 10**

Top 10 punters by interface are:

| Rate (pps) | Packets (diverted/dropped) | vcci | Interface         |
|------------|----------------------------|------|-------------------|
| 1          | 10/0                       | 2606 | Virtual-Access2.1 |

Last diverted packet type is none.

Top 10 punters by Layer 2 flow are:

| Rate (pps) | Packets (diverted/dropped) | Interface | Layer 2 info               |
|------------|----------------------------|-----------|----------------------------|
| 1          | 15/0                       | ATM2/0/3  | vpi 128/vci 4096/vcci 2591 |

Last diverted packet type is oam\_f4.

|   |      |          |                            |
|---|------|----------|----------------------------|
| 1 | 15/0 | ATM2/0/3 | vpi 128/vci 4096/vcci 2593 |
|---|------|----------|----------------------------|

Last diverted packet type is oam\_f4.

### Related Commands

| Command                              | Description   |
|--------------------------------------|---|
| <b>platform c10k divert- policer</b> | Configures the rate and burst size of the divert-policer. |
| <b>show pxf statistics</b>           | Displays a summary of statistics in the PXF.              |

# show pxf cpu statistics drl ipv4

To verify drop counters for WAN-IPv4 packets, use the **show pxf cpu statistics drl ipv4** command in the privileged EXEC mode.

```
show pxf cpu statistics drl ipv4 [threshold | output modifiers]
```

| Syntax Description | threshold               | The packet threshold value. The valid range is 0 to 4294967295.  |
|--------------------|-------------------------|--|
|                    | <i>output modifiers</i> | The following output modifiers are used. <ul style="list-style-type: none"> <li>• <i>append</i>—Appends the redirected output to URL (URLs supporting append operation only)</li> <li>• <i>begin</i>—Begins with the line that matches.</li> <li>• <i>exclude</i>—Excludes the lines that match.</li> <li>• <i>include</i>—Includes the lines that match.</li> <li>• <i>redirect</i>—Redirects the output to the URL.</li> <li>• <i>section</i>—Filters a specific section of the output.</li> <li>• <i>tee</i>—Copies the output to the URL.</li> </ul> |

| Command Modes | Privileged EXEC (#) |
|---------------|---------------------|
|---------------|---------------------|

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCE | This command was introduced. |

## Examples

The following examples indicate the drop counters for WAN-IPv4 packets.

```
Router# show pxf cpu statistics drl ipv4
Divert-Rate-Limit WAN-IPv4 statistics
  dropped  identifier
    460    11.12.13.10 VRF: global divert_code: fib_rp_dest
    150    11.12.13.10 VRF: global divert_code: fib_limited_broadcast
```

```
Router#
Router# show pxf cpu statistics drl ipv4 threshold 400
Divert-Rate-Limit WAN-IPv4 statistics :: threshold = 400
  dropped  identifier
    460    11.12.13.10 VRF: global divert_code: fib_rp_dest
```

## Related Commands

| Command  | Description   |
|--|---|
| <b>clear pxf statistics dnl ipv4</b>               | Clears all the entries in the WAN IPv4 statistics table.                      |
| <b>service divert-rate-limit trusted-site-ipv6</b> | Adds IPv6-specific entries to the trusted site list.                          |
| <b>show pxf cpu statistics dnl us-cable</b>        | Displays the number of upstream cable packets that are dropped from the CMTS. |
| <b>show pxf cpu statistics dnl ipv6</b>            | Verifies the drop counters for WAN-IPv4 packets.                              |

# show pxf cpu statistics drl ipv6

To verify drop counters for WAN-IPv6 packets, use the **show pxf cpu statistics drl ipv6** command in the privileged EXEC mode.

```
show pxf cpu statistics drl ipv6 [threshold | output modifiers]
```

| Syntax Description | threshold               | The packet threshold value. The valid range is 0 to 4294967295.  |
|--------------------|-------------------------|--|
|                    | <i>output modifiers</i> | The following output modifiers are used. <ul style="list-style-type: none"> <li><i>append</i>—Appends the redirected output to URL (URLs supporting append operation only)</li> <li><i>begin</i>—Begins with the line that matches.</li> <li><i>exclude</i>—Excludes the lines that match.</li> <li><i>include</i>—Includes the lines that match.</li> <li><i>redirect</i>—Redirects the output to the URL.</li> <li><i>section</i>—Filters a specific section of the output.</li> <li><i>tee</i>—Copies the output to the URL.</li> </ul> |

| Command Modes | Privileged EXEC (#) |
|---------------|---------------------|
|---------------|---------------------|

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCE | This command was introduced. |

**Examples** The following examples indicate the drop counters for WAN-IPv6 packets.

```
Router# show pxf cpu statistics drl ipv6
Divert-Rate-Limit WAN-IPv6 statistics
  dropped  identifier
    460    10FA:6604:8136:6502::/64 VRF: global  divert_code: ipv6_rp_dest
    150    10FA:6604:8136:6502::/64 VRF: global  divert_code: ipv6_rp_punt

Router#
Router# show pxf cpu statistics drl ipv6 threshold 400
Divert-Rate-Limit Cable/WAN-IP statistics :: threshold = 400
  dropped  identifier
    460    10FA:6604:8136:6502::/64 VRF: global  divert_code: ipv6_rp_dest

Router#
```

**Related Commands**

| <b>Command</b>                                     | <b>Description</b>  |
|--|---|
| <b>clear pxf statistics drl ipv6</b>               | Clears all the entries in the WAN IPv6 statistics table.                      |
| <b>service divert-rate-limit trusted-site-ipv6</b> | Adds IPv6-specific entries to the trusted site list.                          |
| <b>show pxf cpu statistics drl us-cable</b>        | Displays the number of upstream cable packets that are dropped from the CMTS. |
| <b>show pxf cpu statistics drl ipv4</b>            | Verifies the drop counters for WAN-IPv4 packets.                              |

# show pxf cpu statistics drl us-cable

To view and verify the number of upstream cable packets that are dropped from the CMTS, use the **show pxf cpu statistics drl us-cable** command in the privileged EXEC mode.

```
show pxf cpu statistics drl us-cable [threshold | output modifiers]
```

| Syntax Description | threshold        | The packet threshold value. The valid range is 0 to 4294967295.  |
|--------------------|------------------|--|
|                    | output modifiers | The following output modifiers are used. <ul style="list-style-type: none"> <li>• <i>append</i>—Appends the redirected output to URL (URLs supporting append operation only)</li> <li>• <i>begin</i>—Begins with the line that matches.</li> <li>• <i>exclude</i>—Excludes the lines that match.</li> <li>• <i>include</i>—Includes the lines that match.</li> <li>• <i>redirect</i>—Redirects the output to the URL.</li> <li>• <i>section</i>—Filters a specific section of the output.</li> <li>• <i>tee</i>—Copies the output to the URL.</li> </ul> |

| Command Default | Disabled |
|-----------------|----------|
|-----------------|----------|

| Command Modes | Privileged EXEC (#) |
|---------------|---------------------|
|---------------|---------------------|

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCE | This command was introduced. |

## Examples

The following examples indicate the statistics of upstream cable packets that are dropped from the CMTS.

```
Router# show pxf cpu statistics drl us-cable
Divert-Rate-Limit US-cable statistics
  dropped  identifier
    361    interface: Cable6/0/1  SID: 28
    2457   interface: Cable6/0/0  SID: 1
```

```
Router# show pxf cpu statistics drl us-cable threshold 400
Divert-Rate-Limit US-cable statistics :: threshold = 400
  dropped  identifier
    2457   interface: Cable6/0/0  SID: 1
```

```
Router#
```

| <b>Related Commands</b> | <b>Command</b>                                     | <b>Description</b>                                       |
|-------------------------|--|--|
|                         | <b>clear pxf statistics drl us-cable</b>           | Clears all the entries in the US-cable statistics table. |
|                         | <b>service divert-rate-limit trusted-site-ipv6</b> | Adds IPv6-specific entries to the trusted site list.     |
|                         | <b>show pxf cpu statistics drl ipv6</b>            | Verifies the drop counters for WAN-IPv6 packets.         |
|                         | <b>show pxf cpu statistics drl ipv4</b>            | Verifies the drop counters for WAN-IPv4 packets.         |

# show pxf dma

To display information for the current state of the direct memory access (DMA) buffers, error counters, and registers on the Parallel eXpress Forwarding (PXF) processor, use the **show pxf dma** command in user EXEC or privileged EXEC mode.

**show pxf dma** [**buffers** | **counters** | **registers**]

| Syntax Description |            |  |
|--------------------|------------|--|
| <b>buffers</b>     | (Optional) | Displays information about the DMA buffers.            |
| <b>counters</b>    | (Optional) | Displays packet and error counters for the DMA engine. |
| <b>registers</b>   | (Optional) | Displays information about the DMA registers.          |

**Command Default** If given without any options, displays all information.

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.2(1)XF1  | This command was introduced as <b>show hardware pxf dma</b> for the Cisco uBR10012 router. |
|                 | 12.2(15)BC2 | This command was renamed from <b>show hardware pxf dma</b> to <b>show pxf dma</b> .        |

**Usage Guidelines** The **show pxf dma** command displays technical information about the current state of the DMA engine onboard the PXF processor. The **buffers** and **registers** options display information that is useful primarily to Cisco TAC engineers that are troubleshooting problems. The **counters** option displays a set of packet and error counters that can help diagnose and resolve problems with memory on the PXF processor.

**Examples** The following example shows a typical display for the **dma buffers** option:

```
Router# show pxf dma buffers
```

```
PXF To-RP DMA Ring Descriptors & Buffers:
```

|   | Descriptor Address | Buffer Address | Buffer Length (b) | Descriptor Flags |
|---|--------------------|----------------|-------------------|------------------|
| 0 | 0x0B2A6CC0         | 0x08AA80C0     | 512               | 0x0002           |
| 1 | 0x0B2A6CD0         | 0x08AA8340     | 512               | 0x0002           |
| 2 | 0x0B2A6CE0         | 0x08AA8D40     | 512               | 0x0002           |
| 3 | 0x0B2A6CF0         | 0x08AA8AC0     | 512               | 0x0002           |
| 4 | 0x0B2A6D00         | 0x08AA8FC0     | 512               | 0x0002           |
| 5 | 0x0B2A6D10         | 0x08AA9240     | 512               | 0x0002           |
| 6 | 0x0B2A6D20         | 0x08AA9740     | 512               | 0x0002           |
| 7 | 0x0B2A6D30         | 0x08AA94C0     | 512               | 0x0002           |
| 8 | 0x0B2A6D40         | 0x08AA99C0     | 512               | 0x0002           |

```

9    0x0B2A6D50    0x08AA9C40    512    0x0002
10   0x0B2A6D60    0x08AA9EC0    512    0x0002
11   0x0B2A6D70    0x08AAA140    512    0x0002
12   0x0B2A6D80    0x08AAA640    512    0x0002
13   0x0B2A6D90    0x08AAA3C0    512    0x0002
14   0x0B2A6DA0    0x08AAA8C0    512    0x0002
15   0x0B2A6DB0    0x08AAB40     512    0x0002
16   0x0B2A6DC0    0x08AAB040    512    0x0002
17   0x0B2A6DD0    0x08AADC0     512    0x0002
18   0x0B2A6DE0    0x08AAB2C0    512    0x0002
19   0x0B2A6DF0    0x08AAB540    512    0x0002
20   0x0B2A6E00    0x08AAB7C0    512    0x0002
21   0x0B2A6E10    0x08AABA40    512    0x0002
22   0x0B2A6E20    0x08AABF40    512    0x0002
23   0x0B2A6E30    0x08AABCC0    512    0x0002
24   0x0B2A6E40    0x08AA6CC0    512    0x0002
25   0x0B2A6E50    0x08AA6F40    512    0x0002
26   0x0B2A6E60    0x08AA71C0    512    0x0002
27   0x0B2A6E70    0x08AA7440    512    0x0002
28   0x0B2A6E80    0x08AA7940    512    0x0002
29   0x0B2A6E90    0x08AA76C0    512    0x0002
30   0x0B2A6EA0    0x08AA7E40    512    0x0002
31   0x0B2A6EB0    0x08AA7BC0    512    0x0003

```

PIX From-RP DMA Ring Descriptors & Buffers:

|    | Descriptor Address | Buffer Address | Buffer Length (b) | Descriptor Flags | Context Bit |
|----|--------------------|----------------|-------------------|------------------|-------------|
| 0  | 0x0B2A6F00         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 1  | 0x0B2A6F10         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 2  | 0x0B2A6F20         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 3  | 0x0B2A6F30         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 4  | 0x0B2A6F40         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 5  | 0x0B2A6F50         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 6  | 0x0B2A6F60         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 7  | 0x0B2A6F70         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 8  | 0x0B2A6F80         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 9  | 0x0B2A6F90         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 10 | 0x0B2A6FA0         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 11 | 0x0B2A6FB0         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 12 | 0x0B2A6FC0         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 13 | 0x0B2A6FD0         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 14 | 0x0B2A6FE0         | 0x00000000     | 0                 | 0x0000           | Not set     |
| 15 | 0x0B2A6FF0         | 0x00000000     | 0                 | 0x0001           | Not set     |

Router#

[Table 0-22](#) describes the fields shown in the **show pxf dma buffers** command:

**Table 0-22 Field Descriptions for the show pxf dma buffers Command**

| Field              | Description  |
|--------------------|--|
| Descriptor Address | Memory address pointing to the descriptor for this buffer.   |
| Buffer Address     | Address of this buffer in memory.  |
| Buffer Length      | Length, in bytes, of this particular buffer.   |
| Descriptor Flags   | Internal flags identifying this buffer's use and status.   |
| Context Bit        | State of the context bit, which is set when the buffer is currently in use by a context (the basic unit of packet processing). |

The following example shows a typical display for the **dma counters** option:

```
Router# show pxf dma counters

PXF DMA IOS Counters:
  To RP Counters:
    Packets: 874165, Cumulative Bytes: 531976708
    Output Drops: 0, No EOP: 0, No Buffers: 0, No OWN Clear 57
  From RP Counters:
    Packets: 1254593, Cumulative Bytes: 275832396
    Output Drops: 0, Own Errors 46
PXF DMA Driver Info:
  Times Enabled: 1
  GP Registers Address: 0x3C000000
  Pool Address: 0x703EADB0, Buffer Pool Group: 4
  ToRP Info:
    Ring Address: 0x0B2A6CC0, Shadow Address: 0x7046B2D0, Ring Size: 32
    Descriptor Head: 10, Starved: 0
    Pak Pointer: 0x626AAD98
  FromRP Info:
    Ring Address: 0x0B2A6F00, Shadow Address: 0x626AB0D0, Ring Size: 16
    Descriptor Head: 1, Descriptor Tail: 1, From RP count 0
    High Priority Queue: 0x6226A920, Low Priority Queue: 0x6226A930
    FromRP Queue Count: 0
PXF DMA Event Counters:
  Event1:
    PXF DMA Toaster Fault: 0
    PXF DMA FTC Parity Error: 0
    PXF DMA FTC Long Context Error: 0
    PFX DMA FTC Short Context Error: 0
    PXF DMA FTC Overflow Error: 0
    PXF DMA FTC Protocol Error: 0
    PXF DMA FTC Bad Address Error: 0
    PXF DMA FTC Bad Address Pair Error: 0
    PXF DMA FTC Invalid Command Error: 0
    PXF DMA FTC Queue Full Error: 0
    PXF DMA FTC Queue Threshold Exceeded Error: 0
    PXF DMA Full OCQ Wait Error: 0
    PXF DMA Toaster Status Wait Error: 0
    PXF DMA TTQ Context Wait Error: 0
    PXF DMA TBB Length Error: 0
      1/0: error: 0
      1/1: error: 0
      2/0: error: 0
      2/1: error: 0
      3/0: error: 0
      3/1: error: 0
      4/0: error: 0
      4/1: error: 0
      5/0: error: 0
      5/1: error: 0
      6/0: error: 0
      6/1: error: 0
      7/0: error: 0
      7/1: error: 0
      8/0: error: 0
      8/1: error: 0
      9/0: error: 0
      9/1: error: 0
    PXF DMA OQC Cmd Completion Status Queue Full Error: 0
    PXF DMA OQC Invalid Queue Number Error: 0
    PXF DMA OQC Invalid Length Error: 0
    PXF DMA PCI Parity Master Error: 0
    PXF DMA PCI Parity Dev Error: 0
```

```
PXF DMA PCI System Error: 0
PXF DMA PCI Target Abort: 0
PXF DMA PCI Master Abort: 0
PXF DMA PCI Retry Timeout: 0
PXF DMA Single Bit SDRAM Error: 0
PXF DMA Multi-bit SDRAM Error: 0
PXF DMA Non-fatal SDRAM Error Counter Full Error: 0
PXF DMA SDRAM Request Error: 0
PXF DMA Toaster Stall Error: 0
PXF DMA New Work TTQ Full Error: 0
PXF DMA FBTTQ Full Error: 0
PXF DMA New Work TTQ FSM Error: 0
Event2:
PXF DMA Search SOP Error: 0
PXF DMA Debug Compare Match Event: 0
PXF DMA FBB Line Card Error: 0
    1/0: len 0, msop 0, crc 0, ovr 0
    1/1: len 0, msop 0, crc 0, ovr 0
    2/0: len 0, msop 0, crc 0, ovr 0
    2/1: len 0, msop 0, crc 0, ovr 0
    3/0: len 0, msop 0, crc 0, ovr 0
    3/1: len 0, msop 0, crc 0, ovr 0
    4/0: len 0, msop 0, crc 0, ovr 0
    4/1: len 0, msop 0, crc 0, ovr 0
    5/0: len 0, msop 0, crc 0, ovr 0
    5/1: len 0, msop 0, crc 0, ovr 0
    6/0: len 0, msop 0, crc 0, ovr 0
    6/1: len 0, msop 0, crc 0, ovr 0
    7/0: len 0, msop 0, crc 0, ovr 0
    7/1: len 0, msop 0, crc 0, ovr 0
    8/0: len 0, msop 0, crc 0, ovr 0
    8/1: len 0, msop 0, crc 0, ovr 0
PXF DMA FBB Flow Bit Error: 0
PXF DMA New Work Queue Low Error: 0
PXF DMA New Work Queue High Error: 0
PXF DMA NWTQ Word Valid Error: 0
PXF DMA FBTTQ Word Valid Error: 0
PXF DMA NWTQ Context Valid Error: 0
PXF DMA FBTTQ Context Valid Error: 0
PXF DMA NWTQ Context Used Error: 0
PXF DMA PMAC Write Server Error: 0
PXF DMA PMAC Read Server Error: 0
Event3:
Ironbus Event 1/0: 0
Ironbus Event 1/1: 0
Ironbus Event 2/0: 0
Ironbus Event 2/1: 0
Ironbus Event 3/0: 0
Ironbus Event 3/1: 0
Ironbus Event 4/0: 0
Ironbus Event 4/1: 0
Ironbus Event 5/0: 0
Ironbus Event 5/1: 0
Ironbus Event 6/0: 0
Ironbus Event 6/1: 0
Ironbus Event 7/0: 0
Ironbus Event 7/1: 0
Ironbus Event 8/0: 0
Ironbus Event 8/1: 0
```

Router#

The following example shows a typical display for the **dma registers** option:

```
Router# show pxf dma registers

PXF DMA PCI Registers:
Vendor and Device ID: 0x00001137
Command and Status: 0x02A00147
Revision ID and Class Code: 0x00000000
Cache Latency and Header BIST: 0x00003010
Base Address Registers:
  BAR0: 0x9C000000, BAR1: 0x00000000, BAR2: 0x00000000
  BAR3: 0x00000000, BAR4: 0x00000000, BAR5: 0x00000000
CIS Pointer Register: 0x00000000
Subsystem Vendor ID and Subsystem ID: 0x00000000
Expansion ROM Base Address: 0x00000000
Interrupt Grant Latency Register: 0x00000000

PXF DMA General Purpose Registers:
Soft Reset: 0x000000FF, Line Card Reset: 0x00000000
PXF DMA Part Number: 0x08034101, PXF DMA Version 0x00000003
Event1: 0x00000000, Halt Mask1: 0x6500FE00, Fault Mask1: 0x6400B400
Event2: 0x00000008, Halt Mask2: 0x0000003F, Fault Mask2: 0x0000000C
Event3: 0x00000000, Halt Mask3: 0x0000FFFF, Fault Mask3: 0x0000C1CF
Debug Registers:
  Address: 0x000000CE, Out: 0x00001E11, Compare: 0x00000000
FTBB Registers:
  Control1: 0xE0404060, Control2: 0x44444040, Control3: 0x00000040
FBB Registers:
  Flow: 0x00000001
  Length Error: 0x00000000, Multi-SOP Error: 0x00000000
  CRC Error: 0x00000000, IPM Overrun Error: 0x00000000
TTC Registers:
  Control: 0xFF000022, Pad1: 0xAAAAAAAA, Pad2: 0x00000000
FTC Control: 0x00000070
OQC Registers:
  Control: 0x000002D0, Priority: 0x00007C40, Status: 0x00000000
SDRAM Registers:
  Control: 0x00272400, Status: 0x00000000
  ECC Override: 0x00000000, Error Address 0x00000000
  Window: 0x00000007, Timing: 0x000061A8
To RP Registers:
  Descriptor Ring Base Address: 0x0B2A6CC0, Buffer Size: 0x00000200
  Descriptor Status: 0x00E00008, DMA Control: 0x00103E04
  Descriptor Word0: 0x08AA9740, Descriptor Word1 0x02000002
From RP Registers:
  Descriptor Ring Base Address: 0x0B2A6F00
  Descriptor Status: 0x00D0000C, DMA Control: 0x01007E04
  Descriptor Word0: 0x00000000, Descriptor Word1: 0x00000000
RP Debug Out: 0x00000000

Debug Registers:
FBB Rx Iron Bus Engine Debug Resource 04: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 06: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 07: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 11: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 12: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 13: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 14: 0x00000000
FBB Rx Iron Bus Engine Debug Resource 15: 0x00000000
OQC Output Command Queue 03 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
OQC Output Command Queue 05 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
OQC Output Command Queue 06 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
OQC Output Command Queue 10 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
OQC Output Command Queue 11 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
OQC Output Command Queue 12 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
OQC Output Command Queue 13 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
```

```

OQC Output Command Queue 14 Debug Data: 0x00001040, qN_entry_cnt[5:0]: 0
FTC FTQ State Debug Data: 0x00000D1A
  wr_context_num[13:7]: 26
  rd_context_num[6:0]: 26
Ironbus Registers:
Control: 0x00000001, Spy: 0x00000000
Reset: 0x0000C1CF, Ready: 0x00003E34
Slot 1, Subslot 0:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 1, Subslot 1:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 2, Subslot 0:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 2, Subslot 1:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 3, Subslot 0:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 3, Subslot 1:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 4, Subslot 0:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 4, Subslot 1:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 5, Subslot 0:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 5, Subslot 1:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 6, Subslot 0:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 6, Subslot 1:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 7, Subslot 0:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 7, Subslot 1:
  Status: 0x00000DC0, Statistics1: 0x00000000
  Statistics2: 0x00000000, Statistics3: 0x00000000
Slot 8, Subslot 0:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Slot 8, Subslot 1:
  Status: 0xFFFFFFFF, Statistics1: 0xFFFFFFFF
  Statistics2: 0xFFFFFFFF, Statistics3: 0xFFFFFFFF
Router#

```

| Related Commands | Command                         | Description  |
|------------------|---------------------------------|--|
|                  | <b>clear pxf</b>                | Clears the direct memory access (DMA) and error checking and correcting (ECC) error counters on the PXF processor. |
|                  | <b>debug pxf</b>                | Enables debugging of the PXF subsystems on the active PRE1 module on the Cisco uBR10012 router.                    |
|                  | <b>show pxf cable</b>           | Displays information about the multicast echo and packet intercept features for one or all cable interfaces.       |
|                  | <b>show pxf cable interface</b> | Displays information about a particular service ID (SID) on a particular cable interface.                          |
|                  | <b>show pxf cpu</b>             | Displays the display different statistics about the operation of the CPU processor during PXF processing.          |
|                  | <b>show pxf microcode</b>       | Displays identifying information for the microcode being used on the processor.                                    |
|                  | <b>show pxf xcm</b>             | Displays the current state of ECC for the External Column Memory (XCM) on the PXF processor.                       |

# show pxf microcode

To display identifying information for the microcode being used on the Parallel eXpress Forwarding (PXF) processor, use the **show pxf microcode** command in user EXEC or privileged EXEC mode.

## show pxf microcode

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

**Command Default** No default behavior or values

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.2(4)XF1  | This command was introduced as <b>show hardware pxf microcode</b> for the Cisco uBR10012 router. |
|                 | 12.2(15)BC2 | This command was renamed from <b>show hardware pxf microcode</b> to <b>show pxf microcode</b> .  |

**Usage Guidelines** The PXF processors onboard the Performance Routing Engine (PRE1) module automatically load their microcode at the same time that the Cisco IOS image is loaded into the PRE1 module. A fault situation can cause one or both of the PXF processors to reload the microcode as needed. You can use the **show pxf microcode** command to display the version of microcode currently loaded, as well as the number of times the microcode has been loaded since the Cisco IOS software was loaded at system bootup.

**Examples** The following example shows a typical display for the **show pxf microcode** command:

```
Router# show pxf microcode

PXF complex: 2 Toasters 8 Columns total
Toaster processor tmc0 is running.
Toaster processor tmc1 is running.

Loaded microcode: system:pxf/u10k-1-ucode.2.3.1
  Version: 2.3.1
  Release Software created Wed 04-Sep-02 10:04
  Signature: c99db74b91f8fae0a15e62e152c3f49f
  Microcode load attempted 1 time(s), latest 3d17h ago
  DISABLE_BOOTSTRAP_CLEAR
  tmc0 FG_PC=1 BG_PC=5 WDog=1024 MinPhase=31
  tmc1 FG_PC=1 BG_PC=5 WDog=1024 MinPhase=31
  Cobalt Registers: 9 registers specified
    00000064 0000000F 00000001
    00000090 FFFF0000 FF000000
    00000090 000003C0 00000000
    00000090 00000003 00000002
    00000094 FFFFFFFF AAAAAAAA
```

## show pxf microcode

```

000000A0 000001C0 00000040
000000B0 00000200 00000200
000000B0 00000100 00000000
000000B0 0000003F 00000010

```

Router#

Table 0-23 describes the fields shown in the **show pxf microcode** command:

**Table 0-23 Field Descriptions for the show pxf microcode Command**

| Field                    | Description  |
|--------------------------|--|
| PXF complex              | Describes the number of PXF (Toaster) processors, their associate memory columns, and their current status.  |
| Loaded microcode         | Describes the source and filename for the microcode that is currently loaded on the PXF processor.   |
| Version                  | Identifies the major and minor version numbers for the current release of microcode.   |
| Release Software created | Identifies the time and date the current microcode was compiled.   |
| Microcode load attempted | Identifies the number of times the PXF processor has loaded the microcode since the Cisco IOS image was loaded at system bootup. Also shows the time (in days and hours) since the last successful load of the microcode.            |
| DISABLE_BOOTSTRAP        | Displays the current state of operation for the PXF processor. During normal operation, this line shows "DISABLE_BOOTSTRAP_CLEAR".   |
| tmc0, tmc1               | Identifies the current program counters and configuration for the two PXF processors.  |
| Cobalt registers         | Provides a hexadecimal dump of the current contents of the register for the Cobalt support chip, which manages the interface between the PXF processors and the backplane, and which also manages the memory for the packet buffers. |

### Related Commands

| Command                         | Description  |
|---------------------------------|--|
| <b>clear pxf</b>                | Clears the direct memory access (DMA) and error checking and correcting (ECC) error counters on the PXF processor. |
| <b>debug pxf</b>                | Enables debugging of the PXF subsystems on the active PRE1 module on the Cisco uBR10012 router.                    |
| <b>microcode</b>                | Reloads the microcode software images on one or all line cards that support downloadable microcode.                |
| <b>microcode reload</b>         | Reloads the microcode software images on one or all line cards that support downloadable microcode.                |
| <b>show pxf cable</b>           | Displays information about the multicast echo and packet intercept features for one or all cable interfaces.       |
| <b>show pxf cable interface</b> | Displays information about a particular service ID (SID) on a particular cable interface.                          |
| <b>show pxf cpu</b>             | Displays the display different statistics about the operation of the CPU processor during PXF processing.          |

| Command             | Description   |
|---------------------|---|
| <b>show pxf dma</b> | Displays information for the current state of the PXF DMA buffers, error counters, and registers. |
| <b>show pxf xcm</b> | Displays the current state of ECC for the External Column Memory (XCM) on the PXF processor.      |

# show pxf xcm

To display the current state of error checking and correcting (ECC) for the External Column Memory (XCM) on the Parallel eXpress Forwarding (PXF) processor, use the **show pxf xcm** command in user EXEC or privileged EXEC mode.

**show pxf xcm**

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

**Command Default** No default behavior or values

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification  |
|-----------------|-------------|---|
|                 | 12.2(4)XF1  | This command was introduced as <b>show hardware pxf xcm</b> to support the Performance Routing Engine (PRE1) module on the Cisco uBR10012 router. |
|                 | 12.2(15)BC2 | This command was renamed from <b>show hardware pxf xcm</b> to <b>show pxf xcm</b> .   |

**Usage Guidelines** The **show pxf xcm** command displays the register contents and error counters for the ECC function on the processor's XCM memory columns. Each PXF processor contains four memory columns, and ECC is enabled by default for each column.



**Note**

The **show pxf xcm** command is supported only on the PRE1 and later processors for the Cisco uBR10012 router. This command is not supported on the PRE module.

**Examples** The following example shows a typical display for the **show pxf xcm** command for a PRE1 module:

```
Router# show pxf xcm

Toaster 0:
  Number of Columns: 4
  Proc ID: 0x00000002 = TMC
  ASIC Revision: 0x00000002 = T2-ECC
  XCM0 type:SDRAM, size = 67108864
  ECC is enabled for column 0
  XCM Control Register: 0x00000001
  XCM Exception Type Register: 0x00000000
  SDRAM-A Counters
    Number of ECC single bit errors: 0
  SDRAM-B Counters
    Number of ECC single bit errors: 0
  XCM1 type:SDRAM, size = 67108864
```

```
ECC is enabled for column 1
  XCM Control Register: 0x00000001
  XCM Exception Type Register: 0x00000000
  SDRAM-A Counters
    Number of ECC single bit errors: 0
  SDRAM-B Counters
    Number of ECC single bit errors: 0
XCM2 type:SDRAM, size = 67108864
ECC is enabled for column 2
  XCM Control Register: 0x00000001
  XCM Exception Type Register: 0x00000000
  SDRAM-A Counters
    Number of ECC single bit errors: 0
  SDRAM-B Counters
    Number of ECC single bit errors: 0
XCM3 type:SDRAM, size = 67108864
ECC is enabled for column 3
  XCM Control Register: 0x00000001
  XCM Exception Type Register: 0x00000000
  SDRAM-A Counters
    Number of ECC single bit errors: 0
  SDRAM-B Counters
    Number of ECC single bit errors: 0
Toaster 1:
  Number of Columns: 4
  Proc ID: 0x00000002 = TMC
  ASIC Revision: 0x00000002 = T2-ECC
  XCM0 type:SDRAM, size = 67108864
  ECC is enabled for column 0
    XCM Control Register: 0x00000001
    XCM Exception Type Register: 0x00000000
    SDRAM-A Counters
      Number of ECC single bit errors: 0
    SDRAM-B Counters
      Number of ECC single bit errors: 0
  XCM1 type:SDRAM, size = 67108864
  ECC is enabled for column 1
    XCM Control Register: 0x00000001
    XCM Exception Type Register: 0x00000000
    SDRAM-A Counters
      Number of ECC single bit errors: 0
    SDRAM-B Counters
      Number of ECC single bit errors: 0
  XCM2 type:SDRAM, size = 67108864
  ECC is enabled for column 2
    XCM Control Register: 0x00000001
    XCM Exception Type Register: 0x00000000
    SDRAM-A Counters
      Number of ECC single bit errors: 0
    SDRAM-B Counters
      Number of ECC single bit errors: 0
  XCM3 type:SDRAM, size = 67108864
  ECC is enabled for column 3
    XCM Control Register: 0x00000001
    XCM Exception Type Register: 0x00000000
    SDRAM-A Counters
      Number of ECC single bit errors: 0
    SDRAM-B Counters
      Number of ECC single bit errors: 0
Router#
```

Table 0-24 describes the fields displayed by the **show pxf xcm** command.

**Table 0-24 show pxf xcm Field Descriptions**

| Field   | Description  |
|---|--|
| <b>The following fields appear for each PXF processor</b>     |  |
| Toaster 0, Toaster 1  | Identifies the PXF processor.  |
| Number of Columns   | Identifies the number of memory columns on the PXF processor. Each PXF processor contains 4 columns of memory. |
| Proc ID:  | Identifies the type of processor (TMC=Toaster Memory Column).  |
| ASIC Revision   | Identifies the internal version number of the PXF processor.   |
| <b>The following fields appear for each XCM memory column</b> |  |
| XCM type  | Identifies the type and size, in bytes, of memory used in this particular column.                              |
| ECC is enabled for column                                     | Identifies whether ECC checking is enabled or disabled for this memory column.                                 |
| XCM Control Register and Exception Type Register              | Identifies the contents of these two registers for the memory column.  |
| Number of ECC single bit errors                               | Identifies the number of single-bit errors that have been detected in the A and B banks of memory              |

The following example shows the error message that is displayed when this command is used on a PRE1 module:

```
Router# show pxf xcm

ECC is not supported for this revision

Router#
```

## Related Commands

| Command                         | Description  |
|---------------------------------|--|
| <b>clear pxf</b>                | Clears the direct memory access (DMA) and error checking and correcting (ECC) error counters on the PXF processor. |
| <b>debug pxf</b>                | Enables debugging of the PXF subsystems on the active PRE1 module on the Cisco uBR10012 router.                    |
| <b>show pxf cable</b>           | Displays information about the multicast echo and packet intercept features for one or all cable interfaces.       |
| <b>show pxf cable interface</b> | Displays information about a particular service ID (SID) on a particular cable interface.                          |
| <b>show pxf cpu</b>             | Displays the display different statistics about the operation of the CPU processor during PXF processing.          |
| <b>show pxf microcode</b>       | Displays identifying information for the microcode being used on the processor.                                    |
| <b>show pxf dma</b>             | Displays the current state of ECC for the External Column Memory (XCM) on the PXF processor.                       |



## show redundancy (ubr10012)

To display the current redundancy status, use the **show redundancy** command in user EXEC or privileged EXEC mode.

**show redundancy [clients | counters | history | states]**

| Syntax Description |                 |   |
|--------------------|-----------------|---|
|                    | <b>clients</b>  | (Optional) Displays the Redundancy Facility (RF) client list. |
|                    | <b>counters</b> | (Optional) Displays RF operational counters.                  |
|                    | <b>history</b>  | (Optional) Summarizes RF history.                             |
|                    | <b>states</b>   | (Optional) Displays RF states for active and standby modules. |

**Defaults** No default behavior or values

**Command Modes** User EXEC, Privileged EXEC

| Command History | Release     | Modification   |
|-----------------|-------------|--|
|                 | 12.2(4)XF1  | This command was introduced for the Cisco uBR10012 router.   |
|                 | 12.2(11)BC3 | The <b>clients</b> , <b>counters</b> , <b>history</b> , and <b>states</b> option were added, and the default display was enhanced to show the version of Cisco IOS software that is running on the standby PRE module. |
|                 | 12.2(15)BC2 | The default display includes additional information about the history of switchovers, as well as a stack trace from the secondary PRE module's ROMMON for when it last crashed, if ever.                               |
|                 | 12.2(33)SCA | This command was integrated into Cisco IOS Release 12.2(33)SCA.  |

**Usage Guidelines** The **show redundancy** command shows whether the PRE A slot or PRE B slot contains the active (primary) Performance Routing Engine (PRE1) module, the status of the standby (secondary) PRE1 module, and the values for the standby PRE1 module's boot variables and configuration register. In Cisco IOS Release 12.2(13)BC1 and later releases, it also shows the version of Cisco IOS software that is running on the standby PRE module.



**Note**

The **show redundancy** command always shows the correct location of the active PRE1 module. The other PRE slot will always be marked as **Secondary**, even if a standby PRE1 module is not installed.

**Examples** This section contains examples of typical displays for each of the options that are available for the **show redundancy** command.

**Default Displays**

The following example shows a typical display from the show redundancy command in Cisco IOS Release 12.2(15)BC2 and later releases:

```

PRE A                : Secondary
PRE B (This PRE)    : Primary

Uptime since this PRE switched to active : 5 minutes
Total system uptime from reload          : 37 minutes
Switchovers this system has experienced : 5
Secondary failures since this PRE active : 0
The secondary PRE has been up for       : 1 minute
The reason for last switchover: ACTIVE RP CRASHED

Secondary PRE information....
Secondary is up.
Secondary has 524288K bytes of memory.
Secondary BOOT variable = slot0:ubr10k-k8p6-mz.122-11.CY,12;
Secondary CONFIG_FILE variable = bootflash:030227.config
Secondary BOOTLDR variable =
Secondary Configuration register is 0x0

Secondary version:
Cisco Internetwork Operating System Software
IOS (tm) 10000 Software (UBR10K-K8P6-M), Experimental Version 12.2(15)BC2
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Mon 01-Mar-04 12:01 by anxrana

Primary version:
Cisco Internetwork Operating System Software
IOS (tm) 10000 Software (UBR10K-K8P6-M), Released Version 12.2(15)BC2
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Mon 01-Mar-04 12:01 by anxrana

Redundant RP last failure info as reported by Standby:
bus error at PC 0x605C8B24, address 0xFF012345
10000 Software (UBR10K-K8P6-M), Experimental Version 12.3(20040211:230003)
[narana-geo_cable 123]
Compiled Mon 01-Mar-04 12:01 by anxrana
Image text-base: 0x60008CB8, data-base: 0x61F80000

Stack trace from system failure:
FP: 0x7234C8C8, RA: 0x605C8B24
FP: 0x7234CA30, RA: 0x604940F4
FP: 0x7234CA90, RA: 0x60151FF0
FP: 0x7234CAB0, RA: 0x604A5554
FP: 0x7234CB40, RA: 0x6051F638
FP: 0x7234CB58, RA: 0x6051F61C

Router#

The following example shows a typical display from the show redundancy command in Cisco IOS Release 12.2(15)BC1 and earlier releases. The active PRE1 module is in PRE slot A, and the standby PRE1 module is in PRE slot B:

Router# show redundancy

PRE A (This PRE)    : Primary
PRE B                : Secondary

Redundancy state is REDUNDANCY_PEERSECONDARY_INITED

Secondary PRE information....
Secondary is up.
Secondary has 524288K bytes of memory.
Secondary BOOT variable = bootflash:ubr10k-k8p6-mz

```

```

Secondary CONFIG_FILE variable =
Secondary BOOTLDR variable = bootflash:c10k-eboot-mz
Secondary Configuration register is 0x2102

Secondary version:
Cisco Internetwork Operating System Software
IOS (tm) 10000 Software (UBR10K-K8P6-M), Released Version 12.2(11)BC3
Copyright (c) 1986-2003 by cisco Systems, Inc.
Compiled Mon 03-Mar-03 11:28 by texbnt

```

Router#

The following example shows the same display but after a switchover has occurred. The **show redundancy** command now shows that the active (primary) PRE has changed slots (in this case, moving from slot A to slot B):

Router# **show redundancy**

```

PRE A                : Secondary
PRE B (This PRE)    : Primary

Redundancy state is REDUNDANCY_PEERSECONDARY_INITED

Secondary PRE information...
Secondary is up.
Secondary BOOT variable = bootflash:ubr10k-k8p6-mz
Secondary CONFIG_FILE variable =
Secondary BOOTLDR variable = bootflash:c10k-eboot-mz
Secondary Configuration register is 0x2

Secondary version:
Cisco Internetwork Operating System Software
IOS (tm) 10000 Software (UBR10K-K8P6-M), Released Version 12.2(13)BC2
Copyright (c) 1986-2003 by cisco Systems, Inc.
Compiled 26 08-Feb-03 11:28 by texbnt

```

Router#

The following example shows a typical display when the standby PRE1 module is not installed or is not operational. The standby (secondary) PRE1 module is shown as not up, and its boot variables and configuration register are not shown.

Router# **show redundancy**

```

PRE A (This PRE)    : Primary
PRE B                : Secondary

Redundancy state is REDUNDANCY_PEERSECONDARY_NONOPERATIONAL

Secondary PRE information...
Secondary PRE is not up

```

Router#

### Clients Display

The following example shows a typical display for the **show redundancy clients** command:

Router# **show redundancy clients**

```

clientID = 0          clientSeq = 0          RF_INTERNAL_MSG
clientID = 25         clientSeq = 130         CHKPT RF
clientID = 5          clientSeq = 170         RFS client
clientID = 50         clientSeq = 530         Slot RF

```

```
clientID = 65000   clientSeq = 65000   RF_LAST_CLIENT
```

### Counters Display

The following example shows a typical display for the **show redundancy counters** command:

```
Router# show redundancy counters

Redundancy Facility OMs
    comm link up = 1
    comm link down down = 0

    invalid client tx = 0
    null tx by client = 0
    tx failures = 0
    tx msg length invalid = 0

    client not rxing msgs = 0
    rx peer msg routing errors = 0
    null peer msg rx = 0
    errored peer msg rx = 0

    buffers tx = 1009
    tx buffers unavailable = 0
    buffers rx = 1006
    buffer release errors = 0

    duplicate client registers = 0
    failed to register client = 0
    Invalid client syncs = 0
```

### History Display

The following example shows a typical display for the **show redundancy history** command:

```
Router# show redundancy history

00:00:00 client added: RF_INTERNAL_MSG(0) seq=0
00:00:00 client added: RF_LAST_CLIENT(65000) seq=65000
00:00:00 client added: CHKPT RF(25) seq=130
00:00:01 client added: Slot RF(50) seq=530
00:00:15 client added: RFS client(5) seq=170
00:00:16 *my state = INITIALIZATION(2) *peer state = DISABLED(1)
00:00:16 RF_PROG_INITIALIZATION(100) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) CHKPT RF(25) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) RFS client(5) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) Slot RF(50) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) RF_LAST_CLIENT(65000) op=0 rc=11
00:00:16 *my state = NEGOTIATION(3) peer state = DISABLED(1)
00:00:16 RF_EVENT_GO_ACTIVE(512) op=0 rc=0
00:00:16 *my state = ACTIVE-FAST(9) peer state = DISABLED(1)
00:00:16 RF_STATUS_MAINTENANCE_ENABLE(403) CHKPT RF(25) op=0 rc=0
00:00:16 RF_STATUS_MAINTENANCE_ENABLE(403) RFS client(5) op=0 rc=0
00:00:16 RF_STATUS_MAINTENANCE_ENABLE(403) Slot RF(50) op=0 rc=0
00:00:16 RF_PROG_ACTIVE_FAST(200) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) CHKPT RF(25) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) RFS client(5) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) Slot RF(50) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) RF_LAST_CLIENT(65000) op=0 rc=11
00:00:16 *my state = ACTIVE-DRAIN(10) peer state = DISABLED(1)
00:00:16 RF_PROG_ACTIVE_DRAIN(201) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(201) CHKPT RF(25) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(201) RFS client(5) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(201) Slot RF(50) op=0 rc=11
```

### States Display

The following example shows a typical display for the **show redundancy states** command:

```
Router# show redundancy states
    my state = 13 -ACTIVE
    peer state = 8  -STANDBY HOT
        Mode = Duplex
        Unit = Primary
        Unit ID = 0

    Redundancy Mode = Hot Standby Redundancy
    Maintenance Mode = Disabled
        Manual Swact = Enabled
    Communications = Up

    client count = 5
    client_notification_TMR = 30000 milliseconds
    RF debug mask = 0x0
```

### Related Commands

| Command                                   | Description  |
|---|--|
| <b>associate</b>                          | Associates two line cards for Automatic Protection Switching (APS) redundancy protection.                    |
| <b>clear redundancy</b>                   | Clears the counters and history information that are used by the Redundancy Facility (RF) subsystem.         |
| <b>mode (redundancy)</b>                  | Configures the redundancy mode of operation.   |
| <b>redundancy</b>                         | Enters redundancy configuration mode.  |
| <b>redundancy force-failover main-cpu</b> | Forces a manual switchover between the active and standby PRE1 modules.                                      |
| <b>redundancy force-switchover</b>        | Forces the standby PRE to assume the role of the active PRE.   |
| <b>show redundancy config-sync</b>        | Displays failure information generated during a bulk synchronization from the active PRE to the standby PRE. |
| <b>show redundancy platform</b>           | Displays active and standby PRE and software information.  |

# show redundancy config-sync

To display failure information generated during a bulk synchronization from the active Performance Routing Engine (PRE) to the standby PRE, use the **show redundancy config-sync** command in user EXEC or privileged EXEC modes.

**show redundancy config-sync {failures {bem | mcl | prc} | ignored failures mcl}**

| Syntax Description | failures                    | Displays failures related to bulk synchronisation of the standby PRE. |
|--------------------|-----------------------------|---|
|                    | <b>bem</b>                  | Displays Best Effort Method (BEM) failure list.                       |
|                    | <b>mcl</b>                  | Displays Mismatched Command List (MCL) failure list.                  |
|                    | <b>prc</b>                  | Displays Parser Return Code (PRC) failure list.                       |
|                    | <b>ignored failures mcl</b> | Displays mismatched commands in the MCL that are ignored.             |

**Command Default** No default behavior or values.

**Command Modes** User EXEC (>)  
Privileged EXEC (#)

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCA | This command was introduced. |

**Usage Guidelines** This command is used on the active PRE only.

If there are mismatched commands between the active and standby PRE, remove the configuration lines that are not supported on the standby image. If it is not possible to remove the mismatched lines, or it has been determined that the mismatched lines are not critical to the operation of the system, use the command **redundancy config-sync ignore mismatched-commands** to temporarily ignore them.

**Examples** The following example displays a mismatched command list:

```
Router# show redundancy config-sync failures mcl

Mismatched Command List
-----

- tacacs-server host 209.165.200.225 timeout 5
```

The following example shows that no mismatched commands are ignored:

```
router# show redundancy config-sync ignored failures mcl

Ignored Mismatched Command List
-----

The list is Empty
```

The following example displays a Parser Return Code failure list:

```
router# show redundancy config-sync failures prc

PRC Failed Command List
-----
router bgp 999
address-family ipv4 vrf TEST2
- bgp dampening 44 66 66 44
! </submode> "address-family"
address-family ipv4 vrf TEST1
- bgp dampening 44 66 66 44
! </submode> "address-family"
```

The following example displays a Best Effort Method failure list:

```
router# show redundancy config-sync failures bem

BEM Failed Command List
-----
interface Tunnel0
- tunnel mpls traffic-eng priority 7 7
! </submode> "interface"
- next-address loose 10.165.202.158
- next-address loose 10.165.202.129
```

#### Related Commands

| Command                            | Description  |
|------------------------------------|--|
| <b>redundancy force-switchover</b> | Forces the standby PRE to assume the role of the active PRE. |
| <b>show redundancy</b>             | Displays current active and standby PRE redundancy status.   |
| <b>show redundancy platform</b>    | Displays active and standby PRE and software information.    |

# show redundancy platform

To display active and standby Performance Routing Engine (PRE) and software information, use the **show redundancy platform** command in user EXEC or privileged EXEC modes.

## show redundancy platform

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

**Command Default** No default behavior or values.

**Command Modes** User EXEC (>  
Privileged EXEC (#)

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 12.2(33)SCA | This command was introduced. |

**Examples** The following example displays active and standby PRE information such as PRE states, reason for last failover, total system uptime, Cisco IOS release version, and so on:

```
Router# show redundancy platform

PRE A (This PRE)   : Active
PRE B              : Standby
                    Operating mode : SSO
Uptime since this PRE became active from reload : 13 minutes
    Standby failures since this PRE active : 0
    The standby PRE has been up for : 3 minutes
Previous rp_cre_redun_reg bits   - 1057h
Current  rp_cre_redun_reg bits   - 1041h
Previous peer_ready_reg - 01
Current  peer_ready_reg - 11
Standby PRE information...
Standby is up
Standby has 1044480K bytes of memory
Standby BOOT variable = disk1:ubr10k2-k9p6u2-mz.Prednld-prototype-2,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable =
Standby Configuration register is 0x0
Standby version:
Cisco IOS Software, 10000 Software (UBR10K2-K9P6U2-M), Version 12.2(122_33_SCA.2008-02-15)
UBUILDIT Image, CISCO DEVELOPMENT TEST VERSION
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Sat 16-Feb-08 03:12 by jdkerr
Active version:
Cisco IOS Software, 10000 Software (UBR10K2-K9P6U2-M), Version 12.2(122_33_SCA.2008-02-15)
UBUILDIT Image, CISCO DEVELOPMENT TEST VERSION
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Sat 16-Feb-08 03:12 by jdkerr
```

| <b>Related Commands</b> | <b>Command</b>                         | <b>Description</b>   |
|-------------------------|--|--|
|                         | <b>debug ehsa</b>                      | Enables debug information on the EHSA module.  |
|                         | <b>redundancy<br/>force-switchover</b> | Forces the standby PRE to assume the role of the active PRE.   |
|                         | <b>show redundancy<br/>(ubr10012)</b>  | Displays the current redundancy status.  |
|                         | <b>show redundancy<br/>config-sync</b> | Displays failure information generated during a bulk synchronization from the active PRE to the standby PRE. |

# show running-config interface cable

To display the bundles that are configured on a Cisco CMTS router and display the running configuration for each of the cable interfaces, use the **show running-config interface cable** command in privileged EXEC mode.

```
show running-config interface cable {slot/port | slot/subslot/port }
```

## Cisco IOS Release 12.2(33)SCE and later

```
show running-config interface cable {slot/cable-interface-index |
slot/subslot/cable-interface-index }
```

| Syntax Description           |  |
|------------------------------|--|
| <i>slot</i>                  | Slot where the line card resides. <ul style="list-style-type: none"> <li>• Cisco uBR7225VXR router—The valid value is 1 or 2.</li> <li>• Cisco uBR7246VXR router—The valid range is from 3 to 6.</li> <li>• Cisco uBR10012 router—The valid range is from 5 to 8.</li> </ul>   |
| <i>subslot</i>               | (Cisco uBR10012 only) Secondary slot number of the cable interface line card. The valid subslots are 0 or 1.   |
| <i>port</i>                  | Downstream port number. <ul style="list-style-type: none"> <li>• Cisco uBR7225VXR router and Cisco uBR7246VXR router—The valid value is 0 or 1.</li> <li>• Cisco uBR10012 router—The valid range is from 0 to 4 (depending on the cable interface).</li> </ul>   |
| <i>cable-interface-index</i> | Downstream port of the Cisco uBR10-MC5X20 and Cisco uBR-MC28 line cards, or MAC domain index of the Cisco uBR-MC20X20V and Cisco uBR-MC3GX60V line cards. <p>Cisco uBR7225VXR and Cisco uBR7246VXR routers—The valid port value is 0 or 1.</p> <p>Cisco uBR10012 router—The valid range for the Cisco uBR-MC20X20V and Cisco uBR-MC5X20 line cards is from 0 to 4. The valid range for the Cisco uBR-MC3GX60V line card is from 0 to 14.</p> |

**Command Default** Displays screen output without page breaks, removes passwords and other security information.

**Command Modes** User EXEC (>)  
Privileged EXEC (#)

| Command History | Release    | Modification  |
|-----------------|------------|---|
|                 | 10.0       | This command was introduced.  |
|                 | 12.3(21)BC | This command was enhanced to support cable interface bundling and virtual interface bundling. |

| Release     | Modification  |
|-------------|---|
| 12.2(33)SCA | This command was integrated into Cisco IOS Release 12.2(33)SCA.   |
| 12.2(33)SCC | The command output was modified to display profile description for the specified profile.   |
| 12.2(33)SCE | This command was modified. The <i>port</i> parameter was changed to <i>cable-interface-index</i> to indicate the MAC domain index for the Cisco uBR-MC20X20V and Cisco uBR-MC3GX60V cable interface line cards. |

## Examples

The following example displays typical output for the **show running-config** command for a specified cable interface:

```
Router# show running-config interface cable 8/1/0

Building configuration...

Current configuration : 1563 bytes
!
interface Cable8/1/0
 downstream Modular-Cable 1/3/0 rf-channel 0 upstream 0-4
 no cable packet-cache
 cable bundle 1
 cable downstream channel-id 203
 cable downstream annex B
 cable downstream modulation 64qam
 cable downstream interleave-depth 32
 cable downstream frequency 525000000
 cable downstream rf-shutdown
 cable upstream max-ports 4
 cable upstream 0 connector 0
 cable upstream 0 frequency 5800000
 cable upstream 0 channel-width 1600000 1600000
 cable upstream 0 docsis-mode tdma
 cable upstream 0 minislots-size 4
 cable upstream 0 range-backoff 3 6
 cable upstream 0 modulation-profile 21
 cable upstream 0 attribute-mask 20000000
 no cable upstream 0 shutdown
 cable upstream 1 connector 1
 cable upstream 1 channel-width 1600000 1600000
 cable upstream 1 docsis-mode tdma
 cable upstream 1 minislots-size 4
 cable upstream 1 range-backoff 3 6
 cable upstream 1 modulation-profile 21
 cable upstream 1 attribute-mask 20000000
 no cable upstream 1 shutdown
 cable upstream 2 connector 2
 cable upstream 2 channel-width 1600000 1600000
 cable upstream 2 docsis-mode tdma
 cable upstream 2 minislots-size 4
 cable upstream 2 range-backoff 3 6
 cable upstream 2 modulation-profile 21
 cable upstream 2 attribute-mask 20000000
 cable upstream 2 shutdown
 cable upstream 3 connector 3
```

```

cable upstream 3 channel-width 1600000 1600000
cable upstream 3 docsis-mode tdma
cable upstream 3 minislots-size 4
cable upstream 3 range-backoff 3 6
cable upstream 3 modulation-profile 21
cable upstream 3 attribute-mask 20000000
cable upstream 3 shutdown
end

```

The following example displays the virtual bundle information for the specified bundle:

```
Router# show running-config interface Bundle 1
```

```
Building configuration...
```

```

Current configuration : 158 bytes
!
interface Bundle1
 ip address 1.60.0.1 255.255.255.0
 cable arp filter request-send 3 2
 cable arp filter reply-accept 3 2
 no cable ip-multicast-echo
end

```

The following examples displays subinterface information for the specified bundle on a Cisco uBR10012 router:

```
Router# show ip interface brief | include Bundle
```

```

Wideband-Cable8/0/0:0 Bundle2 YES unset up up
In8/0/0:0 Bundle2 YES unset up up
Bundle1 1.60.0.1 YES NVRAM up up
Bundle2 1.80.0.1 YES NVRAM up up
Bundle5 unassigned YES NVRAM up up

```

```
Router# show runrunning interface Bundle150.1
```

```
Building configuration...
```

```

Current configuration : 93 bytes
!
interface Bundle150.1
 ip address 30.0.0.1 255.0.0.0
 cable helper-address 1.8.35.200
end

```

The following example displays the profile description specified for a interface on a Cisco uBR10012 router:

```
Router#show running-config | include gold
```

```

cable multicast auth profile gold
 profile-description gold profile for higher bandwidth
 bootfile gold11_bpi.cm
 tftp-server disk0:gold2.cm alias gold2.cm
 tftp-server disk0:gold11_bpi.cm alias gold11_bpi.cm
 tftp-server disk0:gold11_bpi.cm

```

**Related Commands**

| <b>Command</b>  | <b>Description</b>   |
|---|--|
| <b>cable bundle</b>                                     | Configures a cable interface to belong to an interface bundle or virtual interface bundle.   |
| <b>profile description</b>                              | Configures profile descriptions for each profile in the selected cable multicast authorization profile.  |
| <b>show arp</b>   | Displays the entries in the router's ARP table.  |
| <b>show cable bundle <i>number</i> forwarding-table</b> | Displays the MAC forwarding table for the specified bundle, showing the MAC addresses of each cable modem in a bundle and the physical cable interface that it is currently using. |
| <b>show cable modem</b>                                 | Displays the cable modems that are online both before and after cable interface bundling has been configured.  |

# show tech-support

To display general information about the router when it reports a problem, use the **show tech-support** command in privileged EXEC mode.

```
show tech-support [page] [password] [cef | ipc | ipmulticast [vrf vrf-name] | isis | mpls | ospf
[process-id | detail] | rsvp]
```

## Cisco 7600 Series

```
show tech-support [cef | ipmulticast [vrf vrf-name] | isis | password [page] | platform | page |
rsvp]
```

## Cisco uBR10012 Universal Broadband Router and Cisco uBR7200 Series

```
show tech-support [page] [password] [cef | ipc | ipmulticast [vrf vrf-name] | isis | mpls | ospf
[process-id | detail] | rsvp] [cmts {cable slot/subslot/port | modem {ip address | mac address |
ipv6 address}}]
```

| Syntax Description                |   |
|-----------------------------------|---|
| <b>page</b>                       | (Optional) Causes the output to display a page of information at a time.  |
| <b>password</b>                   | (Optional) Leaves passwords and other security information in the output.   |
| <b>cef</b>                        | (Optional) Displays <b>show</b> command output specific to Cisco Express Forwarding.  |
| <b>ipc</b>                        | (Optional) Displays <b>show</b> command output specific to Inter-Process Communication (IPC).   |
| <b>ipmulticast</b>                | (Optional) Displays <b>show</b> command output related to the IP Multicast configuration, including Protocol Independent Multicast (PIM) information, Internet Group Management Protocol (IGMP) information, and Distance Vector Multicast Routing Protocol (DVMRP) information.                            |
| <b>vrf vrf-name</b>               | (Optional) Specifies a multicast Virtual Private Network (VPN) routing and forwarding instance (VRF).   |
| <b>isis</b>                       | (Optional) Displays <b>show</b> command output specific to Connectionless Network Service (CLNS) and Intermediate System-to-Intermediate System Protocol (IS-IS).<br><br><b>Note</b> IS-IS support is provided only on CMTS platforms running Cisco IOS images that have a “-p-” as part of the image name. |
| <b>mpls</b>                       | (Optional) Displays <b>show</b> command output specific to Multiprotocol Label Switching (MPLS) forwarding and applications.  |
| <b>ospf [process-id   detail]</b> | (Optional) Displays <b>show</b> command output specific to Open Shortest Path First Protocol (OSPF) networking.   |
| <b>rsvp</b>                       | (Optional) Displays <b>show</b> command output specific to Resource Reservation Protocol (RSVP) networking.   |
| <b>platform</b>                   | (Optional) Displays platform-specific <b>show</b> command output.   |

|  |   |
|--|---|
| <b>cmts cable</b><br><i>slot/subslot/port</i>                    | (Optional) Displays debugging information specific to the cable interface, where: <ul style="list-style-type: none"> <li><i>slot</i>—Specifies the chassis slot number of the cable interface line card. Valid values are 5 to 8.</li> <li><i>subslot</i>—Specifies the secondary slot number of the cable interface line card. Valid subslots are 0 or 1.</li> <li><i>port</i>—Specifies the port number. Valid values are 0 to 4 (depending on the cable interface).</li> </ul>   |
| <b>cmts modem</b> <i>ip address   mac address   ipv6 address</i> | (Optional) Displays modem-specific debugging information, where: <ul style="list-style-type: none"> <li><i>ip address</i>—Specifies the IPv4 address of a CM for which the debugging information is required. If you specify the IP address for a CPE device behind a CM, information for that CM is displayed.</li> <li><i>mac address</i>—Identifies the MAC address of a CM for which the debugging information is required. You can also specify the MAC address for a CPE device behind a CM, and information for that CM will be displayed.</li> <li><i>ipv6 address</i>—Specifies the IPv6 address of a CM for which the debugging information is required. If you specify the IP address for a CPE device behind a CM, information for that CM is displayed.</li> </ul> |

**Defaults**

The output scrolls without page breaks.  
Passwords and other security information are removed from the output.

**Command Modes**

Privileged EXEC (#)

**Command History**

| Release           | Modification   |
|-------------------|--|
| 11.2              | This command was introduced.   |
| 11.3(7), 11.2(16) | The output for this command was expanded to show additional information for <b>boot</b> , <b>bootflash</b> , <b>context</b> , and <b>traffic</b> for all enabled protocols.  |
| 12.0              | The output for this command was expanded to show additional information for <b>boot</b> , <b>bootflash</b> , <b>context</b> , and <b>traffic</b> for all enabled protocols. The <b>cef</b> , <b>ipmulticast</b> , <b>isis</b> , <b>mlps</b> , and <b>ospf</b> keywords were added to this command. |
| 12.1(3a)XL        | This command was introduced for the Cisco uBR905 cable access router.  |
| 12.2(13)T         | Support for AppleTalk EIGRP, Apollo Domain, Banyan VINES, Novell Link-State Protocol, and XNS was removed from Cisco IOS software.   |
| 12.2(14)SX        | Support for this command was added for the Supervisor Engine 720.  |
| 12.2(15)BC2       | The output of this command was expanded to include the output from the <b>show pxf microcode</b> command for the Cisco uBR10012 router.  |
| 12.3(9a)BC        | The output from this command was shortened to allow users with large numbers of online cable modems to collect information without consuming the console session for a long period of time. Several commands from the <b>show cable tech-support</b> command were added.                           |

| Release      | Modification  |
|--------------|---|
| 12.3(4)T     | The output of this command was expanded to include the output from the <b>show inventory</b> command.   |
| 12.2(17d)SXB | Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.   |
| 12.2(30)S    | <p>The <b>show tech-support ipmulticast</b> command was changed as follows:</p> <ul style="list-style-type: none"> <li>• Support for bidirectional PIM and Multicast VPN (MVPN) was added.</li> <li>• The <b>vrf vrf-name</b> option was added.</li> </ul> <p>The output of the <b>show tech-support ipmulticast</b> command (without the <b>vrf vrf-name</b> keyword and argument) was changed to include the output from these commands:</p> <ul style="list-style-type: none"> <li>• <b>show ip pim int df</b></li> <li>• <b>show ip pim mdt</b></li> <li>• <b>show ip pim mdt bgp</b></li> <li>• <b>show ip pim rp metric</b></li> </ul>  |
| 12.3(16)     | This command was integrated into Cisco IOS Release 12.3(16).  |
| 12.2(18)SXF  | <p>The <b>show tech-support ipmulticast</b> command was changed as follows:</p> <ul style="list-style-type: none"> <li>• Support for bidirectional PIM and MVPN was added.</li> <li>• The <b>vrf vrf-name</b> option was added.</li> </ul> <p>The output of the <b>show tech-support ipmulticast vrf</b> command was changed to include the output from these commands:</p> <ul style="list-style-type: none"> <li>• <b>show mls ip multicast rp-mapping gm-cache</b></li> <li>• <b>show mmls gc process</b></li> <li>• <b>show mmls msc rpdf-cache</b></li> </ul> <p>The output of the <b>show tech-support ipmulticast</b> command (without the <b>vrf vrf-name</b> keyword and argument) was changed to include the output from these commands:</p> <ul style="list-style-type: none"> <li>• <b>show ip pim int df</b></li> <li>• <b>show ip pim mdt</b></li> <li>• <b>show ip pim mdt bgp</b></li> <li>• <b>show ip pim rp metric</b></li> </ul> <p>Support to interrupt and terminate the <b>show tech-support</b> output was added.</p> |
| 12.4(4)T     | This command was integrated into Cisco IOS Release 12.4(4)T.  |
| 12.4(7)      | This command was integrated into Cisco IOS Release 12.4(7).   |
| 12.2(33)SRA  | This command was integrated into Cisco IOS Release 12.2(33)SRA.   |
| 12.4(9)T     | The output of this command was expanded to include partial <b>show dmvpn details</b> command output.  |

| Release      | Modification   |
|--------------|--|
| 12.2(33)SCB1 | A new keyword, <b>cmmts</b> , was added to provide debugging information specific to a cable interface or a modem for the following universal broadband routers: <ul style="list-style-type: none"> <li>• Cisco uBR10012 router</li> <li>• Cisco uBR7200 series</li> </ul> |
| 12.3(23)BC7  | A keyword, <b>cmmts</b> , was added to provide debugging information specific to a cable interface or a modem for the following universal broadband routers: <ul style="list-style-type: none"> <li>• Cisco uBR10012 router</li> <li>• Cisco uBR7200 series.</li> </ul>    |

### Usage Guidelines

To interrupt and terminate the **show tech-support** output, simultaneously press and release the **CTRL**, **ALT**, and **6** keys.

Press the **Return** key to display the next line of output, or press the **Spacebar** to display the next page of information. If you do not enter the **page** keyword, the output scrolls (that is, it does not stop for page breaks).

If you do not enter the **password** keyword, passwords and other security-sensitive information in the output are replaced with the label “<removed>.”

The **show tech-support** command is useful for collecting a large amount of information about your routing device for troubleshooting purposes. The output of this command can be provided to technical support representatives when reporting a problem.



### Note

This command can generate a very large amount of output. You may want to redirect the output to a file using the **show inventory | redirect url** command syntax extension. Redirecting the output to a file also makes sending this output to your technical support representative easier. See the command documentation for **show <command> | redirect** for more information on this option.

The **show tech-support** command displays the output of a number of **show** commands at once. The output from this command varies depending on your platform and configuration. For example, access servers display voice-related **show** command output. Additionally, the **show protocol traffic** commands are displayed for only the protocols enabled on your device. For a sample display of the output of the **show tech-support** command, see the individual **show** command listed.

If you enter the **show tech-support** command without arguments, the output displays, but is not limited to, the equivalent of these **show** commands:

- **show appletalk traffic**
- **show bootflash**
- **show bootvar**
- **show buffers**
- **show cdp neighbors**
- **show cef**
- **show clns traffic**
- **show context**

- **show controllers**
- **show decnet traffic**
- **show disk0: all**
- show dmvpn details
- **show environment**
- show fabric channel-counters
- **show file systems**
- **show interfaces**
- **show interfaces switchport**
- **show interfaces trunk**
- **show ip interface**
- **show ip traffic**
- **show logging**
- **show mac-address-table**
- **show module**
- **show power**
- **show processes cpu**
- **show processes memory**
- **show running-config**
- **show spanning-tree**
- **show stacks**
- **show version**
- **show vlan**

**Note**

---

Crypto information is not duplicated by the **show dmvpn details** command output.

---

Use of the optional **cef**, **ipc**, **ipmulticast**, **isis**, **mpls**, **ospf**, or **rsvp** keywords provides a way to display a number of **show** commands specific to a particular protocol or process in addition to the **show** commands listed previously.

For example, if your Technical Assistance Center (TAC) support representative suspects that you may have a problem in your Cisco Express Forwarding (CEF) configuration, you may be asked to provide the output of the **show tech-support cef** command. The **show tech-support [page] [password] cef** command will display the output from the following commands in addition to the output for the standard **show tech-support** command:

- **show adjacency summary**
- **show cef drop**
- **show cef events**
- **show cef interface**
- **show cef not-cef-switched**
- **show cef timers**

- **show interfaces stats**
- **show ip cef events summary**
- **show ip cef inconsistency records detail**
- **show ip cef summary**

If you enter the **ipmulticast** keyword, the output displays, but is not limited to, these **show** commands:

- **show ip dvmrp route**
- **show ip igmp groups**
- **show ip igmp interface**
- **show ip mcache**
- **show ip mroute**
- **show ip mroute count**
- **show ip pim interface**
- **show ip pim interface count**
- **show ip pim interface df**
- **show ip pim mdt**
- **show ip pim mdt bgp**
- **show ip pim neighbor**
- **show ip pim rp**
- **show ip pim rp metric**
- **show mls ip multicast rp-mapping gm-cache**
- **show mmls gc process**
- **show mmls msc rpdf-cache**

#### **Cisco uBR10012 Universal Broadband Router, Cisco uBR7200 Series, and Cisco uBR7225VXR**

The **show tech-support** command displays a large amount of configuration, run-time status, and other information about the Cisco CMTS for troubleshooting problems. The output of this command can be provided to technical support representatives when reporting a problem.



#### **Note**

The **show tech-support** command includes most of the information shown in the **show cable tech-support** command.

The **show tech-support** command automatically displays the output of a number of different **show** commands. The exact output depends on the platform, configuration, and type of protocols being used. Typically, the output includes the output from the following commands:

- **show version**
- **show running-config**
- **show stacks**
- **show chassis**
- **show pxf microcode** (Cisco uBR10012 only)
- **show interfaces**

- **show controllers** (for all cable interface)
- **show cable modem**
- **show cable flap-list**
- **show cable qos profile**
- **show cable modulation-profile**
- **show cable spectrum-group**
- **show cable hop**
- **show interface cable sid** (for each cable interface)
- **show interface cable sid connectivity** (for each cable interface)
- **show interface cable downstream**
- **show interface cable upstream**
- **show interface cable mac-scheduler**
- **show interface cable modem**
- **show process memory**
- **show process cpu**
- **show controllers** (for all non-cable interfaces)
- **show hccp detail**
- **show region**
- **show buffers**
- **show diag**
- **show pci hardware**
- **show pci controller**

**Tip**

Depending on the platform and configuration, the output from the **show tech-support** command can easily exceed the buffers found in most communications programs. To capture this output and send to Cisco TAC, use a Telnet program.

**Tip**

In Cisco IOS Releases 12.1(12)EC and 12.2(8)BC1, and later releases, you can add a timestamp to **show** commands using the **exec prompt timestamp** command in line configuration mode.

**Examples**

For a sample display of the output from the **show tech-support** command, refer to the documentation for the **show** commands listed in the “Usage Guidelines” section.

**Related Commands**

| Command                       | Description  |
|-------------------------------|--|
| <b>dir</b>                    | Displays a list of files on a file system.                             |
| <b>show appletalk traffic</b> | Displays statistics about AppleTalk traffic, including MAC IP traffic. |
| <b>show bootflash</b>         | Displays the contents of boot flash memory.                            |

| Command                                | Description   |
|--|---|
| <b>show bootvar</b>                    | Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting.    |
| <b>show buffers</b>                    | Displays statistics for the buffer pools on the network server.   |
| <b>show cdp neighbors</b>              | Displays detailed information about neighboring devices discovered using Cisco Discovery Protocol.  |
| <b>show cef</b>                        | Displays information about packets forwarded by Cisco Express Forwarding.   |
| <b>show clns traffic</b>               | Displays a list of the CLNS packets this router has seen.   |
| <b>show &lt;command&gt;   redirect</b> | Redirects the output of any <b>show</b> command to a file.  |
| <b>show context</b>                    | Displays context data.  |
| <b>show controllers</b>                | Displays information that is specific to the hardware.  |
| <b>show controllers tech-support</b>   | Displays general information about a VIP card for problem reporting.  |
| <b>show decnet traffic</b>             | Displays the DECnet traffic statistics (including datagrams sent, received, and forwarded).   |
| <b>show disk:0</b>                     | Displays flash or file system information for a disk located in slot 0:   |
| <b>show dmvpn details</b>              | Displays detail DMVPN information for each session, including Next Hop Server (NHS) and NHS status, crypto session information, and socket details.   |
| <b>show environment</b>                | Displays temperature, voltage, and blower information on the Cisco 7000 series routers, Cisco 7200 series routers, Cisco 7500 series routers, Cisco 7600 series routers, Cisco AS5300 series access servers, and the Gigabit Switch Router. |
| <b>show fabric channel counters</b>    | Displays the fabric channel counters for a module.  |
| <b>show file system</b>                | Lists available file systems.   |
| <b>show interfaces</b>                 | Displays statistics for all interfaces configured on the router or access server.   |
| <b>show interfaces switchport</b>      | Displays the administrative and operational status of a switching (nonrouting) port.  |
| <b>show interfaces trunk</b>           | Displays the interface-trunk information.   |
| <b>show inventory</b>                  | Displays the product inventory listing and UDI of all Cisco products installed in the networking device.  |
| <b>show ip interface</b>               | Displays the usability status of interfaces configured for IP.  |
| <b>show ip traffic</b>                 | Displays statistics about IP traffic.   |
| <b>show logging</b>                    | Displays the state of syslog and the contents of the standard system logging buffer.  |
| <b>show mac-address table</b>          | Displays the MAC address table.   |
| <b>show module</b>                     | Displays module status and information.   |
| <b>show power</b>                      | Displays the current power status of system components.   |
| <b>show processes cpu</b>              | Displays information about the active processes.  |
| <b>show processes memory</b>           | Displays the amount of memory used.   |
| <b>show running-config</b>             | Displays the current configuration of your routing device.  |

| <b>Command</b>            | <b>Description</b>  |
|---------------------------|---|
| <b>show spanning-tree</b> | Displays information about the spanning tree state.   |
| <b>show stacks</b>        | Displays the stack usage of processes and interrupt routines.   |
| <b>show version</b>       | Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images. |
| <b>show vlan</b>          | Displays VLAN information.  |

# show voice port

To display configuration information about a specific voice port, use the **show voice port** command in privileged EXEC mode.

**Cisco uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter**

**show voice port** *number*

| Syntax Description | <i>number</i> | Identifies the voice port. Valid entries are <b>0</b> (which corresponds to the RJ-11 connector labeled V1) and <b>1</b> (which corresponds to the RJ-11 connector labeled V2). |
|--------------------|---------------|---|
|--------------------|---------------|---|

| Command Modes | Privileged EXEC |
|---------------|-----------------|
|---------------|-----------------|

| Command History | Release    | Modification  |
|-----------------|------------|---|
|                 | 12.0(4)XL  | This command was introduced for the Cisco uBR924 cable access router. |
|                 | 12.1(5)XU1 | Support was added for the Cisco CVA122 Cable Voice Adapter.           |
|                 | 12.2(2)XA  | Support was added for the Cisco uBR925 cable access router.           |

**Examples** The following example shows typical output from the **show voice port** command for a cable access router:

```
Router# show voice port 0

Foreign Exchange Station 0
Type of VoicePort is FXS
Operation State is DORMANT
Administrative State is UP
No Interface Down Failure
Description is not set
Noise Regeneration is enabled
Non Linear Processing is enabled
Music On Hold Threshold is Set to -38 dBm
In Gain is Set to -2 dB
Out Attenuation is Set to 0 dB
Echo Cancellation is enabled
Echo Cancel Coverage is set to 8 ms
Connection Mode is normal
Connection Number is not set
Initial Time Out is set to 10 s
Interdigit Time Out is set to 10 s
Call-Disconnect Time Out is set to 60 s
Ringing Time Out is set to 180 s
Region Tone is set for US

Analog Info Follows:
Currently processing none
Maintenance Mode Set to None (not in mtc mode)
Number of signaling protocol errors are 0
Impedance is set to 600r Ohm
```

```

Voice card specific Info Follows:
Signal Type is loopStart
Ring Frequency is 25 Hz
Hook Status is On Hook
Ring Active Status is inactive
Ring Ground Status is inactive
Tip Ground Status is inactive
Digit Duration Timing is set to 100 ms
InterDigit Duration Timing is set to 100 ms
Router#

```

Table 25 describes the fields shown in this display.

**Table 25** *show voice port Field Descriptions*

| Field                               | Description   |
|-------------------------------------|---|
| Type of VoicePort                   | Type of voice port: always FXS for the cable access router.                               |
| Operations State                    | Operation state of the port.  |
| Administrative State                | Administrative state of the voice port.   |
| Interface Down Failure              | Last interface down failure that was reported, if any.                                    |
| Description                         | Description of the voice port, if any.  |
| Noise Regeneration                  | Whether or not background noise should be played to fill silent gaps if VAD is activated. |
| Non Linear Processing               | Whether or not nonlinear processing is enabled for this port.                             |
| Music On Hold Threshold             | Configured music-on-hold threshold value for this interface.                              |
| In Gain                             | Amount of gain inserted at the receiver side of the interface.                            |
| Out Attenuation                     | Amount of attenuation inserted at the transmit side of the interface.                     |
| Echo Cancellation                   | Whether or not echo cancellation is enabled for this port.                                |
| Echo Cancel Coverage                | Echo cancel coverage for this port.   |
| Connection Mode                     | Connection mode of the interface.   |
| Connection Number                   | Full E.164 telephone number used to establish a connection with the trunk or PLAR mode.   |
| Initial Time Out                    | Amount of time the system waits for an initial input digit from the caller.               |
| Interdigit Time Out                 | Amount of time the system waits for a subsequent input digit from the caller.             |
| Call-Disconnect Time Out            | Number of seconds for an idle call to be disconnected.                                    |
| Ringing Time Out                    | Ringing time out duration.  |
| Region Tone                         | Configured regional tone for this interface.  |
| Currently Processing                | Type of call currently being processed: none, voice, or fax.                              |
| Maintenance Mode                    | Maintenance mode of the voice port.   |
| Number of signaling protocol errors | Number of signalling protocol errors.   |
| Impedance                           | Configured terminating impedance for the E&M interface.                                   |

**Table 25** *show voice port Field Descriptions (continued)*

| Field                            | Description   |
|----------------------------------|---|
| Signal Type                      | Type of signalling for a voice port: loop-start, ground-start, wink-start, immediate, and delay-dial. |
| Ring Frequency                   | Configured ring frequency for this interface.   |
| Hook Status                      | Hook status of the FXO/FXS interface.   |
| Ring Active Status               | Ring active indication.   |
| Ring Ground Status               | Ring ground indication.   |
| Tip Ground Status                | Tip ground indication.  |
| Digit Duration Timing            | DTMF digit duration in milliseconds.  |
| InterDigit Duration Timing       | DTMF interdigit duration in milliseconds.   |
| InterDigit Pulse Duration Timing | Pulse dialing interdigit timing in milliseconds.  |
| Alias                            | User-supplied alias for this voice port, if any.  |
| Coder Type                       | Voice compression mode used.  |
| Hook Flash Duration Timing       | Maximum length of hook flash signal.  |
| Ring Cadence                     | Configured ring cadence for this interface.   |

**Tip**

In Cisco IOS Release 12.2(8)T and later releases, you can add a timestamp to **show** commands using the **exec prompt timestamp** command in line configuration mode.

**Related Commands**

| Command                        | Description  |
|--------------------------------|--|
| <b>show call active voice</b>  | Displays the contents of the active call table.                        |
| <b>show call history voice</b> | Displays the contents of the call history table.                       |
| <b>show dial-peer voice</b>    | Displays configuration information and call statistics for dial peers. |