show adjacency

To display information about the Cisco Express Forwarding adjacency table or the hardware Layer 3-switching adjacency table, use the **show adjacency** command in user EXEC or privileged EXEC mode.

show adjacency [*ip-address*] [*interface-type interface-number* | **null** *number* | **port-channel** *number* | **sysclock** *number* | **vlan** *number* | *ipv6-address* | **fcpa** *number* | **serial** *number*] [**connectionid** *number*] [**link** {**ipv4** | **ipv6** | **mpls**}] [**detail** | **encapsulation**]

show adjacency summary [*interface-type interface-number*]

Syntax Description

ip-address	(Optional) An IP address or IPv6 address. **Note** On the Cisco 10000 series routers IPv6 is supported on Cisco IOS Release 12.2(28)SB or later releases.
interface-type interface-number	(Optional) Interface type and number. Valid values for the *interface-type* argument are **atm**, **async**, **auto-template**, **ctunnel**, dialer, **esconphy**, **fastethernet**, **filter**, **filtergroup**, **gigabitethernet**, **group-async**, **longreachethernet**, **loopback**, **mfr**, **multilink**, **portgroup**, **pos**, **tunnel**, **vif**, **virutal-template**, **voabypassin**, **voabypassout**, **voafilterin**, **voafilterout**, **voain**, and **voaout**. **Note** Not all interface types and numbers are available on all platforms. Enter the **show adjacency** command to verify the interface types for your platform.
null *number*	(Optional) Specifies the null interface. The valid value is **0**.
port-channel *number*	(Optional) Specifies the channel interface; valid values are 1 to 282.
sysclock *number*	(Optional) Telecom-bus clock controller; valid values are 1 to 6.
vlan *number*	(Optional) Specifies the VLAN; valid values are 1 to 4094.
ipv6-address	(Optional) Specifies the associated IPv6 address.
fcpa *number*	(Optional) The fiber channel; valid values are 1 to 6.
serial *number*	(Optional) Specifies the serial interface number; valid values are 1 to 6.
connectionid *number*	(Optional) Specifies the client connection identification number.
link {**ipv4** | **ipv6** | **mpls**}	(Optional) Specifies the link type (IP, IPv6, or Multiprotocol Label Switching (MPLS) traffic of the adjacency).
detail	(Optional) Displays the protocol detail and timer information.
summary	(Optional) Displays a summary of Cisco Express Forwarding adjacency information.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2GS	This command was introduced.
11.1CC	Multiple platform support was added.
12.0(7)XE	Support was added for the Cisco 7600 series routers.
12.1(5c)EX	This command was modified to include Layer 3 information.
12.1(11b)E	The **atm**, **ge-wan**, and **pos** keywords were added.
12.2(8)T	The **detail** keyword output was modified to show the epoch value for each entry of the adjacency table. The **summary** keyword output was modified to show the table epoch for the adjacency table.
12.2(14)SX	Support for this command was added for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Cisco IOS Release 12.2(17d)SXB.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S. The **link ipv4**, **link ipv6**, and **link mpls** keywords and the *prefix* argument were added.
12.2(28)SB	Support for IPv6 was added for the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 2.1	This command was implemented on Cisco ASR 1000 Series Aggregation Services Routers.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

The **show adjacency** command is used to verify that an adjacency exists for a connected device, that the adjacency is valid, and that the MAC header rewrite string is correct.

For line cards, you must specify the line card if_number (interface number). Use the **show cef interface** command to obtain line card if_numbers.

You can use any combination of the *ip-address, interface-type*, and other keywords and arguments (in any order) as a filter to display a specific subset of adjacencies.

On Cisco 7600 series routers, hardware Layer 3-switching adjacency statistics are updated every 60 seconds.

Note On the Cisco 10000 series routers, Pv6 is supported on Cisco IOS Release 12.2(28)SB or later releases.

The following information may be displayed by the **show adjacency** commands:

- Protocol
- Interface
- Type of routing protocol that is configured on the interface
- Type of routed protocol traffic using this adjacency
- Next hop address
- Method of adjacency that was learned
- Adjacency source (for example, Address Resolution Protocol (ARP) or ATM Map)

- Encapsulation prepended to packet switched through this adjacency
- Chain of output chain elements applied to packets after an adjacency
- Packet and byte counts
- High availability (HA) epoch and summary event epoch
- MAC address of the adjacent router
- Time left before the adjacency rolls out of the adjacency table. After the adjacency rolls out, a packet must use the same next hop to the destination.

Examples

The following examples show how to display adjacency information:

Cisco 7500 Series Router

```
Router# show adjacency

Protocol Interface                 Address
IP       FastEthernet2/3           172.20.52.1(3045)
IP       FastEthernet2/3           172.20.52.22(11)
```

The following example shows how to display adjacency information for a specific interface:

```
Router# show adjacency fastethernet 0/0

Protocol Interface                 Address
IP       FastEthernet0/0           10.4.9.2(5)
IP       FastEthernet0/0           10.4.9.3(5)
```

Cisco 10000 Series Router

```
Router# show adjacency

Protocol Interface                 Address
IP       FastEthernet2/0/0         172.20.52.1(3045)
IP       FastEthernet2/0/0         172.20.52.22(11)
```

Cisco 7500 and 10000 Series Router

The following example shows how to display detailed adjacency information for adjacent IPv6 routers:

```
Router# show adjacency detail

Protocol Interface                 Address
IP       Tunnel0                   point2point(6)
                                    0 packets, 0 bytes
                                    00000000
                                    CEF   expires: 00:02:57
                                          refresh: 00:00:57
                                    Epoch: 0
IPV6     Tunnel0                   point2point(6)
                                    0 packets, 0 bytes
                                    00000000
                                    IPv6 CEF   never
                                    Epoch: 0
IPV6     Ethernet2/0               FE80::A8BB:CCFF:FE01:9002(3)
                                    0 packets, 0 bytes
                                    AABBCC019002AABBCC012C0286DD
                                    IPv6 ND    never
                                    Epoch: 0
IPV6     Ethernet2/0               3FFE:2002::A8BB:CCFF:FE01:9002(5)
                                    0 packets, 0 bytes
```

```
                                AABBCC019002AABBCC012C0286DD
                                IPv6 ND    never
                                Epoch: 0
```

Table 3 describes the significant fields shown in the displays.

Table 3 show adjacency Field Descriptions

Field	Description
Protocol	Type of Internet protocol.
Interface	Outgoing interface.
Address	Next hop IP address.

The following example shows how to display a summary of adjacency information:

```
Router# show adjacency summary

Adjacency table has 7 adjacencies:
  each adjacency consumes 368 bytes (4 bytes platform extension)
  6 complete adjacencies
  1 incomplete adjacency
  4 adjacencies of linktype IP
    4 complete adjacencies of linktype IP
    0 incomplete adjacencies of linktype IP
    0 adjacencies with fixups of linktype IP
    2 adjacencies with IP redirect of linktype IP
  3 adjacencies of linktype IPV6
    2 complete adjacencies of linktype IPV6
    1 incomplete adjacency of linktype IPV6

Adjacency database high availability:
  Database epoch: 8 (7 entries at this epoch)

Adjacency manager summary event processing:
 Summary events epoch is 52
 Summary events queue contains 0 events (high water mark 113 events)
 Summary events queue can contain 49151 events
 Adj last sourced field refreshed every 16384 summary events
RP adjacency component enabled
```

The following examples show how to display protocol detail and timer information:

For a Cisco 7500 Series Router

```
Router# show adjacency detail

Protocol Interface                 Address
IP       FastEthernet0/0           10.4.9.2(5)
                                   0 packets, 0 bytes
                                   epoch 0
                                   sourced in sev-epoch 2
                                   Encap length 14
                                   00307131ABFC000500509C080800
                                   ARP
IP       FastEthernet0/0           10.4.9.3(5)
                                   0 packets, 0 bytes
                                   epoch 0
                                   sourced in sev-epoch 2
                                   Encap length 14
```

```
                                000500506C08000500509C080800
                                ARP
```

For a Cisco 7600 Series Router

```
Router# show adjacency detail

Protocol Interface               Address
IP       FastEthernet2/3         172.20.52.1(3045)
                                 0 packets, 0 bytes
                                 000000000FF920000380000000000000
                                 000000000000000000000000000000000
                                 00605C865B2800D0BB0F980B0800
                                 ARP        03:58:12
IP       FastEthernet2/3         172.20.52.22(11)
                                 0 packets, 0 bytes
                                 000000000FF920000380000000000000
                                 000000000000000000000000000000000
                                 00801C93804000D0BB0F980B0800
                                 ARP        03:58:06
```

For a Cisco 10000 Series Router

```
Router# show adjacency detail

Protocol Interface               Address
IP       FastEthernet2/0/0         10.4.9.2(5)
                                 0 packets, 0 bytes
                                 epoch 0
                                 sourced in sev-epoch 2
                                 Encap length 14
                                 00307131ABFC000500509C080800
                                 ARP
IP       FastEthernet2/0/0         10.4.9.3(5)
                                 0 packets, 0 bytes
                                 epoch 0
                                 sourced in sev-epoch 2
                                 Encap length 14
                                 000500506C08000500509C080800
                                 ARP
```

The following examples show how to display protocol detail and timer adjacency information for IP links for a specific interface:

For a Cisco 7500 Series Router

```
Router# show adjacency tunnel 1 link detail

Protocol Interface               Address
IP       Tunnel1                 point2point(7)
                                 0 packets, 0 bytes
                                 epoch 1
                                 sourced in sev-epoch 4
                                 empty encap string
                                 P2P-ADJ
                                 Next chain element:
                                  label 16 TAG adj out of Ethernet1/0, addr 10.0.0.0
```

For a Cisco 7600 Series Router

```
Router# show adjacency fastethernet 2/3

Protocol Interface                 Address
IP       FastEthernet2/3           172.20.52.1(3045)
IP       FastEthernet2/3           172.20.52.22(11)
```

For a Cisco 10000 Series Router

```
Router# show adjacency tunnel 1 link detail

Protocol Interface              Address
IP       Tunnel1                point2point(7)
                                0 packets, 0 bytes
                                epoch 1
                                sourced in sev-epoch 4
                                empty encap string
                                P2P-ADJ
                                Next chain element:
                                label 16 TAG adj out of FastEthernet0/0, addr 10.0.0.0
```

Related Commands

Command	Description
clear adjacency	Clears the Cisco Express Forwarding adjacency table.
clear arp-cache	Deletes all dynamic entries from the ARP cache.
show adjacency	Enables the display of information about the adjacency database.
show mls cef adjacency	Displays information about the hardware Layer 3-switching adjacency node.
show cef interface	Displays detailed Cisco Express Forwarding information for all interfaces.

show cef

To display information about packets forwarded by Cisco Express Forwarding, use the **show cef** command in privileged EXEC mode.

show cef {**accounting** | **background** [**detail**] | **broker** *broker-name* [**detail**] | **error** | **fib** | **hardware vectors** | **idb** | **loadinfo** | **non-ip** | **nsf** | **path** [**list** [**walk**] | **sets** [**detail** | **id** *path-set-id* | **summary**] | **switching background** [**detail**] | **walks** [**process** | **queue**]}

Syntax Description

accounting	Displays Cisco Express Forwarding accounting state.
background	Displays Cisco Express Forwarding background processing.
detail	(Optional) Displays detailed Cisco Express Forwarding information.
broker *broker-name*	(Distributed platforms only) Displays Cisco Express Forwarding information related to update brokers.
error	Displays information about the state of Cisco Express Forwarding errors.
fib	Displays Cisco Express Forwarding Forwarding Information Base (FIB) entries.
hardware vectors	Displays the hardware application programming interface (API) vector function table.
idb	Displays Cisco Express Forwarding interface descriptor blocks.
loadinfo	Displays Cisco Express Forwarding loadinfo events.
non-ip	Displays Cisco Express Forwarding paths for non-IP traffic.
nsf	(Distributed platforms only) Displays Cisco Express Forwarding nonstop forwarding (NSF) statistics.
path	Displays Cisco Express Forwarding paths.
list	(Optional) Displays a list of Cisco Express Forwarding paths.
walk	(Optional) Displays the walk through the list of Cisco Express Forwarding paths.
sets	(Optional) Displays point-to-multipoint path set information.
detail	(Optional) Displays detailed point-to-multipoint path set information.
id *path-set-id*	(Optional) Displays information about the specified path set. Enter the path set ID in hex format.
summary	(Optional) Displays high-level information about point-to-multipoint path sets.
switching background	Display Cisco Express Forwarding background switching processing.
walks	Specifies a walk through Cisco Express Forwarding infrastructure.
process	(Optional) Displays the process that services the background work queue.
queue	(Optional) Displays the work queue of background walks.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.2GS	This command was introduced to support the Cisco 12012 Internet router.
11.1CC	Support was added for multiple platforms.
12.0(22)S	The display output for this command was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding for IPv6 packets.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	The **drop** and **not-cef-switched** keywords were removed. The **accounting**, **background**, **broker**, **fib**, **hardware vectors**, **idb**, **loadinfo**, **non-ip**, **nsf**, **path**, and **walks** keywords were added.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
12.2(33)SRE	This command was modified. The **sets** keyword was added to display point-to-multipoint information.

Usage Guidelines

Use this command to display and monitor information about traffic forwarded by Cisco Express Forwarding.

A line card might drop packets because of encapsulation failure, absence of route information, or absence of adjacency information.

A packet is punted (sent to another switch path) because Cisco Express Forwarding may not support a specified encapsulation or feature, the packet may be destined for the router, or the packet may have IP options (such as time stamp and record route). IP options are process switched.

Examples

The following example shows how to display Cisco Express Forwarding accounting information:

```
Router# show cef accounting

IPv4 accounting state:
 Enabled accounting:            per-prefix, non-recursive, prefix-length
 Non-recursive load interval:   30 (default 30)
 Non-recursive update interval: 0 (default 0)

IPv6 accounting state:
 Enabled accounting:            None
 Non-recursive load interval:   30 (default 30)
 Non-recursive update interval: 0 (default 0)
```

Table 4 describes the significant fields shown in the example.

Table 4 show cef accounting Field Descriptions

Field	Description
Enabled accounting	Type or types of Cisco Express Forwarding accounting that are enabled: load-balance-hash, non-recursive, per-prefix, prefix-length, or none.
per-prefix	Indicates that Cisco Express Forwarding accounting is enabled for the collection of the number of packets and bytes express-forwarded to a destination (or prefix).
non-recursive	Indicates that Cisco Express Forwarding accounting is enabled through nonrecursive prefixes.
prefix-length	Indicates that Cisco Express Forwarding accounting is enabled through prefix length.

The following example shows how to display Cisco Express Forwarding background information:

```
Router# show cef background

CEF background process process (pid 77) running
 0 events awaiting registration on background process
 9 events registered on background process
  boolean   FIB malloc failed, 0 occurences
  boolean   FIB assert failed, 0 occurences
  boolean   FIB hw_api_failure failed, 0 occurences
  timer     FIB checkers: auto-repair delay, init, !run, 0 occurences
  timer     FIB checkers: auto-repair delay, init, !run, 0 occurences
  timer     FIB checkers: IPv4 scan-rib-ios scanner, init, run, 2 occurences
  timer     FIB checkers: IPv4 scan-ios-rib scanner, init, run, 2 occurences
  timer     FIB checkers: IPv6 scan-ios-rib scanner, init, run, 2 occurences
  timer     FIB table: rate monitor, init, run, 0 occurences
```

Table 5 describes the significant fields shown in the example.

Table 5 show cef background Field Descriptions

Field	Description
boolean	The background process is waiting for a true or false flag to be set.
FIB malloc failed, 0 occurences	No instances of memory allocation failure have occurred for the FIB.
FIB assert failed, 0 occurences	No instances of assertion failure have occurred for the FIB.
FIB hw_api_failure failed; 0 occurences	No failures are reported during the programming of hardware forwarding.
timer	The background process is waiting for a timer to be triggered. Once the timer is triggered, the operation begins. In the FIB checkers cases that follow, the timer is linked to Cisco Express Forwarding consistency checkers.
FIB checkers: auto-repair delay, init, !run, 0 occurences	FIB auto repair timer is initialized, but the timer is not running and has not been running (0 occurences).
FIB checkers: IPv4 scan-rib-ios scanner, init, !run, 2 occurences	FIB IPv4 scan-rib-ios timer is initialized and running. The timer has been triggered twice.

Table 5 show cef background Field Descriptions

Field	Description
FIB checkers: IPv4 scan-ios-rib scanner, init, run, 2 occurences	FIB IPv4 scan-ios-rib timer is initialized and running. The timer has been triggered twice.
FIB table: rate monitor, init, run, 0 occurences	FIB table rate monitor timer is initialized and running, but has yet to be triggered.

The following example shows how to display information about Cisco Express Forwarding FIB entries:

```
Router# show cef fib

9 allocated IPv4 entries, 0 failed allocations
1 allocated IPv6 entry, 0 failed allocations
```

Table 6 describes the significant fields shown in the example.

Table 6 show cef fib Field Descriptions

Field	Description
9 allocated IPv4 entries, 0 failed allocations	Number of successfully allocated and failed IPv4 entries.
1 allocated IPv6 entry, 0 failed allocations	Number of successfully allocated and failed IPv6 entries.

The following example shows how to display information about Cisco Express Forwarding loadinfo:

```
Router# show cef loadinfo

0 allocated loadinfos, 0 failed allocations
0 allocated loadinfo hash usage gsbs
0 inplace modifies (enabled)
0 identical modifies
```

Table 7 describes the significant fields shown in the example.

Table 7 show cef loadinfo Field Descriptions

Field	Description
0 allocated loadinfos, 0 failed allocations	Number of successfully allocated and failed allocated loadinfos.
0 allocated loadinfo hash usage gsbs	Number of allocated subblocks for per-hash bucket accounting when load balancing is used.
0 inplace modifies (enabled)	In-place modification is enabled. No in-place modifications have occurred.
0 identical modifies	Number of in-place modifications that were skipped because the replacement was identical to the target.

The following example shows how to display information for Cisco Express Forwarding paths:

```
Router# show cef path

28 allocated IPv4 paths, 0 failed allocations
4 allocated IPv6 paths, 0 failed allocations
```

```
32 Total Paths, 587 Recursive Paths, 0 Unresolved Paths
```

Table 8 describes the significant fields shown in the example.

Table 8 show cef path Field Descriptions

Field	Definition
28 allocated IPv4 paths	Number of successfully allocated and failed IPv4 paths.
4 allocated IPv6 paths	Number of successfully allocated and failed IPv4 paths.
32 Total Paths, 587 Recursive Paths, 0 Unresolved Paths	Information on all Cisco Express Forwarding paths.

The following example shows how to display information about Cisco Express Forwarding background switching processes:

```
Router# show cef switching background

CEF switching background process (pid 46) running
 0 events awaiting registration on background process
 1 event registered on background process
  boolean   OCE unlock queue, 0 occurences
```

Table 9 describes the significant fields shown in the example.

Table 9 show cef switching background Field Descriptions

Field	Description
0 events awaiting registration on background process	Number of events waiting to be registered on the background process.
1 event registered on background process	Number of events registered on the background process.
boolean OCE unlock queue, 0 occurences	Number of output chain element (OCE) unlock queue events.

The following example shows how to display information about Cisco Express Forwarding:

```
Router# show cef walks

Calling process:
----------------

Number of initial walks:

                        started
mode / priority             low          high     very high
sync                          3             0             0
atomic                        0             0             0

                       finished
mode / priority             low          high     very high
sync                          3             0             0
atomic                        0             0             0

                      restarted
mode / priority             low          high     very high
```

```
sync                            0              0              0
atomic                          0              0              0

Number of sub walks:

                           started
mode / priority                low           high      very high
sync                             0              0              0
atomic                           0              0              0

                          finished
mode / priority                low           high      very high
sync                             0              0              0
atomic                           0              0              0
```

Table 10 describes the significant fields shown in the example.

Table 10 show cef walks Field Description

Field	Description
mode	Indicates the mode of the Cisco Express Forwarding infrastructure walk: • sync—The walk takes place in the current process context and completes before the start function returns. Other processes are allowed to run. • atomic—The walk takes place in the current process context and completes before the start function returns. No other processes are allowed to run.
priority	Indicate the priority of the infrastructure walk: low, medium, or high.

Related Commands

Command	Description
clear cef linecard	Clears Cisco Express Forwarding information from line cards.
show cef features global	Displays Cisco Express Forwarding features for any interface.
show cef interface	Displays detailed Cisco Express Forwarding information for a specified interface or for all interfaces.
show cef linecard	Displays Cisco Express Forwarding-related information by line card.
show cef memory	Displays information about Cisco Express Forwarding memory usage.
show cef state	Displays the state of Cisco Express Forwarding on a networking device.
show cef subtree context client	Displays Cisco Express Forwarding prefix subtrees.
show cef table	Displays the configuration and operational state of the Cisco Express Forwarding FIB table.
show cef timers	Displays the current state of the timers internal to the Cisco Express Forwarding process.

show cef drop

Note The **show cef drop** command is not available in Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T and later releases.

To display a list of which packets each line card dropped, use the **show cef drop** command in user EXEC or privileged EXEC mode.

show cef drop

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2 GS	This command was introduced to support the Cisco 12012 Internet router.
11.1 CC	Multiple platform support was added.
12.0(22)S	The display output for this command was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding for IPv6 packets.
12.0(23)S	This command was integrated into Cisco IOS Release 12.0(23)S.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T. Previously there was a **show cef** command, and **drop** was a keyword of that command.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	This command was removed. It is not available in Cisco IOS Release 12.2(25)S and later Cisco IOS 12.2S releases.
12.2(28)SB	This command was removed. It is not available in Cisco IOS Release 12.2(28)SB and later Cisco IOS 12.2SB releases.
12.2(33)SRA	This command was removed. It is not available in Cisco IOS Release 12.2(33)SRAand later Cisco IOS 12.2SR releases.
12.2(33)SXH	This command was removed. It is not available in Cisco IOS Release 12.2(33)SXH and later Cisco IOS 12.2S releases.
12.4(20)T	This command was removed. It is not available in Cisco IOS Release 12.4(20)T and later Cisco IOS 12.4T releases.

Usage Guidelines

A line card might drop packets because of encapsulation failure, absence of route information, or absence of adjacency information.

A packet is sent to a different switching path (punted) because Cisco Express Forwarding does not support the encapsulation or feature, the packet is destined for the router, or the packet has IP options, such as time stamp and record route. IP options are process switched.

Note If Cisco Express Forwarding for IPv6 or distributed Cisco Express Forwarding for IPv6 is enabled globally on the router, the **show cef drop** command displays IPv6 Cisco Express Forwarding counter information and IPv4 Cisco Express Forwarding counter information. If Cisco Express Forwarding for IPv6 or distributed Cisco Express Forwarding for IPv6 is not enabled globally on the router, the command displays only IPv4 Cisco Express Forwarding counter information.

Examples

The following is sample output from the **show cef drop** command:

```
Router# show cef drop

CEF Drop Statistics
Slot  Encap_fail  Unresolved Unsupported    No_route      No_adj   ChksumErr
RP             4          89           0           4           0           0
1              0           0           0           0           0           0
2              0           0           5           0           0           5
IPv6 CEF Drop Statistics
Slot  Encap_fail  Unresolved Unsupported    No_route      No_adj
RP             2          33           0           2           0
1              0           0           3           0           0
2              0           0           0           0           0
```

Table 11 describes the significant fields shown in the display.

Table 11 show cef drop Field Descriptions

Field	Description
Slot	The slot number on which the packets were received.
Encap_fail	Indicates the number of packets dropped after exceeding the limit for packets punted to the processor due to missing adjacency information (Cisco Express Forwarding throttles packets passed up to the process level at a rate of one packet every two seconds).
Unresolved	Indicates the number of packets dropped due to an unresolved prefix in the Forwarding Information Base (FIB) table.
Unsupported	Indicates the number of packets fast-dropped by Cisco Express Forwarding (drop adjacency).
No_route	Indicates the number of packets dropped due to a missing prefix in the FIB table.
No_adj	Indicates the number of packets dropped due to incomplete adjacency.
ChksumErr	Indicates the number of IPv4 packets received with a checksum error. **Note** This field is not supported for IPv6 packets.

Related Commands

Command	Description
show cef interface	Displays Cisco Express Forwarding-related interface information.
show ipv6 cef	Displays entries in the IPv6 FIB.

show cef events

Note The **show cef events** command is not available in Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T and later releases.

To display a list of events internal to the Cisco Express Forwarding process, use the **show cef events** command in user EXEC or privileged EXEC mode.

show cef events

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0(23)S	This command was introduced.
12.0(24)S	This command was integrated into Cisco IOS Release 12.0(24)S.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.2(25)S	This command was removed. It is not available in Cisco IOS Release 12.2(25)S and later Cisco IOS 12.2S releases.
12.2(28)SB	This command was removed. It is not available in Cisco IOS Release 12.2(28)SB and later Cisco IOS 12.2SB releases.
12.2(33)SRA	This command was removed. It is not available in Cisco IOS Release 12.2(33)SRAand later Cisco IOS 12.2SR releases.
12.2(33)SXH	This command was removed. It is not available in Cisco IOS Release 12.2(33)SXH and later Cisco IOS 12.2S releases.
12.4(20)T	This command was removed. It is not available in Cisco IOS Release 12.4(20)T and later Cisco IOS 12.4T releases.

Examples

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

```
Router# show cef events

CEF events (14/0 recorded/ignored)

Time            Event     Details
+00:00:00.000   SubSys    ipfib init
+00:00:00.000   SubSys    ipfib_ios init
+00:00:00.000   SubSys    ipfib_util init
+00:00:00.000   SubSys    adj_ios init
+00:00:00.000   SubSys    ipfib_les init
+00:00:01.272   Flag      FIB enabled set to yes
+00:00:01.272   Flag      FIB switching enabled set to yes
+00:00:01.272   GState    CEF enabled
+00:00:02.872   Process   Background created
```

```
+00:00:02.872   Flag      FIB running set to yes
+00:00:02.872   Process   Background event loop enter
+00:00:02.912   Flag      FIB switching running set to yes
+00:00:02.920   Process   Scanner created
+00:00:02.920   Process   Scanner event loop enter
```

Table 12 describes the significant fields shown in the display.

Table 12 show cef events Field Descriptions

Field	Description
Time	Time that the event occurred.
Event	Type of event that occurred.
Details	Detailed description of the event.

Related Commands

Command	Description
show cef drop	Displays a list of which packets each line card dropped.
show cef interface	Displays Cisco Express Forwarding-related interface information.
show cef linecard	Displays Cisco Express Forwarding-related interface information by line card.

show cef features global

To display Cisco Express Forwarding features for any interface, use the **show cef features global** command in privileged EXEC mode.

show cef features global

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(28)SB	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

This command is used to determine if Cisco Express Forwarding is enabled for all interfaces.

Examples

The following is sample output from the **show cef features global** command:

```
Router# show cef features global

   Global Drop features not attached to a specific interface:
      Input FNF
   Global Punt features not attached to a specific interface:
      Input FNF, SPD Classify
```

Table 13 describes the significant fields shown in the display.

Table 13 show cef features global Field Descriptions

Field	Description
Input FNF	Flexible NetFlow (FNF) feature.
SPD Classify	Flexible NetFlow (FNF) feature.

This output shows the global drop feature, Flexible NetFlow (Input FNF), and two global punt features, Input FNF and SPD Classify. SPD Classify is present by default. The punt features are invoked for all punted packets regardless of the interface upon which they are received.

Related Commands

Command	Description
show cef interface	Displays detailed Cisco Express Forwarding information for all interfaces.

show cef interface

To display detailed Cisco Express Forwarding information for a specified interface or for all interfaces, use the **show cef interface** command in user EXEC or privileged EXEC mode.

show cef interface [*type number*] [**statistics | detail | internal | brief | policy-statistics** [**input | output**]]

Syntax Description

type number	(Optional) Interface type and number. No space is required between the interface type and number.
statistics	(Optional) Displays switching statistics for an interface or interfaces.
detail	(Optional) Displays detailed Cisco Express Forwarding information for the specified interface type and number.
internal	(Optional) Displays internal Cisco Express Forwarding interface status and configuration.
brief	(Optional) Summarizes the Cisco Express Forwarding interface state.
policy-statistics	(Optional) Displays Border Gateway Protocol (BGP) policy statistical information for a specific interface or for all interfaces.
input	(Optional) Displays BGP accounting policy statistics for traffic that is traveling through an input interface.
output	(Optional) Displays BGP accounting policy statistics for traffic that is traveling through an output interface.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2GS	This command was introduced to support the Cisco 12012 Internet router.
11.1CC	Support for multiple platforms was added.
12.0(14)ST	This command was integrated into Cisco IOS Release 12.0(14)ST, and the **statistics** keyword was added.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T, and the **detail** keyword was added.
12.2(13)T	The **policy-statistics** keyword was added.
12.0(22)S	The **input** and **output** keywords were added. The display output was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding interface information. Output fields that support BGP policy accounting were added for the Cisco 7200 series and Cisco 7500 series platforms.

Release	Modification
12.3(4)T	The **input** and **output** keywords were added. The display output was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding interface information. Output fields that support BGP policy accounting were added for the Cisco 7200 series and Cisco 7500 series platforms.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	The **internal** keyword was added.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(25)SG	This command was integrated into Cisco IOS Release 12.2(25)SG.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

You can use this command to display the detailed Cisco Express Forwarding status for all interfaces.

Values entered for the *type* and *number* arguments display Cisco Express Forwarding status information for the specified interface type and number.

The **policy-statistics**, **input**, and **output** keywords are available only on distributed switching platforms.

Examples

The following example shows how to display a summary of Cisco Express Forwarding information for an interface named Ethernet 3/0:

```
Router# show cef interface ethernet 3/0 brief

Interface                      IP-Address      Status  Switching
Ethernet3/0                    10.0.212.6      up      CEF
Router#
```

The following is sample output from the **show cef interface** command for Fast Ethernet interface 1/0/0 with BGP policy accounting configured for input traffic:

```
Router# show cef interface fastethernet 1/0/0

FastEthernet1/0/0 is up (if_number 6)
  Corresponding hwidb fast_if_number 6
  Corresponding hwidb firstsw->if_number 6
  Internet address is 10.1.1.1/24
  ICMP redirects are always sent
  Per packet load-sharing is disabled
  IP unicast RPF check is disabled
  Inbound access list is not set
  Outbound access list is not set
  IP policy routing is disabled
  BGP based policy accounting on input is enabled
  BGP based policy accounting on output is disabled
Hardware idb is FastEthernet1/0/0 (6)
  Software idb is FastEthernet1/0/0 (6)
  Fast switching type 1, interface type 18
  IP Distributed CEF switching enabled
  IP Feature Fast switching turbo vector
  IP Feature CEF switching turbo vector
  Input fast flags 0x100, Output fast flags 0x0, Flags 0x0
```

```
  ifindex 7(7)
  Slot 1 Slot unit 0 VC -1
  Transmit limit accumulator 0xE8001A82 (0xE8001A82)
  IP MTU 1500
```

The following is sample output from the **show cef interface detail** command for Ethernet interface 1/0/0:

```
Router# show cef interface ethernet 1/0/0 detail

FastEthernet1/0/0 is up (if_number 6)
  Corresponding hwidb fast_if_number 6
  Corresponding hwidb firstsw->if_number 6
  Internet address is 10.1.1.1/24
  ICMP redirects are always sent
  Per packet load-sharing is disabled
  IP unicast RPF check is disabled
  Inbound access list is not set
  Outbound access list is not set
  IP policy routing is disabled
  BGP based policy accounting on input is enabled
  BGP based policy accounting on output is disabled
  Hardware idb is FastEthernet1/0/0 (6)
  Software idb is FastEthernet1/0/0 (6)
  Fast switching type 1, interface type 18
  IP Distributed CEF switching enabled
  IP Feature Fast switching turbo vector
  IP Feature CEF switching turbo vector
  Input fast flags 0x100, Output fast flags 0x0, Flags 0x0
  ifindex 7(7)
  Slot 1 Slot unit 0 VC -1
  Transmit limit accumulator 0xE8001A82 (0xE8001A82)
  IP MTU 1500
```

The following is sample output from the **show cef interface Null 0 detail** command:

```
Router# show cef interface null 0 detail

Null0 is up (if_number 1)
  Corresponding hwidb fast_if_number 1
  Corresponding hwidb firstsw->if_number 1
  Internet Protocol processing disabled
  Interface is marked as nullidb
  Packets switched to this interface on linecard are dropped to next slow path
  Hardware idb is Null0
  Fast switching type 13, interface type 0
  IP CEF switching enabled
  IP Feature CEF switching turbo vector
  Input fast flags 0x0, Output fast flags 0x0
  ifindex 0(0)
  Slot -1 Slot unit -1 VC -1
  Transmit limit accumulator 0x0 (0x0)
  IP MTU 1500
```

The following is sample output for internal Cisco Express Forwarding interface status and configuration for the Ethernet 3/1 interface:

```
Router# show cef interface ethernet 3/1 internal

Ethernet3/1 is up (if_number 13)
  Corresponding hwidb fast_if_number 13
  Corresponding hwidb firstsw->if_number 13
  Internet address is 10.0.212.6/24
  ICMP redirects are always sent
```

```
  Per packet load-sharing is disabled
  IP unicast RPF check is disabled
  Inbound access list is not set
  Outbound access list is not set
  IP policy routing is disabled
  BGP based policy accounting on input is disabled
  BGP based policy accounting on output is disabled
  Hardware idb is Ethernet3/1
  Fast switching type 1, interface type 63
  IP CEF switching enabled
  IP CEF switching turbo vector
  IP CEF turbo switching turbo vector
  IP prefix lookup IPv4 mtrie 8-8-8-8 optimized
  Input fast flags 0x0, Output fast flags 0x0
  ifindex 11(11)
  Slot 3 Slot unit 0 VC -1
  Transmit limit accumulator 0x0 (0x0)
  IP MTU 1500
Subblocks:
  IPv6: enabled 1 unreachable FALSE redirect TRUE mtu 1500 flags 0x0
        link-local address is FE80::20C:CFFF:FEF9:4854
        Global unicast address(es):
        10:6:6:6:20C:CFFF:FEF9:4854, subnet is 10:6:6:6::/64 [EUI]
  IPv4: Internet address is 10.0.212.6/24
        Broadcast address 255.255.255.255
        Per packet load-sharing is disabled
        IP MTU 1500
```

Table 14 describes the significant fields shown in the displays.

Table 14 show cef interface Field Descriptions

Field	Description
FastEthernet1/0/0 is up	Indicates type, number, and status of the interface.
Internet address is	Internet address of the interface.
ICMP redirects are always sent	Indicates how packet forwarding is configured.
Per packet load-sharing is disabled	Indicates status of load sharing on the interface.
IP unicast RPF check is disabled	Indicates status of IP unicast Reverse Path Forwarding (RPF) check on the interface.
Inbound access list is not set	Indicates the number or name of the inbound access list if one is applied to this interface. Also indicates whether the list is set.
Outbound access list is not set	Indicates the number or name of the outbound access list if one is applied to this interface. Also indicates whether the list is set.
IP policy routing is disabled	Indicates the status of IP policy routing on the interface.
BGP based policy accounting on input is enabled	Indicates the status of BGP policy accounting on the input interface.
BGP based policy accounting on output is disabled	Indicates the status of BGP policy accounting on the output interface.
Hardware idb is Ethernet1/0/0	Interface type and number configured.

Table 14 show cef interface Field Descriptions (continued)

Field	Description
Fast switching type	Used for troubleshooting; indicates switching mode in use.
Interface type	Indicates interface type.
IP Distributed CEF switching enabled	Indicates whether distributed Cisco Express Forwarding is enabled on this interface. (Cisco 7500 and 12000 series Internet routers only.)
IP Feature Fast switching turbo vector	Indicates IP fast switching type configured.
IP Feature CEF switching turbo vector	Indicates IP feature Cisco Express Forwarding switching type configured.
Input fast flags	Indicates the input status of various switching features: • 0x0001 (input Access Control List [ACL] enabled) • 0x0002 (policy routing enabled) • 0x0004 (input rate limiting) • 0x0008 (MAC/Prec accounting) • 0x0010 (DSCP/PREC/QOS GROUP) • 0x0020 (input named access lists) • 0x0040 (NAT enabled on input) • 0x0080 (crypto map on input) • 0x0100 (QPPB classification) • 0x0200 (inspect on input) • 0x0400 (input classification) • 0x0800 ([1]casa input enable) • 0x1000 (Virtual Private Network [VPN] enabled on a [2]swidb) • 0x2000 (input idle timer enabled) • 0x4000 (unicast Reverse Path Forwarding [RPF] check) • 0x8000 (per-address ACL enabled) • 0x10000 (deaggregating a packet) • 0x20000 ([3]GPRS enabled on input) • 0x40000 (URL RenDezvous) • 0x80000 (QoS classification) • 0x100000 (FR switching on interface) • 0x200000 ([4]WCCP redirect on input) • 0x400000 (input classification)

Table 14 show cef interface Field Descriptions (continued)

Field	Description
Output fast flags	Indicates the output status of various switching features, as follows: • 0x0001 (output ACL enabled) • 0x0002 (IP accounting enabled) • 0x0004 (WCC redirect enabled interface) • 0x0008 (rate limiting) • 0x0010 (MAC/Prec accounting) • 0x0020 (DSCP/PREC/QOS GROUP) • 0x0040 (D-QOS classification) • 0x0080 (output named access lists) • 0x0100 (NAT enabled on output) • 0x0200 (TCP intercept enabled) • 0x0400 (crypto map set on output) • 0x0800 (output firewall) • 0x1000 ([5]RSVP classification) • 0x2000 (inspect on output) • 0x4000 (QoS classification) • 0x8000 (QoS preclassification) • 0x10000 (output stile)
ifindex 7/(7)	Indicates a Cisco IOS internal index or identifier for this interface.
Slot 1 Slot unit 0 VC -1	The slot number and slot unit.
Transmit limit accumulator	Indicates the maximum number of packets allowed in the transmit queue.
IP MTU	The MTU size set on the interface.

1. Cisco applications and services architecture (CASA)
2. Software interface descriptor block (SWIDB)
3. General packet radio system (GPRS)
4. Web cache communication protocol (WCCP)
5. Resource reservation protocol (RSVP)

The following is sample output from the **show cef interface command** using the **policy-statistics** keyword:

```
Router# show cef interface policy-statistics

POS7/0 is up (if_number 8)
Index   Packets                 Bytes

1           0                       0
2           0                       0
3           50                      5000
```

```
4          100                  10000
5          100                  10000
6          10                   1000
7          0                    0
8          0                    0
```

The following is sample output from the **show cef interface** command using the **policy-statistics** keyword. It shows policy statistics for Ethernet interface 1/0.

```
Router# show cef interface ethernet 1/0 policy-statistics

Ethernet1/0 is up (if_number 3)
  Corresponding hwidb fast_if_number 3
  Corresponding hwidb firstsw->if_number 3
 Index         Packets           Bytes
     1               0               0
     2               0               0
     3               0               0
     4               0               0
     5               0               0
     6               0               0
     7               0               0
     8               0               0
```

The following is sample output from the **show cef interface** command using the **policy-statistics** keyword. It shows policy statistics for Fast Ethernet interface 1/0/0 with the policy accounting based on input traffic.

```
Router# show cef interface fastethernet 1/0/0 policy-statistics input

FastEthernet1/0/0 is up (if_number 6)
  Corresponding hwidb fast_if_number 6
  Corresponding hwidb firstsw->if_number 6
  BGP based Policy accounting on input is enabled
 Index         Packets           Bytes
     1            9999          999900
     2               0               0
     3               0               0
     4               0               0
     5               0               0
     6               0               0
     7               0               0
     8               0               0
     9               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
    32               0               0
    33               0               0
    34            1234          123400
    35               0               0
    36               0               0
    37               0               0
    38               0               0
    39               0               0
    40               0               0
    41               0               0
    42               0               0
    43               0               0
    44               0               0
    45            1000          100000
    46               0               0
    47               0               0
    48               0               0
    49               0               0
    50               0               0
    51               0               0
    52               0               0
    53               0               0
    54            5123         1198782
```

The following is sample output from the **show cef interface** command using the **policy-statistics** keyword. It shows policy statistics for serial interface 1/1/2 with the policy accounting based on output traffic.

```
Router# show cef interface serial 1/1/2 policy-statistics output

Serial1/1/2 is up (if_number 9)
  Corresponding hwidb fast_if_number 9
  Corresponding hwidb firstsw->if_number 9
  BGP based Policy accounting on output is enabled
Index         Packets           Bytes
     1            9999          999900
     2               0               0
    .
    .
    .
    18               0               0
    19               0               0
    20               0               0
    .
    .
    .
    34            1234          123400
    35               0               0
    .
    .
    .
    44               0               0
    45            1000          100000
    46               0               0
    47               0               0
    48               0               0
    49               0               0
    50               0               0
    51               0               0
    52               0               0
    53               0               0
    54            5123         1198782
```

```
55              0               0
56              0               0
57              0               0
58              0               0
59              0               0
60              0               0
61              0               0
62              0               0
63              0               0
64              0               0
```

Table 15 describes the significant fields shown in the display.

Table 15 show cef interface policy-statistics Field Descriptions

Field	Description
Index	Traffic index set with the **route-map** command.
Packets	Number of packets switched that match the index definition.
Bytes	Number of bytes switched that match the index definition.

Related Commands

Command	Description
clear cef linecard	Clears Cisco Express Forwarding information from line cards.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.
show cef	Displays information about packets forwarded by Cisco Express Forwarding.
show cef drop	Displays which packets the line cards dropped, or displays which packets were not express forwarded.
show cef linecard	Displays Cisco Express Forwarding interface information by line card.

show cef interface policy-statistics

To display Cisco Express Forwarding policy statistical information for a specific interface or for all interfaces, use the **show cef interface policy-statistics** command in user EXEC or privileged EXEC mode.

show cef interface [*type number*] **policy-statistics** [**input** | **output**]

Syntax Description

type number	(Optional) Interface type and number. A space is not required between the interface type and number.
input	(Optional) Displays Border Gateway Protocol (BGP) policy accounting statistics for traffic that is traveling through an input interface.
output	(Optional) Displays BGP policy accounting statistics for traffic that is traveling through an output interface.

Command Default

By default, this command displays the input statistics only.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0(9)S	This command was introduced on the Cisco 12000 series Internet routers.
12.0(14)ST	This command was integrated into Cisco IOS Release 12.0(14)ST.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.0(22)S	The **input** and **output** keywords were added. The display output was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding for IPv6 interface information. Output fields that support BGP policy accounting were added for the Cisco 7200 series and Cisco 7500 series platforms.
12.2(14)SX	Support for this command was implemented on the Supervisor Engine 720.
12.3(4)T	Changes to this command were integrated into Cisco IOS Release 12.3(4)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command is available on all software switching platforms, such as the Cisco 7200 series router, and distributed switched platforms, such as the Route Switch Processor (RSP), Gigabit Switch Router (GSR), and the Catalyst 6000 series router.

This command is not supported on Cisco 7600 series routers that are configured with a Supervisor Engine 2.

Two sets of counters are displayed for BGP policy accounting: input counters and output counters. If you enter the **show cef interface policy-statistics** command without an optional keyword, the command displays only input counters. If you want to display the output counters, you must enter the command with the **output** keyword. You can also display the input counters by entering the **input** keyword with the command.

The number of lines in the output of the **show cef interface policy-statistics** command varies from platform to platform. The software switched platforms support 64 input and 64 output counters and thus 64 lines of output. The Catalyst 6000 family switches and Cisco 7600 series routers support seven input and seven output counters and seven lines of output.

You enable BGP policy accounting on a particular interface when you enter the **bgp-policy accounting** command in interface configuration mode. To define the conditions for BGP policy accounting, you use the **set traffic-index** command in route-map configuration mode, the **route-map** command in global configuration mode, the **table-map** command in route-map configuration mode, and the **match** command in route-map configuration mode. The **table-map** command adds the named route map to the BGP routing table. BGP uses the route map name to set traffic indexes for routes in the IP routing table. The **match** commands specify the match criteria—the conditions under which policy routing occurs. The **set traffic-index** command sets the traffic indexes for matching prefixes. The **show ip cef detail** command displays the traffic index for any particular route.

Examples

The following is sample output from the **show cef interface policy-statistics** command:

```
Router# show cef interface policy-statistics

POS7/0 is up (if_number 8)
Index   Packets                 Bytes

1           0                       0
2           0                       0
3           50                      5000
4           100                     10000
5           100                     10000
6           10                      1000
7           0                       0
8           0                       0
```

The following is sample output from the **show cef interface policy-statistics** command showing policy statistics for Ethernet interface 1/0:

```
Router# show cef interface ethernet 1/0 policy-statistics

Ethernet1/0 is up (if_number 3)
  Corresponding hwidb fast_if_number 3
  Corresponding hwidb firstsw->if_number 3
 Index         Packets           Bytes
     1               0               0
     2               0               0
     3               0               0
     4               0               0
     5               0               0
     6               0               0
     7               0               0
     8               0               0
```

The following is sample output from the **show cef interface policy-statistics** command showing policy statistics for Fast Ethernet interface 1/0/0 with the policy accounting based on input traffic:

```
Router# show cef interface fastethernet 1/0/0 policy-statistics input
```

```
FastEthernet1/0/0 is up (if_number 6)
  Corresponding hwidb fast_if_number 6
  Corresponding hwidb firstsw->if_number 6
  BGP based Policy accounting on input is enabled
 Index         Packets           Bytes
     1            9999          999900
     2               0               0
     3               0               0
     4               0               0
     5               0               0
     6               0               0
     7               0               0
     8               0               0
     9               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
    32               0               0
    33               0               0
    34            1234          123400
    35               0               0
    36               0               0
    37               0               0
    38               0               0
    39               0               0
    40               0               0
    41               0               0
    42               0               0
    43               0               0
    44               0               0
    45            1000          100000
    46               0               0
    47               0               0
    48               0               0
    49               0               0
    50               0               0
    51               0               0
    52               0               0
    53               0               0
    54            5123         1198782
    55               0               0
    56               0               0
    57               0               0
    58               0               0
    59               0               0
```

```
    60               0               0
    61               0               0
    62               0               0
    63               0               0
    64               0               0
```

The following is sample output from the **show cef interface policy-statistics** command showing policy statistics for serial interface 1/1/2 with the policy accounting based on output traffic:

```
Router# show cef interface serial 1/1/2 policy-statistics output

Serial1/1/2 is up (if_number 9)
  Corresponding hwidb fast_if_number 9
  Corresponding hwidb firstsw->if_number 9
  BGP based Policy accounting on output is enabled
Index         Packets           Bytes
     1            9999          999900
     2               0               0
     3               0               0
     4               0               0
     5               0               0
     6               0               0
     7               0               0
     8               0               0
     9               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
    32               0               0
    33               0               0
    34            1234          123400
    35               0               0
    36               0               0
    37               0               0
    38               0               0
    39               0               0
    40               0               0
    41               0               0
    42               0               0
    43               0               0
    44               0               0
    45            1000          100000
    46               0               0
    47               0               0
    48               0               0
```

```
49              0               0
50              0               0
51              0               0
52              0               0
53              0               0
54           5123         1198782
55              0               0
56              0               0
57              0               0
58              0               0
59              0               0
60              0               0
61              0               0
62              0               0
63              0               0
64              0               0
```

Table 16 describes the significant fields shown in these displays.

Table 16 show cef interface policy-statistics Field Descriptions

Field	Description
Index	Traffic index set with the **route-map** command.
Packets	Number of packets switched that match the index definition.
Bytes	Number of bytes switched that match the index definition.

Related Commands

Command	Description
bgp-policy	Enables BGP policy accounting or policy propagation on an interface.
match as-path	Matches a BGP autonomous system path access list.
match community	Matches a BGP community.
match extcommunity	Matches BGP extended community list attributes.
match local-preference	Configures a route map to match routes based on the BGP local-preference attribute.
match policy-list	Configures a route map to evaluate and process a BGP policy list in a route map.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol to another or enables policy routing.
set traffic-index	Indicates how to classify packets that pass a match clause of a route map for BGP policy accounting.
show cef drop	Displays which packets were dropped by the line cards or displays which packets were not express forwarded.
show cef linecard	Displays Cisco Express Forwarding-related interface information by line card.
show ip cef detail	Displays a detailed summary of the FIB.
table-map	Modifies metric and tag values when the IP routing table is updated with BGP learned routes.

show cef linecard

To display Cisco Express Forwarding-related information by line card, use the **show cef linecard** command in user EXEC or privileged EXEC mode.

show cef linecard [*slot-number*] [**detail**] [**internal**]

Syntax Description

slot-number	(Optional) Slot number for the line card about which to display Cisco Express Forwarding-related information. When you omit this argument, information about all line cards is displayed.
detail	(Optional) Displays detailed Cisco Express Forwarding information for the specified line card.
internal	(Optional) Displays internal Cisco Express Forwarding information for the specified line card.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2 GS	This command was introduced to support the Cisco 12012 Internet router.
11.1 CC	Multiple platform support was added.
12.0(10)S	Output display was changed.
12.1(2)T	This command was integrated into Cisco IOS Release 12.1(2)T.
12.0(22)S	This command was integrated into Cisco IOS Release 12.0(22)S, and the display output was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding for IPv6 line card information.
12.2(13)T	The display output modifications made in Cisco IOS Release 12.0(22)S were integrated into Cisco IOS Release 12.2(13)T.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	The **events** keyword was removed.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

This command is available only on distributed switching platforms.

When you omit the *slot-number* argument, information about all line cards is displayed. When you omit the *slot-number* argument and include the **detail** keyword, detailed information is displayed for all line cards. When you omit the *slot-number* argument and include the **internal** keyword, detailed internal information is displayed for all line cards.When you omit all keywords and arguments, the **show cef linecard** command displays important information about all line cards in table format.

Examples

The following is sample output from the **show cef linecard** command. The command displays information for all line cards in table format.

```
Router# show cef linecard

Slot    MsgSent    XDRSent  Window   LowQ   MedQ  HighQ Flags
0             6         95      24      0      0      0 up
1             6         95      24      0      0      0 up
VRF Default-table, version 8, 6 routes
Slot Version    CEF-XDR    I/Fs State    Flags
0          7          4       8 Active   up, sync
1          7          4      10 Active   up, sync
```

The following is sample output from the **show cef linecard detail** command for all line cards:

```
Router# show cef linecard detail

CEF linecard slot number 0, status up
 Sequence number 4, Maximum sequence number expected 28, Seq Epoch 2
 Send failed 0, Out Of Sequence 0, drops 0
 Linecard CEF reset 0, reloaded 1
 95 elements packed in 6 messages(3588 bytes) sent
 69 elements cleared
 linecard in sync after reloading
 0/0/0 xdr elements in LowQ/MediumQ/HighQ
 11/9/69 peak elements on LowQ/MediumQ/HighQ
 Input  packets 0, bytes 0
 Output packets 0, bytes 0, drops 0
 CEF Table statistics:
 Table name                Version Prefix-xdr Status
 Default-table                   7          4 Active, up, sync
CEF linecard slot number 1, status up
 Sequence number 4, Maximum sequence number expected 28, Seq Epoch 2
 Send failed 0, Out Of Sequence 0, drops 0
 Linecard CEF reset 0, reloaded 1
 95 elements packed in 6 messages(3588 bytes) sent
 69 elements cleared
 linecard in sync after reloading
 0/0/0 xdr elements in LowQ/MediumQ/HighQ
 11/9/69 peak elements on LowQ/MediumQ/HighQ
 Input  packets 0, bytes 0
 Output packets 0, bytes 0, drops 0
 CEF Table statistics:
 Table name                Version Prefix-xdr Status
 Default-table                   7          4 Active, up, sync
```

The following is sample output from the **show cef linecard internal** command for all line cards:

```
Router# show cef linecard internal

CEF linecard slot number 0, status up
 Sequence number 11, Maximum sequence number expected 35
 Send failed 0, Out Of Sequence 0
 Linecard CEF reset 2, reloaded 2
 Total elements queued:
  prefix                   4
  adjacency                4
  interface                91
  address                  2
  policy routing           2
  hw interface             57
  state                    6
  resequence               2
  control                  13
```

```
 table                    2
 time                     4484
 flow features deactivate 2
 flow cache config        2
 flow export config       2
 dss                      2
 isl                      2
 mpls atm vc remove       2
 mpls atm vc set label    2
                          2
                          2
                          3
                          1
4574 elements packed in 4495 messages(90286 bytes) sent
115 elements cleared
Total elements cleared:
 prefix                   2
 adjacency                1
 interface                63
 address                  1
 policy routing           1
 hw interface             29
 state                    2
 control                  5
 table                    1
 flow features deactivate 1
 flow cache config        1
 flow export config       1
 dss                      1
 isl                      1
 mpls atm vc remove       1
 mpls atm vc set label    1
                          1
                          1
                          1
linecard disabled  - failed a reload
0/0/0 xdr elements in LowQ/MediumQ/HighQ
Input  packets 0, bytes 0
Output packets 0, bytes 0, drops 0

CEF Table statistics:
Table name               Version Prefix-xdr Status
Default-table                  8          4 Active, sync
```

Table 17 describes the significant fields shown in the displays.

Table 17 show cef linecard Field Descriptions

Field	Description
Table name	Name of the Cisco Express Forwarding table.
Version	Number of the Forwarding Information Base (FIB) table version.
Prefix-xdr	Number of prefix IPC information elements external data representation (XDRs) processed.
Status	State of the Cisco Express Forwarding table.
Slot	Slot number of the line card.
MsgSent	Number of interprocess communications (IPC) messages sent.
XDRSent	XDRs packed into IPC messages sent from the Route Processor (RP) to the line card.

Table 17 show cef linecard Field Descriptions (continued)

Field	Description
Window	Size of the IPC window between the line card and the RP.
LowQ/MedQ/HighQ	Number of XDR elements in the Low, Medium, and High priority queues.
Flags	Indicates the status of the line card. States are: • up—Line card is up. • sync—Line card is in synchronization with the main FIB. • FIB is repopulated on the line card. • reset—Line card FIB is reset. • reloading—Line card FIB is being reloaded. • disabled—Line card is disabled.
CEF-XDR	Number of Cisco Express Forwarding XDR messages processed.
I/Fs	Interface numbers.

Related Commands

Command	Description
show cef	Displays which packets the line cards dropped or displays which packets were not express-forwarded.
show cef interface	Displays Cisco Express Forwarding-related interface information.
show ipv6 cef	Displays entries in the IPv6 FIB.

show cef memory

To display information about Cisco Express Forwarding memory usage, use the **show cef memory** command in privileged EXEC mode.

show cef memory [**changes** | **chunk-utilisation** [**changes** | **summary** [**changes**]] | **snapshot** | **summary**]

Syntax Description

changes	Displays Cisco Express Forwarding memory usage changes since the last snapshot.
chunk-utilisation	Displays Cisco Express Forwarding chunk memory utilization.
summary	Displays a summary of Cisco Express Forwarding memory usage.
snapshot	Displays Cisco Express Forwarding memory information and takes a snapshot.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

Use this command to monitor the memory usage of Cisco Express Forwarding processes. You can display a summary of Cisco Express Forwarding memory usage, display a snapshot of memory use, and display changes to memory use since the last snapshot was taken.

Examples

The following is sample output from the **show cef memory** command:

```
Router# show cef memory

  Memory                          in use/allocated         Count
  ------------------------------------------------------------------------
  ADJ: NULL adjacency       :         276/328        ( 84%) [1]
  ADJ: adj sev context      :         208/312        ( 66%) [2]
  ADJ: adjacency            :         856/960        ( 89%) [2]
  ADJ: request resolve      :        2200/2304       ( 95%) [2]
  ADJ: sevs                 :         256/360        ( 71%) [2]
  CEF: FIB subtree context  :          28/80         ( 35%) [1]
  CEF: FIBHWIDB             :       19440/20480      ( 94%) [20]
  CEF: FIBIDB               :        6352/7392       ( 85%) [20]
  CEF: FIBSWSB control      :         496/600        ( 82%) [2]
  CEF: IPv4 ARP throttle    :        1028/1080       ( 95%) [1]
  CEF: IPv4 not-sw cnt      :          76/128        ( 59%) [1]
  CEF: IPv4 not-sw si       :          76/128        ( 59%) [1]
```

```
CEF: OCE get hash callbac :          28/80          ( 35%) [1]
CEF: Table rate Monitor S :          88/192         ( 45%) [2]
CEF: arp throttle chunk   :       22096/22200       ( 99%) [2]
CEF: dQ elems             :         208/312         ( 66%) [2]
CEF: fib                  :        1640/1744        ( 94%) [2]
CEF: fib GSB              :        2496/2808        ( 88%) [6]
CEF: fib deps             :         208/312         ( 66%) [2]
CEF: fib_fib_s            :         456/560         ( 81%) [2]
CEF: fib_fib_src_interfac :         208/312         ( 66%) [2]
CEF: fib_fib_src_special_ :         208/312         ( 66%) [2]
CEF: fib_rib_route_update :        4840/4944        ( 97%) [2]
CEF: fibhwidb table       :       40004/40056       ( 99%) [1]
CEF: fibidb table         :       40004/40056       ( 99%) [1]
CEF: hash table           :      262152/262256      ( 99%) [2]
CEF: ipv6 feature error c :        1260/1312        ( 96%) [1]
CEF: ipv6 feature error s :        1260/1312        ( 96%) [1]
CEF: ipv6 not cef switche :         484/536         ( 90%) [1]
CEF: ipv6 not cef switche :         484/536         ( 90%) [1]
CEF: loadinfos            :         504/608         ( 82%) [2]
CEF: mpls long path exts  :         280/384         ( 72%) [2]
CEF: mpls path exts       :         200/304         ( 65%) [2]
CEF: nh entry context     :         280/384         ( 72%) [2]
CEF: non_ip entry context :         280/384         ( 72%) [2]
CEF: pathl                :        2424/2736        ( 88%) [6]
CEF: pathl ifs            :         280/384         ( 72%) [2]
CEF: pathl its            :         352/456         ( 77%) [2]
CEF: pathloutputchain     :         432/536         ( 80%) [2]
```

Table 18 describes the significant fields shown in the display.

Table 18 show cef memory Field Descriptions

Field	Description
Memory	The type of Cisco Express Forwarding process that is using memory.
in use/allocated	Number of bytes in use by Cisco Express Forwarding and the number of bytes allocated for use by Cisco Express Forwarding.
Count	Number of blocks in use.
ADJ	Indicates a Cisco Express Forwarding adjacency process.
CEF	Indicates a Cisco Express Forwarding process.

The following is sample output from the **show cef memory summary** command:

```
Router# show cef memory summary

CEF has allocated 502888 bytes of memory (7904 bytes overhead)
```

This example shows that Cisco Express Forwarding allocated 502888 bytes of memory. The difference between the amount of memory in use and the amount of memory allocated is 7904 bytes.

The following is sample output from the **show cef memory snapshot** command:

```
Router# show cef memory snapshot

CEF memory snapshot taken at 00:26:01.116
```

This example shows when you last took a snapshot of Cisco Express Forwarding memory.

The following is sample output from the **show cef memory changes** command:

```
Router# show cef memory changes

No changes in CEF memory allocation in last 00:36:05.064
```

This examples shows the Cisco Express Forwarding memory changes, if any, that have occurred since the last memory snapshot was taken.

Related Commands

Command	Description
show cef	Displays information about packets forwarded by Cisco Express Forwarding.

show cef not-cef-switched

Note The **show cef not-cef-switched** command is not available in Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T and later releases.

To display which packets were sent to a different switching path, use the **show cef not-cef-switched** command in user EXEC or privileged EXEC mode.

show cef not-cef-switched

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2 GS	This command was introduced to support the Cisco 12012 Internet router.
11.1 CC	Support for multiple platforms was added.
12.0(22)S	The display output for this command was modified to include support for Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding for IPv6 packets.
12.0(23)S	This command was integrated into Cisco IOS Release 12.0(23)S.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T. Previously there was a **show cef** command, and **drop** was a keyword of that command.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	This command was removed. It is not available in Cisco IOS Release 12.2(25)S and later Cisco IOS 12.2S releases.
12.2(28)SB	This command was removed. It is not available in Cisco IOS Release 12.2(28)SB and later Cisco IOS 12.2SB releases.
12.2(33)SRA	This command was removed. It is not available in Cisco IOS Release 12.2(33)SRAand later Cisco IOS 12.2SR releases.
12.2(33)SXH	This command was removed. It is not available in Cisco IOS Release 12.2(33)SXH and later Cisco IOS 12.2S releases.
12.4(20)T	This command was removed. It is not available in Cisco IOS Release 12.4(20)T and later Cisco IOS 12.4T releases.

Usage Guidelines

If packets are not being cef switched and you want to determine why, enter the **show cef not-cef switched** command.

Note If Cisco Express Forwarding for IPv6 or distributed Cisco Express Forwarding for IPv6 is enabled globally on the router, the **show cef not-cef-switched** command displays IPv6 Cisco Express Forwarding counter information and IPv4 Cisco Express Forwarding counter information. If Cisco Express Forwarding for IPv6 or distributed Cisco Express Forwarding for IPv6 is not enabled globally on the router, the command displays only IPv4 Cisco Express Forwarding counter information.

Examples

The following is sample output from the **show cef not-cef-switched** command:

```
Router# show cef not-cef-switched

CEF Packets passed on to next switching layer
Slot No_adj No_encap Unsupp'ted Redirect  Receive  Options   Access    Frag
RP        0        0          0        0    91584        0        0       0
1         0        0          0        0        0        0        0       0
2         0        0          0        0        0        0        0       0
IPv6 CEF Packets passed on to next switching layer
Slot No_adj No_encap Unsupp'ted Redirect  Receive  Options   Access    MTU
RP        0        0          0        0    92784        0        0       0
1         0        0          0        0        0        0        0       0
2         0        0          0        0        0        0        0       0
```

Table 19 describes the significant fields shown in the display.

Table 19 show cef not-cef-switched Field Descriptions

Field	Meaning
Slot	The slot number on which the packets were received.
No_adj	Indicates the number of packets sent to the processor due to incomplete adjacency.
No_encap	Indicates the number of packets sent to the processor for Address Resolution Protocol (ARP) resolution.
Unsupp'ted	Indicates the number of packets punted to the next switching level due to unsupported features.
Redirect	Records packets that are ultimately destined to the router, and packets destined to a tunnel endpoint on the router. If the decapsulated tunnel is IP, it is Cisco Express Forwarding switched; otherwise, packets are process switched.
Receive	Indicates the number of packets ultimately destined to the router, or packets destined to a tunnel endpoint on the router. If the decapsulated tunnel packet is IP, the packet is Cisco Express Forwarding switched. Otherwise, packets are process switched.
Options	Indicates the number of packets with options. Packets with IP options are handled only at the process level.
Access	Indicates the number of packets punted due to an access list failure.

Table 19 show cef not-cef-switched Field Descriptions (continued)

Field	Meaning
Frag	Indicates the number of packets punted due to fragmentation failure. **Note** This field is not supported for IPv6 packets.
MTU	Indicates the number of packets punted due to maximum transmission unit (MTU) failure. **Note** This field is not supported for IPv4 packets.

Related Commands

Command	Description
show cef drop	Displays a list of which packets each line card dropped.
show cef interface	Displays Cisco Express Forwarding-related interface information.
show ipv6 cef	Displays entries in the IPv6 FIB.

show cef state

To display the state of Cisco Express Forwarding on a networking device, use the **show cef state** command in privileged EXEC mode.

show cef state

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced on Cisco 7500, 10000, and 12000 series Internet routers.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S on Cisco 7500 series routers.
12.2(20)S	Support for the Cisco 7304 router was added. The Cisco 7500 series router is not supported in Cisco IOS Release 12.2(20)S.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Examples

Example for Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12,2(33)SRA, 12,2(33)SXH, 12.4(20T, and Later Releases

The following example shows the state of Cisco Express Forwarding on the active Route Processor (RP):

```
Router# show cef state

CEF Status:
 RP instance
 common CEF enabled
IPv4 CEF Status:
 CEF enabled/running
 dCEF disabled/not running
 CEF switching enabled/running
 universal per-destination load sharing algorithm, id A189DD49
IPv6 CEF Status:
 CEF enabled/running
 dCEF disabled/not running
 original per-destination load sharing algorithm, id A189DD49
```

Table 20 describes the significant fields shown in the display.

Table 20 show cef state Field Description (New)

Field	Description
RP instance	Cisco Express Forwarding status is for the RP.
common CEF enabled	Common Cisco Express Forwarding is enabled.
IPv4 CEF Status	Cisco Express Forwarding mode and status is for IPv4.
universal per-destination load sharing algorithm	IPv4 is using the universal per-destination load sharing algorithm for Cisco Express Forwarding traffic.
IPv6 CEF Status	Cisco Express Forwarding mode and status is for IPV6.
original per-destination load sharing algorithm	IPv6 is using the original per-destination load sharing algorithm for Cisco Express Forwarding traffic.

Example for Cisco IOS Releases Before Cisco IOS 12.2(25)S

The following example shows the state of Cisco Express Forwarding on the active Route Processor (RP):

```
Router# show cef state

RRP state:
     I am standby RRP:          no
     RF Peer Presence:          yes
     RF PeerComm reached:       yes
     Redundancy mode:           SSO(7)
     CEF NSF:                   enabled/running
```

Table 21 describes the significant fields shown in the display.

Table 21 show cef state Field Descriptions

Field	Description
I am standby RRP: no	This RP is not the standby.
RF Peer Presence: yes	This RP does have RF peer presence.
RF PeerComm reached: yes	This RP has reached RF peer communication.
Redundancy mode: SSO(&)	Type of redundancy mode on this RP.
CEF NSF: enabled/running	States whether Cisco Express Forwarding nonstop forwarding (NSF) is running or not.

The following example shows the state of Cisco Express Forwarding on the standby RP:

```
Router# show cef state

RRP state:
     I am standby RRP:          yes
     My logical slot:           0
     RF Peer Presence:          yes
     RF PeerComm reached:       yes
     CEF NSF:                   running
```

Related Commands

Command	Description
clear ip cef epoch	Begins a new epoch and increments the epoch number for a Cisco Express Forwarding table.
show cef nsf	Displays the current NSF state of Cisco Express Forwarding on both the active and standby RPs.

show cef subtree context client

To display Cisco Express Forwarding prefix subtrees, use the **show cef subtree context client** command in privileged EXEC mode.

show cef subtree context client {**all** | **ip-session** | **test**}

Syntax Description

all	Displays all Cisco Express Forwarding clients that provide prefix subtree context.
ip-session	Displays Cisco Express Forwarding IP sessions that provide prefix subtree context.
test	Tests all Cisco Express Forwarding applications that provide prefix subtree context.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

Note This command is for debugging purposes only. Do not use it unless instructed to do so by a Cisco service engineer.

Examples

The following example shows how to display information about all clients that provide subtree context:

```
Router# show cef subtree context client all

Client: FIB_SC: Test
        instances: 0
        app space: 0
        platform space: 0
```

Table 22 describes the significant fields shown in the display.

Table 22 show cef subtree context client all Field Descriptions

Field	Description
FIB_SC: Test	Identifies the name of the client. This is useful information for the Cisco service engineer.
instances: 0	Number of instances of the subtree context.
app space: 0	Amount of extra space requested by the application for each instance of the subtree context.
platform space: 0	Amount of extra space requested by the platform for each instance of the subtree context.

Related Commands

Command	Description
show cef	Displays information about packets forwarded by Cisco Express Forwarding.

show cef table

To display the configuration and operational state of the Cisco Express Forwarding Forwarding Information Base (FIB) table, use the **show cef table** command in privileged EXEC mode.

Cisco IOS 12.2(33)SRB and Later S-Based Releases

show cef table [**consistency-check** | **detail** | **internal** | [**ipv4** | **ipv6**] [**vrf** {***** | **Default** | *vrf-name*}] [**topology** {***** | **base** | *topology-name*}] [**detail** | **internal**]]

Cisco IOS 12.4(20)T and Later T-Based Releases

show cef table [**consistency-check** | **detail** | **internal** | [**ipv4** | **ipv6**] {**Default** | *vrf-name*} [**detail** | **internal**]]

Syntax Description

consistency-check	(Optional) Displays the status of consistency checkers in the FIB.
detail	(Optional) Displays detailed Cisco Express Forwarding operational status and configuration.
internal	(Optional) Displays internal Cisco Express Forwarding operational status and configuration.
ipv4	(Optional) Displays operational status for IPv4 from the IPv4 FIB.
ipv6	(Optional) Displays operational status for IPv6 from the IPv6 FIB.
vrf	(Optional) Specifies a Virtual Private Network (VPN) routing and forwarding (VRF) instance for the specified address family.
*****	Displays operational status for all configured VRFs (**vrf ***) or all topologies (**topology ***), respectively.
Default	Displays operational status for the default VRF for the specified address family.
vrf-name	Displays operational status for the named VRF configured for the specified address family.
topology	(Optional) Specifies a topology for the selected address family.
base	Displays operational status for the base topology for the specified address family.
topology-name	Displays operational status for the identified topology-specific table.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 2.2(28)SB.
12.2(33)SRA	This command was introduced.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

Use this command to display information about the configuration and operational statistics for Cisco Express Forwarding IPv4 FIB and IPv6 FIB.

Cisco IOS 12.4(20)T and Later T-based Releases

When you enter an **ipv4** or **ipv6** keyword with the **show cef table** command, you must enter the name of a configured VRF or the **Default** keyword.

Cisco IOS 12.2(33)SRB and Later S-based Releases

The **vrf** and **topology** keywords are optional when you enter the **ipv4** or **ipv6** keyword with the **show cef table** command.

Examples

The following is sample output from the **show cef table** command:

```
Router# show cef table

Global information:
 Output chain build favors:
  platform:      not configured
  CLI:           not configured
  operational:   convergence-speed
 Output chain build characteristics:
  Inplace modify
     operational for:     load-sharing
 Collapse
     operational for:     load-sharing
 Indirection
     operational for:     recursive-prefix
 MTRIE information:
  TAL: node pools:
   pool[C/8 bits]: 12 allocated (0 failed), 12480 bytes {1 refcount}


1 active IPv4 table (9 prefixes total) out of a maximum of 10000.
VRF                      Prefixes       Memory  Flags
Default                         9        13520

1 active IPv6 table (1 prefix total) out of a maximum of 10000.
VRF                      Prefixes       Memory  Flags
VRF                      Prefixes       Memory  Flags
Default                         1          208
```

Table 23 describes significant fields shown in the display.

Table 23 show cef table Field Descriptions

Field	Description
Output chain build favors:	Indicates table output chain building operational preferences.
Platform: not configured	Output chain building characteristics are not explicitly set or supported by the platform. The default output chain building characteristics are used.
CLI: not configured	Output chain building characteristics are not explicitly configured. The default is used.
operational: convergence speed	Output chain building favors convergence. This is the default operational behavior.

Table 23 show cef table Field Descriptions (continued)

Field	Description
Output chain build characteristics	Indicates the output chain building characteristics.
Inplace modify operational for: load-sharing	Indicates that the load sharing information in effect can be changed if the output information of the Interior Gateway Protocol (IGP) changes.
Collapse operational for: load-sharing	Indicates that the load-sharing tree is collapsed if load balancing is not affected.
Indirection operational for: recursive-prefix	Indicates that the use of indirection objects is enabled for recursive prefixes.
MTRIE information:	Indicates that information about the multi-array retrieval (MTRIE) follows.
TAL: node pools:	Indicates that node pool information for the Tree Abstraction Layer (TAL) follows.
pool (C/8 bits):	Indicates the memory management technique for the pool and the stride size (8 bits). The C indicates the use of a chunk pool. An M would indicate the use of a malloc.

The following is sample output from the **show cef table internal** command:

```
Router# show cef table internal

Table: IPv4:Default (id 0)
 sources:               Default table
 ref count:             31
 flags (0x00):          none
 smp allowed:           yes
 default network:       none
 route count:           9
 route count (fwd):     9
 route count (non-fwd): 0
 Database epoch:        0 (9 entries at this epoch)
 Subblocks:

  These rates are ndbs/minute.
   RIB update rate:           0
   RIB update peak rate:      0
 Internals:
  table:            0x4BFA060
  extra:            0x000000
  broker record:    0x000000
  tal root:         0x4C01988
  lookup OCE:       0x4C12B50


Table: IPv6:Default (id 0)
 sources:               Default table
 ref count:             3
 flags (0x00):          none
 smp allowed:           no
 default network:       none
 route count:           1
 route count (fwd):     1
 route count (non-fwd): 0
 Database epoch:        0 (1 entry at this epoch)
```

```
 Subblocks:

  These rates are ndbs/minute.
   RIB update rate:           0
   RIB update peak rate:      0
 Internals:
  table:             0x4BF9FF0
  extra:             0x000000
  broker record:     0x000000
  tal root:          0x4C96328
  lookup OCE:        0x4C12B30
```

Table 24 describes significant fields shown in the display.

Table 24 show cef table internal Field Descriptions

Field	Description
Table: IPv4: Default (id 0)	The FIB table, IPv4 or IPv6, for which operation statistics follow.
sources: Default table	The source of the information comes from the Default table.
ref count: 3	The number of internal pointers to the VRF table structure.
flags (0x00): none	No flags are configured.
smp allowed: yes	Symmetrical Multi-Processing (SMP) is allowed.
default network: none	A default network is not configured.
route count: 9	Total number of routes is 9.
route count (fwd): 9	The number of routes forwarded is 9.
route count (non-fwd): 0	The number of routes not forwarded is 0.
Database epoch: 0 (9 entries at this epoch)	Epoch number (table version) is 0 and contains 9 entries.
Subblocks:	No subblocks are defined.
RIB update rate: 0	No update rate is configured for the RIB.
RIB update peak rate 0	No peak update rate is defined for the RIB.
Internal:	Identification for Cisco Express Forwarding internal operations.

The following is sample output from the **show cef table consistency-check** command:

```
Router# show cef table consistency-check

Consistency checker master control: enabled

IPv4:
 Table consistency checker state:
  scan-rib-ios: disabled
   0/0/0/0 queries sent/ignored/checked/iterated
  scan-ios-rib: disabled
   0/0/0/0 queries sent/ignored/checked/iterated
  full-scan-rib-ios: enabled [1000 prefixes checked every 60s]
   0/0/0/0 queries sent/ignored/checked/iterated
  full-scan-ios-rib: enabled [1000 prefixes checked every 60s]
   0/0/0/0 queries sent/ignored/checked/iterated
 Checksum data checking disabled
```

```
 Inconsistency error messages are disabled
 Inconsistency auto-repair is enabled (10s delay, 300s holddown)
 Inconsistency auto-repair runs: 0
 Inconsistency statistics: 0 confirmed, 0/16 recorded

IPv6:
 Table consistency checker state:
  scan-ios-rib: disabled
   0/0/0/0 queries sent/ignored/checked/iterated
  full-scan-rib-ios: enabled [1000 prefixes checked every 60s]
   0/0/0/0 queries sent/ignored/checked/iterated
  full-scan-ios-rib: enabled [1000 prefixes checked every 60s]
   0/0/0/0 queries sent/ignored/checked/iterated
 Checksum data checking disabled
 Inconsistency error messages are disabled
 Inconsistency auto-repair is enabled (10s delay, 300s holddown)
 Inconsistency auto-repair runs: 0
 Inconsistency statistics: 0 confirmed, 0/16 recorded
```

Table 25 describes significant fields shown in the display.

Table 25 show cef table consistency-check Field Descriptions

Field	Description
scan-rib-ios: disabled	The consistency checker that compares the Routing Information Base (RIB) to the FIB table and provides the number of entries missing from the FIB table is disabled.
scan-ios-rib: disabled	The consistency checker that compares the FIB table to the RIB and provides the number of entries missing from the RIB is disabled.
full-scan-rib-ios: enabled	A full scan is enabled that compares the RIB to the FIB table. Every 60 seconds, 1000 prefixes are checked.
full-scan-ios-rib: enabled	A full scan is enabled that compares the FIB table to the RIB. Every 60 seconds, 1000 prefixes are checked.
Checksum data checking disabled	The data-checking function is disabled.
Inconsistency error messages are disabled	The consistency checker to generate inconsistency error messages is disabled.
Inconsistency auto-repair is enabled (10s delay, 300s holddown)	The auto repair function is enabled with the default settings of a 10-second delay and a 300-second holddown.

The following is sample output from the **show cef table IPv4 Default** command:

```
Router# show cef table ipv4 Default

Table: IPv4:Default (id 0)
 sources:               Default table
 ref count:             31
 flags (0x00):          none
 smp allowed:           yes
 default network:       none
 route count:           9
 route count (fwd):     9
 route count (non-fwd): 0
 Database epoch:        0 (9 entries at this epoch)
 Subblocks:
```

```
  These rates are ndbs/minute.
   RIB update rate:           0
   RIB update peak rate:      0
```

For a description of significant fields shown in the display, see Table 24.

The following is sample output from the **show cef table IPv6 Default internal** command:

```
Router# show cef table ipv6 Default internal

Table: IPv6:Default (id 0)
 sources:               Default table
 ref count:             3
 flags (0x00):          none
 smp allowed:           no
 default network:       none
 route count:           1
 route count (fwd):     1
 route count (non-fwd): 0
 Database epoch:        0 (1 entry at this epoch)
 Subblocks:

  These rates are ndbs/minute.
   RIB update rate:           0
   RIB update peak rate:      0
 Internals:
  table:            0x4BF9FF0
  extra:            0x000000
  broker record:    0x000000
  tal root:         0x4C96328
  lookup OCE:       0x4C12B30
```

For a description of significant fields shown in the display, see Table 24.

Related Commands

Command	Description
cef table consistency-check	Enables Cisco Express Forwarding table consistency checker types and parameters.
cef table output-chain build	Configures Cisco Express Forwarding table output chain building characteristics for the forwarding of packet through the network.
show cef	Displays information about packets forwarded by Cisco Express Forwarding.

show cef table download priority

To display the configured download priority of Cisco Express Forwarding routes, use the **show cef table download priority** command in privileged EXEC mode.

show cef table download priority

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Usage Guidelines

Use this command to display the configured priority for Cisco Express Forwarding routes that are downloaded from the Route Processor (RP) to the line cards.

You can change the default priority for a route type with the **cef table download** configuration command. If you change the default priority for a route type, the **show cef table download priority** command displays the user-configured priority followed by the default priority in parentheses.

Examples

The following sample output shows the configured download priority of the routes and prefixes from the Cisco Express Forwarding table on the RP to the line cards:

```
Router# show cef table download priority

Route type                                priority
Route with recursive dependents           1st
Default route, 0.0.0.0/0 or ::/0          1st
Directly connected route                  2nd
Receive route, local address on router    2nd
Route is in a VRF                         3rd
Any other route not matched               4th
```

This example shows that the default download priorities are in effect.

Table 26 describes the significant fields shown in the display.

Table 26 show cef table download priority Field Descriptions

Field	Description
Route type	Type of route in the Cisco Express Forwarding table downloaded from the RP to the line cards.
priority	Order in which the route type is downloaded from the RP to the line cards.

In the following example, the default priority of a default route and a receive route was changed with the **cef table download** command:

```
Router# configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# cef table download default-route priority 2
Router(config)# cef table download receive-route priority 4
Router(config)# exit
```

The following **show cef table download priority** command displays the newly configured download priority and the default priority (in parentheses) for the default route and the receive route:

```
Router# show cef table download priority

Route type                                priority
Route with recursive dependents           1st
Default route, 0.0.0.0/0 or ::/0          2nd (default 1st)
Directly connected route                  2nd
Receive route, local address on router    4th (default 2nd)
Route is in a VRF                         3rd
Any other route not matched               4th
```

See Table 26 for a description of the significant fields shown in the display.

Related Commands

Command	Description
cef table download	Sets download characteristics for prefixes and routes in the Cisco Express Forwarding table.

show cef timers

To display the current state of the timers internal to the Cisco Express Forwarding process, use the **show cef timers** command in user EXEC or privileged EXEC mode.

show cef timers

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.3(2)T	This command was introduced.
12.2(25)S	Command output was changed.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Examples

Example for Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12,2(33)SRA, 12,2(33)SXH, 12.4(20)T, and Later Releases

The following is sample output from the **show cef timer** command:

```
Router# show cef timers

CEF background process
    Expiration    Type
       13.248  (parent)
        13.248  FIB checkers: IPv4 scan-rib-ios scanner
        13.248  FIB checkers: IPv4 scan-ios-rib scanner
        13.248  FIB checkers: IPv6 scan-ios-rib scanner

Platform counter polling is not enabled
IPv4 CEF background process
    Expiration    Type
       0.600  (parent)
         0.600  ARP throttle
         0.600  adjacency update hwidb
```

Table 27 describes the significant fields shown in the display.

Table 27 show cef timers Field Descriptions

Field	Description
Experation	Seconds in which the timers will expire
Type	Identification of the counter

Example for Cisco IOS Releases Before Cisco IOS Release 12.2(25)S

The following is sample output from the **show cef timers** command:

```
Router# show cef timers
```

```
CEF background process
     Expiration   Type
            0.208 (parent)
               0.208 adjacency update hwidb
               0.540 slow resolution
               1.208 ARP throttle

CEF FIB scanner process
     Expiration    Type
           44.852  (parent)
              44.852  checker scan-rib
```

Table 28 describes the significant fields shown in the display.

Table 28 show cef timers Field Descriptions

Field	Description
Expiration	Seconds in which the timers will expire
Type	Identification of the timer

Related Commands

Command	Description
show cef interface	Displays Cisco Express Forwarding-related interface information.
show ipv6 cef	Displays entries in the IPv6 FIB.

show cef vrf

To display information about Cisco Express Forwarding Virtual Private Networks (VPN) routing and forwarding (VRF) instances, use the **show cef vrf** command in privileged EXEC mode.

show cef vrf [**ipv4** | **ipv6**] [**Default** | *vrf-name*]

Syntax Description

ipv4	(Optional) Displays IPv4 address-family type VRF instances.
ipv6	(Optional) Displays IPv6 address-family type VRF instances.
Default	(Optional) Default VRF for the specified address family.
vrf-name	(Optional) Name assigned to a VRF.

Command Default

If you do not specify any arguments or keywords, the command displays information about all VRFs in the Cisco Express Forwarding Forwarding Information Base (FIB).

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.

Usage Guidelines

Use this command to display information about specified VRF instances or all VRF instances in the Cisco Express Forwarding FIB. To display information about all VRF instances in the FIB, omit arguments and keywords.

Examples

The following is sample output from the **show cef vrf** command:

```
Router# show cef vrf

AF: IPv4, VRF: Default(0)
  Contains 1 table:
    IPv4:Default
AF: IPv6, VRF: Default(0)
  Contains 1 table:
    IPv6:Default
```

Table 29 describes significant fields shown in the display.

Table 29 show cef vrf Field Descriptions

Field	Description
AF: IPv4	The address-family type is IPv4.
VRF: Default (0)	Identifies the default VRF.
AF: IPv6	The address-family type is IPv6.

The following is sample output from the **show cef vrf ipv4** command:

```
Router# show cef vrf ipv4

AF: IPv4, VRF: Default(0)
  Contains 1 table:
    IPv4:Default
```

The following is sample output from the **show cef vrf ipv6** command:

```
Router# show cef vrf ipv6

AF: IPv6, VRF: Default(0)
  Contains 1 table:
    IPv6:Default
```

For a description of significant fields in the displays, see Table 29.

Related Commands

Command	Description
show cef	Displays information about packets forwarded by Cisco Express Forwarding.

show interface stats

To display numbers of packets that were process switched, fast switched, and distributed switched, use the **show interface stats** command in user EXEC or privileged EXEC mode.

show interface *type number* **stats**

Syntax Description

type number	Interface type and number about which to display statistics.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.0	This command was introduced.
12.3(14)YM2	This command was modified to show the counter for Multi-Processor Forwarding (MPF) switched packets.
12.4(4)T	This command was integrated into Cisco IOS Release 12.4(4)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use this command on the Route Processor (RP).

Note When fast switching is configured on the outbound interface, and RSP optimum, RSP flow, and VIP DFS switching modes are all specified on the incoming interface, the interface on which RSP optimum, RSP flow, and VIP DFS switching modes is not enabled can still show packets switched out via those switching paths when packets are received from other interfaces with RSP optimum, RSP flow, and VIP DES switching modes enabled.

Examples

The following sample output is from Cisco IOS Release 12.3(14)YM2 and shows counters for both Multi-Processor Forwarding (MPF) switched packets on native GigabitEthernet interfaces and for non-MPF FastEthernet interfaces:

```
Router# show interface stats

GigabitEthernet0/0
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
               Processor          0          0        225      77625
             Route cache          0          0          0          0
  Multi-Processor Fwding        950     221250        500      57000
                   Total        950     221250        725     134625
GigabitEthernet0/1
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
```

```
                Processor          1         60        226       77685
             Route cache           0          0          0           0
  Multi-Processor Fwding         500      57000        500       57000
                  Total          501      57060        726      134685
GigabitEthernet0/2
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                Processor          1         60        226       77685
             Route cache           0          0          0           0
  Multi-Processor Fwding           0          0          0           0
                  Total          1         60        226       77685
FastEthernet1/0
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                Processor      34015    5331012       1579      158190
             Route cache           0          0          0           0
                  Total      34015    5331012       1579      158190
```

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

```
Router# show interface fddi 3/0/0 stats

Fddi3/0/0
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                Processor   3459994 1770812197    4141096 1982257456
             Route cache   10372326 3693920448     439872  103743545
       Distributed cache   19257912 1286172104   86887377 1184358085
                  Total    33090232 2455937453   91468345 3270359086
```

Table 30 describes the significant fields in the display.

Table 30 show interface stats Field Descriptions

Field	Description
Fddi3/0/0	Interface for which information is shown
Switching path	Column heading for the various switching paths below it
Pkts In	Number of packets received in each switching mechanism
Chars In	Number of characters received in each switching mechanism
Pkts Out	Number of packets sent out each switching mechanism
Chars Out	Number of characters sent out each switching mechanism

show interfaces switching

To display the number of packets sent and received on an interface classified by the switching path, use the **show interfaces switching** command in user EXEC and privileged EXEC mode.

show interfaces [*type number*] **switching**

Syntax Description

type number	Interface type and number about which to display packet switching path information.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.3	This command was introduced.

Usage Guidelines

Use the **show interfaces switching** command to show which path the router uses and how the traffic is switched. This command is also useful for troubleshooting CPU utilization.

Statistics for packets in, bytes in, packets out, and bytes out are displayed for the available protocols. The statistics are arranged by process, cache misses, fast-path, and autonomous path. All values displayed by the **show interfaces switching** command are absolute. The **clear interface counters** command has no effect on these values.

You must enter at least seven characters of the **switching** keyword (**switchi**) when you use the **show interfaces switching** command.

Examples

The following shows sample output from the **show interfaces switching** command:

```
Router# show interfaces switching

FastEthernet0/0
          Throttle count          0
                   Drops         RP          0         SP          0
              SPD Flushes       Fast          0        SSE          0
              SPD Aggress       Fast          0
             SPD Priority     Inputs          0      Drops          0

    Protocol IP
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process          24       8208          0          0
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
              Auton/SSE           0          0          0          0

    Protocol  DECnet
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process           0          0          0          0
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
```

```
              Auton/SSE          0          0          0          0
.........
.........

    Protocol  IPv6
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process          0          0          0          0
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
              Auton/SSE           0          0          0          0

    Protocol  Other
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process          2        120          3        180
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
              Auton/SSE           0          0          0          0

    NOTE: all counts are cumulative and reset only after a reload.

Interface POS4/0 is disabled
```

The following shows sample output from the **show interfaces switching** command for the interface FastEthernet 0/0:

```
Router> show interfaces FastEthernet 0/0 switching

FastEthernet0/0
          Throttle count          0
                   Drops         RP          0         SP          0
              SPD Flushes       Fast        218        SSE          0
              SPD Aggress       Fast          0
            SPD Priority     Inputs          0      Drops          0

    Protocol IP
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process        239      23422        237      23226
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
              Auton/SSE           0          0          0          0

    Protocol  ARP
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process          4        240          3        180
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
              Auton/SSE           0          0          0          0

    Protocol  CDP
          Switching path    Pkts In   Chars In   Pkts Out  Chars Out
                 Process          8       2632         15       5477
           Cache misses           0          -          -          -
                   Fast           0          0          0          0
              Auton/SSE           0          0          0          0

    NOTE: all counts are cumulative and reset only after a reload.
```

Table 31 describes the significant fields shown in the display.

Table 31 show interfaces switching Field Descriptions

Field	Description
Throttle count	Number of times input packet processing was throttled on this interface.
Drops	RP—Number of packets dropped for input congestion. SP—Number of packets flushed by external throttling.
SPD Flushes	Fast—Number of packets flushed by selective packet discard on RP. SSE—Number of packets flushed by external selective packet discard.
SPD Aggress	Fast—Input packets dropped by aggressive selective packet discard.
SPD Priority	Inputs—Number of priority packets received. Drops—Number of priority packets dropped.
Protocol	Name of the protocol for which packet switching information is displayed.
Switching Path	Indicates the traffic switching path.
Pkts In	Number of incoming packets.
Chars In	Number of incoming bytes.
Pkts Out	Number of outgoing packets.
Chars Out	Number of outgoing bytes.
Process	Process switching. With this type of switching, an incoming packet is associated with a destination network or subnet entry in the routing table located in main memory. Process switching is performed by the system processor.
Cache misses	Packets that were forwarded through the process level (for which there was no entry in fast switching cache).
Fast	Fast switching. With this type of switching, an incoming packet matches an entry in the fast-switching cache located in main memory. Fast switching is done via asynchronous interrupts, which are handled in real time. Fast switching allows higher throughput by switching a packet using a cache created by previous packets.
Auton	Autonomous switching. With this type of switching, an incoming packet matches an entry in the autonomous-switching cache located on the interface processor. Autonomous switching provides faster packet switching by allowing the ciscoBus controller to switch packets independently without having to interrupt the system processor. It is available only on Cisco 7000 series routers and in AGS+ systems with high-speed network controller cards.
SSE	Silicon switching engine switching. With this type of switching, an incoming packet matches an entry in the silicon-switching cache located in the silicon switching engine (SSE) of the Silicon Switch Processor (SSP) module. This module is available only on Cisco 7000 series routers. Silicon switching provides very fast, dedicated packet switching by allowing the SSE to switch packets independently without having to interrupt the system processor.

Related Commands

Command	Description
show interface stats	Displays numbers of packets that were process switched, fast switched, and distributed switched.

show ip cache

To display the routing table cache used to fast switch IP traffic, use the **show ip cache** command in user EXEC or privileged EXEC mode.

show ip cache [*prefix mask*] [*type number*]

Syntax Description

prefix mask	(Optional) Displays only the entries in the cache that match the prefix and mask combination.
type number	(Optional) Displays only the entries in the cache that match the interface type and number combination.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The **show ip cache** display shows MAC headers up to 92 bytes.

Examples

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

```
Router# show ip cache

IP routing cache version 4490, 141 entries, 20772 bytes, 0 hash overflows
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
   quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last 7 seconds, 0 in last 3 seconds
Last full cache invalidation occurred 0:06:31 ago

Prefix/Length       Age       Interface       MAC Header
131.108.1.1/32      0:01:09   Ethernet0/0     AA000400013400000C0357430800
131.108.1.7/32      0:04:32   Ethernet0/0     00000C01281200000C0357430800
131.108.1.12/32     0:02:53   Ethernet0/0     00000C029FD000000C0357430800
131.108.2.13/32     0:06:22   Fddi2/0         00000C05A3E000000C035753AAAA0300
                                              00000800
131.108.2.160/32    0:06:12   Fddi2/0         00000C05A3E000000C035753AAAA0300
                                              00000800
131.108.3.0/24      0:00:21   Ethernet1/2     00000C026BC600000C03574D0800
131.108.4.0/24      0:02:00   Ethernet1/2     00000C026BC600000C03574D0800
131.108.5.0/24      0:00:00   Ethernet1/2     00000C04520800000C03574D0800
131.108.10.15/32    0:05:17   Ethernet0/2     00000C025FF500000C0357450800
```

```
131.108.11.7/32     0:04:08   Ethernet1/2     00000C010E3A00000C03574D0800
131.108.11.12/32    0:05:10   Ethernet0/0     00000C01281200000C0357430800
131.108.11.57/32    0:06:29   Ethernet0/0     00000C01281200000C0357430800
```

Table 32 describes the significant fields shown in the display.

Table 32 show ip cache Field Descriptions

Field	Description
IP routing cache version	Version number of this table. This number is incremented any time the table is flushed.
entries	Number of valid entries.
bytes	Number of bytes of processor memory for valid entries.
hash overflows	Number of times autonomous switching cache overflowed.
Minimum invalidation interval	Minimum time delay between cache invalidation request and actual invalidation.
maximum interval	Maximum time delay between cache invalidation request and actual invalidation.
quiet interval	Length of time between cache flush requests before the cache will be flushed.
threshold <*n*> requests	Maximum number of requests that can occur while the cache is considered quiet.
Invalidation rate <*n*> in last <*m*> seconds	Number of cache invalidations during the last <*m*> seconds.
0 in last 3 seconds	Number of cache invalidation requests during the last quiet interval.
Last full cache invalidation occurred <*hh:mm:ss*> ago	Time since last full cache invalidation was performed.
Prefix/Length	Network reachability information for cache entry.
Age	Age of cache entry.
Interface	Output interface type and number.
MAC Header	Layer 2 encapsulation information for cache entry.

The following is sample output from the **show ip cache** command with a prefix and mask specified:

```
Router# show ip cache 131.108.5.0 255.255.255.0

IP routing cache version 4490, 119 entries, 17464 bytes, 0 hash overflows
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
   quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last second, 0 in last 3 seconds
Last full cache invalidation occurred 0:11:56 ago

Prefix/Length       Age       Interface       MAC Header
131.108.5.0/24      0:00:34   Ethernet1/2     00000C04520800000C03574D0800
```

The following is sample output from the **show ip cache** command with an interface specified:

```
Router# show ip cache e0/2

IP routing cache version 4490, 141 entries, 20772 bytes, 0 hash overflows
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
   quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last second, 0 in last 3 seconds
Last full cache invalidation occurred 0:06:31 ago

Prefix/Length       Age       Interface       MAC Header
131.108.10.15/32    0:05:17   Ethernet0/2     00000C025FF500000C0357450800
```

Related Commands

Command	Description
clear ip cache	Deletes entries in the routing table cache used to fast switch IP traffic.

show ip cef

To display entries in the Cisco Express Forwarding Forwarding Information Base (FIB) or to display a summary of the FIB, use the **show ip cef** command in user EXEC or privileged EXEC mode.

Privileged EXEC Mode

show ip cef [[[*network* [*network-mask*] | *network*/*mask*] [**longer-prefixes**] | *interface-type number*] [**platform**] [**detail** | **internal** [**checksum**]] | [*network* [*network-mask*] | *network*/*mask*] [**dependents** | **same-routing**] | **prefix-statistics**]

User EXEC Mode

show ip cef [[[*network* [*network-mask*] | *network*/*mask*] [**longer-prefixes**] | *interface-type number*] [**platform**] [**detail**] | [*network* [*network-mask*] | *network*/*mask*] [**dependents** | **same-routing**] | **prefix-statistics**]

Syntax Description

network	(Optional) Network number for which to display a FIB entry.
network-mask	(Optional) Network mask to be used with the specified *network* value.
network/*mask*	(Optional) The network number assigned to the interface and the length of the prefix.
longer-prefixes	(Optional) Displays FIB entries for more specific destinations.
interface-type	(Optional) Interface type. For more information, use the question mark (?) online help function.
number	(Optional) Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.
platform	(Optional) Displays platform-specific data structure only.
detail	(Optional) Displays detailed FIB entry information.
internal	(Optional) Displays the FIB internal data structure. The **internal** keyword is available in privileged EXEC mode only.
checksum	(Optional) Displays FIB entry checksum values. The **checksum** keyword is available in privileged EXEC mode only.
dependents	(Optional) Displays all prefixes recursing through the FIB.
same-routing	(Optional) Displays all prefixes with the same routing.
prefix-statistics	(Optional) Displays nonzero prefix statistics.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2GS	This command was introduced on the Cisco 12012 Internet router.
11.1CC	This command was modified. Multiple platform support was added.

Release	Modification
12.0(5)T	This command was integrated into Cisco IOS Release12.0(5)T.
12.0(17)ST	This command was modified. The display of a message indicating support for Border Gateway Protocol (BGP) policy accounting was added.
12.0(26)S	This command was integrated into Cisco IOS Release 12.0(26)S.
12.2(25)S	This command was modified. The **checksum**, **internal**, **platform**, and **prefix-statistics** keywords were added. Output was changed to show IPv4 output only.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(24)T	This command was modified. The **dependents**, **longer-prefixes**, and **same-routing** keywords were added.
15.0(1)S	This command was integrated into Cisco IOS Release 15.0(1)S.

Usage Guidelines

Use of the **show ip cef** command without any keywords or arguments shows a brief display of all FIB entries.

The **show ip cef detail** command shows detailed FIB entry information for all FIB entries.

Examples

The following is sample output from the **show ip cef detail** command for Ethernet interface 0. It shows all the prefixes resolving through adjacency pointing to next hop Ethernet interface 0/0 and next hop interface IP address 192.0.2.233.

```
Router# show ip cef Ethernet 0/0 detail

IP Distributed CEF with switching (Table Version 136808)
45800 routes, 8 unresolved routes (0 old, 8 new) 45800 leaves, 2868 nodes, 8444360 bytes,
136808 inserts, 91008 invalidations 1 load sharing elements, 208 bytes, 1 references 1 CEF
resets, 1 revisions of existing leaves refcounts: 527343 leaf, 465638 node

172.16.0.0/12, version 7417, cached adjacency 192.0.2.230 0 packets, 0 bytes,
Adjacency-prefix
via 192.0.2.231, Ethernet0/0, 0 dependencies
next hop 192.0.2.232, Ethernet0/0
valid cached adjacency
```

Table 33 describes the significant fields shown in the display.

Table 33 show ip cef detail Field Descriptions

Field	Description
routes	Total number of entries in the Cisco Express Forwarding table.
unresolved routes	Number of entries in the Cisco Express Forwarding table that do not have resolved recursions categorized by old and new routes.
leaves, nodes, bytes	Number of elements in the Cisco Express Forwarding table and how much memory they use.
inserts	Number of nodes inserted.

Table 33 show ip cef detail Field Descriptions (continued)

Field	Description
invalidations	Number of entries that have been invalidated.
load sharing elements, bytes, references	Information about load sharing elements: how many, number of associated bytes, and number of associated references.
CEF resets	Number of times the Cisco Express Forwarding table has reset.
revisions of existing leaves refcounts	Number of revisions of the existing elements in the Cisco Express Forwarding table.
version	Version of the Cisco Express Forwarding table.
cached adjacency	Type of adjacency to which this Cisco Express Forwarding table entry points.
packets, bytes	Number of packets and bytes switched through the name entry.
dependencies	Number of table entries that point to the named entry.
next hop	Type of adjacency or the next hop toward the destination.

The following is sample output from the **show ip cef detail** command for the prefix 192.0.2.1, showing that the BGP policy accounting bucket number 4 (traffic_index 4) is assigned to this prefix:

```
Router# show ip cef 192.0.2.1 detail

192.168.5.0/24, version 21, cached adjacency to POS7/2
0 packets, 0 bytes, traffic_index 4
via 192.0.2.233, 0 dependencies, recursive
next hop 192.0.2.234, POS7/2 via 172.16.0.0/12
valid cached adjacency
```

Table 33 describes the significant fields shown in the display.

Related Commands

Command	Description
show cef	Displays the packets dropped by the line cards, or displays the packets that were not express forwarded.
show cef interface	Displays Cisco Express Forwarding-related interface information.
show ipv6 cef	Displays entries in the IPv6 FIB.
show ipv6 cef summary	Displays a summary of the entries in the IPv6 FIB.

show ip cef adjacency

To display Cisco Express Forwarding and distributed Cisco Express Forwarding recursive and direct prefixes resolved through an adjacency, use the **show ip cef adjacency** command in user EXEC or privileged EXEC mode.

Recursive and Direct Prefixes

show ip cef [**vrf** *vrf-name*] **adjacency** *interface-type interface-number ip-prefix* [**checksum** | **detail** | **epoch** *epoch-number* | **internal** | **platform** | **source**]

Special Adjacency Types Representing Nonstandard Switching Paths

show ip cef [**vrf** *vrf-name*] **adjacency** {**discard** | **drop** | **glean** | **null** | **punt**} [**detail**] [**checksum** | **detail** | **epoch** *epoch-number* | **internal** | **platform** | **source**]

Recursive and Direct Prefixes (Cisco 10000 Series Routers)

show ip cef [**vrf** *vrf-name*] **adjacency** *interface-type interface-number ip-prefix* [**detail** | **internal** | **platform**]

Special Adjacency Types Representing Nonstandard Switching Paths (Cisco 10000 Series Routers)

show ip cef [**vrf** *vrf-name*] **adjacency** {**discard** | **drop** | **glean** | **null** | **punt**} [**detail**] [**internal**] [**platform**]

Syntax Description

vrf	(Optional) Specifies a Virtual Private Network (VPN) routing and forwarding (VRF) instance.
vrf-name	(Optional) Name assigned to the VRF.
interface-type interface-number	Interface type and number for which to display Forwarding Information Base (FIB) entries.
ip-prefix	Next-hop IP prefix, in dotted decimal format (A.B.C.D).
checksum	(Optional) Displays FIB entry checksums.
detail	(Optional) Displays detailed information for each Cisco Express Forwarding adjacency type entry.
epoch *epoch-number*	(Optional) Displays adjacency type entries filtered by epoch number. The epoch number range is from 0 to 255.
internal	(Optional) Displays data for adjacency type entries.
platform	(Optional) Displays platform-specific adjacency information.
source	(Optional) Displays source-specific adjacency information.
discard	Discards adjacency. Sets up the adjacency for loopback interfaces. Loopback IP addresses receive entries in the FIB table.
drop	Drops the packets that are forwarded to this adjacency.
glean	Represents destinations on a connected interface for which no Address Resolution Protocol (ARP) cache entry exists.

null	Drops the packets forwarded to the adjacency formed for the null 0 interface.
punt	Represents destinations that cannot be switched in the normal path and that are punted to the next-fastest switching vector.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.1CC	This command was introduced.
12.0(5)T	The **vrf** keyword was added.
12.0(22)S	This command was integrated into Cisco IOS Release 12.0(22)S.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	The **internal**, **platform**, and **source** keywords were added.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB and implemented on the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

An adjacency is a node that can be reached by one Layer 2 hop.

Distributed Cisco Express Forwarding is not supported on Cisco 10000 series routers.

Adjacencies and Dialer Interfaces

By default, an IP adjacency node is installed in the Cisco Express Forwarding table for the aggregate (dialer) interface. When an asynchronous interface of type AUX_LINE is connected to the aggregate (dialer) interface, a punt adjacency node is installed. However, when the asynchronous interface is disconnected from the aggregate (dialer) interface, the IP adjacency node is restored.

Examples

The following is sample output from the **show ip cef adjacency** command when the **glean** keyword is specified:

```
Router# show ip cef adjacency glean

Prefix              Next Hop            Interface
10.2.61.0/24         attached            Ethernet1/0/0
10.17.250.252/32   10.2.61.1             Ethernet1/0/0
```

The following is sample output from the **show ip cef adjacency drop** command with the **detail** keyword specified:

```
Router# show ip cef adjacency drop detail

IP CEF with switching (Table Version 4), flags=0x0
  4 routes, 0 reresolve, 0 unresolved (0 old, 0 new), peak 0
  4 leaves, 8 nodes, 8832 bytes, 13 inserts, 9 invalidations
  0 load sharing elements, 0 bytes, 0 references
```

```
  universal per-destination load sharing algorithm, id 00B999CA
  3 CEF resets, 0 revisions of existing leaves
  Resolution Timer: Exponential (currently 1s, peak 1s)
  0 in-place modifications
  refcounts:  533 leaf, 536 node

10.0.0.0/4, version 3
0 packets, 0 bytes, Precedence routine (0)
  via 0.0.0.0, 0 dependencies
    next hop 0.0.0.0
    valid drop adjacency
```

The following sample output shows the direct IP prefix when the next hop Gigabit Ethernet interface 3/0 is specified:

```
Router# show ip cef adjacency GigabitEthernet 3/0 172.20.26.29

Prefix              Next Hop            Interface
10.1.1.0/24         10.20.26.29         GigabitEthernet3/0
```

Cisco 10000 Series Routers Examples Only

The **show ip cef adjacency** command shows all prefixes resolved through a regular next-hop adjacency or through the usage of a special adjacency type keyword such as **discard**, **drop**, **glean**, **null**, or **punt**.

The following is sample output from the **show ip cef adjacency** command when the **glean** keyword is specified:

```
Router# show ip cef adjacency glean

Prefix              Next Hop            Interface
10.2.61.0/24         attached             GigabitEthernet1/0/0
10.17.250.252/32   10.2.61.1             GigabitEthernet1/0/0
```

The following is sample output from the **show ip cef adjacency drop** command with the **detail** keyword specified:

```
Router# show ip cef adjacency drop detail

IPv4 CEF is enabled for distributed and running
VRF Default:
 42 prefixes (42/0 fwd/non-fwd)
 Table id 0
 Database epoch: 3 (42 entries at this epoch)

10.0.0.0/4, epoch 3
  Special source: drop
  drop
```

The following sample output shows the direct IP prefix when the next hop Gigabit Ethernet interface 3/0/0 is specified (before Cisco IOS Release 12.2(25)S):

```
Router# show ip cef adjacency GigabitEthernet 3/0/0 172.20.26.29

Prefix              Next Hop            Interface
10.1.1.0/24         10.20.26.29        GigabitEthernet3/0/0
```

Table 34 describes the significant fields shown in the display.

Table 34 show ip cef adjacency Field Descriptions (Before Cisco IOS Release 12.2(25)S)

Field	Description
Prefix	Destination IP prefix.
Next Hop	Next hop IP address.
Interface	Next hop interface.

For Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T, and later releases the information in the output is the same, but the format of the output is changed.

```
Router# show ip cef adjacency FastEthernet 0/1 172.17.22.1

10.10.1.2/32
  nexthop 172.17.22.1 FastEthernet0/1
10.20.12.0/24
  nexthop 172.17.22.1 FastEthernet0/1
```

Table 35 describes the significant fields shown in the display.

Table 35 show ip cef adjacency Field Descriptions

Field	Description
10.10.1.2/32	Destination IP prefix.
nexthop 172.17.22.1	Next hop IP address.
FastEthernet0/1	Next hop interface.

Related Commands

Command	Description
show adjacency	Displays Cisco Express Forwarding adjacency table information.
show ip cef summary	Displays a summary of the entries in the FIB.
show ipv6 adjacency	Displays Cisco Express Forwarding for IPv6 and distributed Cisco Express Forwarding for IPv6 recursive and direct prefixes resolved through an adjacency.

show ip cef epoch

To display the epoch information for all Forwarding Information Base (FIB) tables, use the **show ip cef epoch** command in user EXEC or privileged EXEC mode

show ip cef epoch

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(25)S	Table adjacency epoch information was moved from the output of this command to the output of the **show adjacency** *prefix* command.
12.2(28)SB	This command was integrated into the Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into the Cisco IOS Release 12.2(33)SRA
12.2(33) SXH	This command was integrated into the Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into the Cisco IOS Release 12.4(20)T.

Usage Guidelines

These **show** commands also display the epoch information for the following:

- **show ip cef summary**—Displays the table epoch for a specific FIB table.
- **show ip cef detail**—Displays the epoch value for each entry of a specific FIB table.
- **show adjacency summary**—Displays the adjacency table epoch.
- **show adjacency** *detail*—Displays the epoch value for each entry of the adjacency table.

Examples

Sample Output for Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T, and Later Releases

This example shows how to display epoch information. The fields shown in the display are self-explanatory.

```
Router# show ip cef epoch

VRF: Default
 Database epoch: 0 (12 entries at this epoch)
```

For adjacency table epoch information, see the **show adjacency** *prefix* command.

Sample Output for Cisco IOS Releases Before Cisco IOS Release 12.2(25)S

This example shows how to display epoch information. The fields shown in the display are self-explanatory.

```
Router# show ip cef epoch

CEF epoch information:

Table:Default-table
  Table epoch:2 (164 entries at this epoch)

Adjacency table
  Table epoch:1 (33 entries at this epoch)
```

This example shows the output after you clear the epoch table and increment the epoch number. The fields shown in the display are self-explanatory.

```
Router# show ip cef epoch

CEF epoch information:

Table:Default-table
  Table epoch:2 (164 entries at this epoch)

Adjacency table
  Table epoch:1 (33 entries at this epoch)
Router# clear ip cef epoch full
Router# show ip cef epoch

CEF epoch information:

Table:Default-table
  Table epoch:3 (164 entries at this epoch)

Adjacency table
  Table epoch:2 (33 entries at this epoch)
```

Related Commands

Command	Description
show ip cef	Displays entries in the FIB or displays a summary of the FIB.
show ip cef summary	Displays a summary of the FIB.
show ip cef detail	Displays detailed FIB entry information.
show adjacency detail	Displays the information about the protocol detail and timer.
show adjacency summary	Displays a summary of Cisco Express Forwarding adjacency information.

show ip cef events

Note The **show ip cef events** command is not available in Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T and later releases.

To display all recorded Cisco Express Forwarding Forwarding Information Base (FIB) and adjacency events, use the **show ip cef events** command in user EXEC or privileged EXEC mode.

show ip cef [**vrf** *vrf-name*] **events** [*ip-prefix*] [**new** | **within** *seconds*] [**detail**] [**summary**]

Syntax Description

vrf	(Optional) A Virtual Private Network (VPN) routing and forwarding (VRF) instance.
vrf-name	(Optional) Name assigned to the VRF.
ip-prefix	(Optional) Next hop IP prefix, in dotted decimal format (A.B.C.D).
new	(Optional) Displays new Cisco Express Forwarding events not previously shown.
within *seconds*	(Optional) Displays Cisco Express Forwarding events that occurred within a specified number of seconds.
detail	(Optional) Displays detailed information for each Cisco Express Forwarding event entry.
summary	(Optional) Displays a summary of the Cisco Express Forwarding event log.

Command Modes

User EXEC (>)
Privileged EXEC(#)

Command History

Release	Modification
12.0(15)S	This command was introduced.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.
12.2(25)S	This command was removed. It is not available in Cisco IOS Release 12.2(25)S and later Cisco IOS 12.2S releases.
12.2(28)SB	This command was removed. It is not available in Cisco IOS Release 12.2(28)SB and later Cisco IOS 12.2SB releases.
12.2(33)SRA	This command was removed. It is not available in Cisco IOS Release 12.2(33)SRAand later Cisco IOS 12.2SR releases.
12.2(33)SXH	This command was removed. It is not available in Cisco IOS Release 12.2(33)SXH and later Cisco IOS 12.2S releases.
12.4(20)T	This command was removed. It is not available in Cisco IOS Release 12.4(20)T and later Cisco IOS 12.4T releases.

Usage Guidelines

This command shows the state of the table event log and must be enabled for events to be recorded.

The **ip cef table event-log** command controls parameters such as event log size.

Examples

The following is sample output from the **show ip cef events** command with **summary** specified:

```
Router# show ip cef events summary

CEF table events summary:
     Storage for 10000 events (320000 bytes), 822/0 events recorded/ignored
     Matching all events, traceback depth 16
     Last event occurred 00:00:06.516 ago.
```

The following is sample output from the **show ip cef events** command displaying events that occurred within 1 second:

```
Router# show ip cef events within 1

CEF table events (storage for 10000 events, 14 events recorded)
+00:00:00.000:[Default-table] *.*.*.*/*          New FIB table          [OK]
+00:00:00.000:[Default-table] 10.1.80.194/32      FIB insert in mtrie    [OK]
+00:00:00.000:[Default-table] 10.1.80.0/32        FIB insert in mtrie    [OK]
+00:00:00.000:[Default-table] 10.1.80.255/32      FIB insert in mtrie    [OK]
+00:00:00.004:[Default-table] 10.1.80.0/24        FIB insert in mtrie    [OK]
+00:00:00.004:[Default-table] 10.1.80.0/24        NBD up                 [OK]
+00:00:00.004:[Default-table] 224.0.0.0/8         FIB insert in mtrie    [OK]
+00:00:00.012:[Default-table] 10.1.80.0/24        NBD up                 [Ignr]
+00:00:00.012:[Default-table] 224.0.0.0/8         FIB remove             [OK]
+00:00:00.016:[Default-table] 224.0.0.0/8         FIB insert in mtrie    [OK]
+00:00:05.012:[Default-table] 224.0.0.0/8         FIB remove             [OK]
+00:00:05.012:[Default-table] 224.0.0.0/8         FIB insert in mtrie    [OK]
+00:00:28.440:[Default-table] 224.0.0.0/8         FIB remove             [OK]
+00:00:28.440:[Default-table] 224.0.0.0/8         FIB insert in mtrie    [OK]
First event occurred at 00:00:36.568 (00:04:40.756 ago)
Last event occurred at 00:01:05.008 (00:04:12.316 ago)
```

Table 36 describes the significant fields shown in the display.

Table 36 show ip cef events Field Descriptions

Field	Description
+00:00:00.000	Time stamp of the IP Cisco Express Forwarding event.
[Default-table]	Type of VRF table for this event entry.
..*.*/*	All IP prefixes.
9.1.80.194/32	IP prefix associated with the event.
FIB insert in mtrie	IP prefix insert in the FIB table event.
NBD up	IP prefix up event.
FIB remove	FIB entry remove event.
[Ignr]	Cisco Express Forwarding ignored event.
[OK]	Cisco Express Forwarding processed event.

Related Commands

Command	Description
ip cef table consistency-check	Enables Cisco Express Forwarding table consistency checker types and parameters.
ip cef table event-log	Controls Cisco Express Forwarding table event-log characteristics.

show ip cef exact-route

To display the exact route for a source-destination IP address pair, use the **show ip cef exact-route** command in user EXEC or privileged EXEC mode.

show ip cef [**vrf** *vrf-name*] **exact-route** *source-address* [**src-port** *port-number*] *destination-address* [**dest-port** *port-number*]

Syntax Description

vrf	(Optional) A Virtual Private Network (VPN) routing and forwarding (VRF) instance.
vrf-name	(Optional) Name assigned to the VRF.
source-address	The network source address.
src-port	(Optional) Specifies a source port.
port-number	(Optional) The Layer 4 port number of the source IP address, if configured. The port number can be from 0 to 65535.
destination-address	The network destination address.
dest-port	(Optional) Specifies a destination port.
port-number	(Optional) The Layer 4 port number of the destination IP address, if configured. The port number can be from 0 to 65535.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.1(4)T	This command was introduced.
12.2(25)S	Command output was reformatted.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(11)T	The **src-port** *port-number* and **dest-port** *port-number* keywords and arguments were added.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

When you are load balancing per destination, this command shows the exact next hop that is used for a given IP source-destination pair.

If you configured the **ip cef load-sharing algorithm include-ports** command and the **source**, **destination**, or **source destination** keywords, you can use the source port number or the destination port number or both port numbers to see the load-balancing decision for a source and destination address. These options are available only if the include-ports algorithm is enabled.

Examples

Sample Output for Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T, and Later Releases

The following is sample output from the **show ip cef exact-route** command:

```
Router# show ip cef exact-route 172.16.1.3 172.16.1.2

172.16.1.3 -> 172.16.1.2 => IP adj out of FastEthernet0/1, addr  172.17.25.1
```

Table 37 describes the significant fields shown in the display.

Table 37 show ip cef exact-route Field Descriptions

Field	Description
172.16.1.3 -> 172.16.1.2	From source 172.16.1.3 to destination 172.16.1.2.
FastEthernet0/1,	Next hop is out interface FastEthernet0/1.
addr 172.17.25.1	IP address of the next hop is 172.17.25.1.

Sample Output for Cisco IOS Releases Before Cisco IOS Release 12.2(25)S

The following is sample output from the **show ip cef exact-route** command:

```
Router# show ip cef exact-route 10.1.1.1 172.17.249.252

10.1.1.1          -> 172.17.249.252 :Ethernet2/0/0 (next hop 10.1.104.1)
```

Table 38 describes the significant fields shown in the display.

Table 38 show ip cef exact-route Field Descriptions

Field	Description
10.1.1.1 -> 172.17.249.252	From source 10.1.1.1 to destination 172.17.249.252.
Ethernet2/0/0 (next hop 10.1.104.1)	Next hop is 10.1.104.1 on Ethernet 2/0/0.

Related Commands

Command	Description
ip cef load-sharing algorithm	Selects a Cisco Express Forwarding load-balancing algorithm.

show ip cef inconsistency

Note The show ip cef inconsistency command is not available in Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T and later releases. This command is replaced by the **test cef table consistency** command.

To display Cisco Express Forwarding IP prefix inconsistencies, use the **show ip cef inconsistency** command in user EXEC or privileged EXEC mode.

show ip cef [**vrf** *vrf-name*] **inconsistency** [**records** [**detail**]]

Syntax Description

vrf	(Optional) A Virtual Private Network (VPN) routing and forwarding (VRF) instance.
vrf-name	(Optional) Name assigned to the VRF.
records	(Optional) Displays all recorded inconsistencies.
detail	(Optional) Displays detailed information for each Cisco Express Forwarding table entry.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0(15)S	This command was introduced.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to 12.2(17d)SXB.
12.2(25)S	This command was removed. It is not available in Cisco IOS Release 12.2(25)S and later Cisco IOS 12.2S releases.
12.2(33)SRA	This command was removed. It is not available in Cisco IOS Release 12.2(33)SRAand later Cisco IOS 12.2SR releases.
12.4(20)T	This command was removed. It is not available in Cisco IOS Release 12.4(20)T and later Cisco IOS 12.4T releases.

Usage Guidelines

This command is available only on routers with line cards.

This command displays recorded IP Cisco Express Forwarding inconsistency records found by the lc-detect, scan-rp, scan-rib, and scan-lc detection mechanisms.

You can configure the IP Cisco Express Forwarding prefix consistency-detection mechanisms using the **cef table consistency-check** command.

Examples

The following is sample output from the **show ip cef inconsistency** command:

```
Router# show ip cef inconsistency

Table consistency checkers (settle time 65s)
 lc-detect:running
  0/0/0 queries sent/ignored/received
 scan-lc:running [100 prefixes checked every 60s]
  0/0/0 queries sent/ignored/received
 scan-rp:running [100 prefixes checked every 60s]
  0/0/0 queries sent/ignored/received
 scan-rib:running [1000 prefixes checked every 60s]
  0/0/0 queries sent/ignored/received
Inconsistencies:0 confirmed, 0/16 recorded
```

Table 39 describes the significant fields shown in the display.

Table 39 show ip cef inconsistency Field Descriptions

Field	Description
settle time	Time after a recorded inconsistency is confirmed.
lc-detect running	Consistency checker lc-detect is running.
0/0/0 queries	Number of queries sent, ignored, and received.
Inconsistencies:0 confirmed, 0/16 recorded	Number of inconsistencies confirmed, and recorded. Sixteen is the maximum number of inconsistency records to be recorded.

Related Commands

Command	Description
clear ip cef inconsistency	Clears the statistics and records for the Cisco Express Forwarding consistency checker.
cef table consistency-check	Enables Cisco Express Forwarding table consistency checker types and parameters.

show ip cef non-recursive

To display nonrecursive route entries in the Forwarding Information Base (FIB), use the **show ip cef non-recursive** command in user EXEC or privileged EXEC mode.

show ip cef non-recursive [**detail** | **epoch** *epoch-number* | **internal** | **platform** | **source**]

Cisco 10000 Series Routers

show ip cef non-recursive [**detail** | **internal** | **platform**]

Syntax Description

detail	(Optional) Displays detailed nonrecursive route entry information.
epoch *epoch-number*	(Optional) Displays adjacency type entries filtered by epoch number. The epoch number range is from 0 to 255.
internal	(Optional) Displays data for nonrecursive route entries.
platform	(Optional) Displays platform-specific nonrecursive route entries.
source	(Optional) Displays source-specific nonrecursive route entry information.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	The **epoch, internal**, **platform**, and **source** keywords were added, and the *epoch-number* argument was added.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB and implemented on the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

The **show ip cef non-recursive detail** command shows detailed FIB entry information for all nonrecursive routes.

Examples

The following is sample output from the **show ip cef non-recursive detail** command:

```
Router# show ip cef non-recursive detail

IPv6 CEF is enabled and running
IPv6 CEF default table
8 prefixes
2001:xx::/35
     nexthop FE80::ssss:CFF:FE3D:DCC9 Tunnel55
2001:zzz:500::/40
     nexthop FE80::nnnn:801A Tunnel32
2001:zzz::/35
     nexthop 3FFE:mmm:8023:21::2 Tunnel126
3FFE:yyy:8023:37::1/128 Receive
  Receive
3FFE:yyy:8023:37::/64 Attached, Connected
     attached to Tunnel37
3FFE:yyy:8023:38::1/128 Receive
  Receive
3FFE:yyy:8023:38::/64 Attached, Connected
     attached to Tunnel40
3FFE:yyy:8023:39::1/128 Receive
  Receive
```

Cisco 10000 Series Router Example

The following is sample output from the s**how ip cef non-recursive detail** command:

```
Router# show ip cef non-recursive detail

IPv4 CEF is enabled for distributed and running
VRF Default:
 42 prefixes (42/0 fwd/non-fwd)
 Table id 0
 Database epoch: 3 (42 entries at this epoch)

0.0.0.0/0, epoch 3, flags default route handler
  no route
0.0.0.0/32, epoch 3, flags receive
  Special source: receive
  receive
10.2.2.2/32, epoch 3
  local label info: global/24
  nexthop 10.1.1.1 GigabitEthernet1/0/0 label 18
10.4.4.4/32, epoch 3
  local label info: global/30
  nexthop 10.1.1.1 GigabitEthernet1/0/0 label 19
10.5.5.5/32, epoch 3
  local label info: global/29
  nexthop 10.1.1.1 GigabitEthernet1/0/0
10.6.6.6/32, epoch 3, flags receive
  receive
10.1.1.0/24, epoch 3
  local label info: global/23
  nexthop 10.1.1.1 GigabitEthernet1/0/0 label 17
```

Table 40 describes the significant fields shown in the displays.

Table 40 show ip cef non-recursive Field Descriptions

Field	Description
8 prefixes	Indicates the total number of prefixes in the Cisco Express Forwarding table.
2001:xx::/35	Indicates the prefix of the remote network.
2001:zzz:500::/40 nexthop FE80::nnnn:801A Tunnel32	Indicates that prefix 2001:zzz:500::/40 is reachable through this next-hop address and interface.
attached to Tunnel37	Indicates that this prefix is a connected network on Tunnel interface 37.
Receive	Indicates that this prefix is local to the router.

Related Commands

Command	Description
show ip cef	Displays entries in the FIB.
show ip cef summary	Displays a summary of the entries in the FIB.
show ip cef unresolved	Displays unresolved entries in the FIB.

show ip cef platform

To display entries in the Forwarding Information Base (FIB) or to display a summary of the FIB, use the **show ip cef platform** command in privileged EXEC mode.

show ip cef *ip-prefix* [*mask*] **platform** [**checksum | detail | internal checksum**]

Syntax Description

ip-prefix [*mask*]	The IP address prefix of the entries to display. You can also include an optional subnet mask.
checksum	(Optional) Displays FIB entry checksums information.
detail	(Optional) Displays detailed FIB entry information.
internal {**checksum**}	(Optional) Displays internal data structures. The **checksum** option includes FIB entry checksums information in the output.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2 (28)SB	The command was introduced.

Examples

The following example shows FIB entry information for IP address prefix 10.4.4.4:

```
Router# show ip cef 10.4.4.4 platform

10.4.4.4/32
Fib Entry: 0xD6680610 XCM leaf from 0x50805550(RP) 0xA0805550(FP):
load_bal_or_adj[0] 0x0 load_bal_or_adj[1] 0x18 load_bal_or_adj[2] 0x1C
leaf points to an adjacency, index 0x607
ip_mask 0x0 as_number 0x0 precedence_num_loadbal_intf 0xF0 qos_group 0x0
Label object OCE Chain:
Label(0x12, real) Adjacency
c10k_label_data = 0x450467F8
tag_elt_addr = 0x50003038
ipv6_tag_elt_addr = 0x0
tag_index = 0x607
tt_tag_rew = 0x45046800
Tag Rewrite: vcci = 0x9DA, fib_root = 0x0
mac_rewrite_index = 0x395, flags = 0x9
pktswitched = 0 byteswitched = 0
XCM Tag Rewrite: vcci = 0x9DA, fib_root = 0x0
mac_rewrite_index = 0x395, flags = 0x9
mac_index_extension = 0x0
XCM mac rewrite from index 0x395
mtu from 0x53800E54(RP) 0xA3800E54(FP)
frag_flags = 0x0
mtu = 1496
mac length 0x12 encap length 0x16 upd_offset=0x02FF
mac string start from bank4 0x32001CA8(RP)
0x82001CA8(FP)
mac string end from bank9 0x50801CA8(RP)
0xA0801CA8(FP)
Encap String: 0005DC387B180003A011A57881000002884700012000
```

Related Commands

Command	Description
show cef	Displays which packets the line cards dropped, or displays which packets were not express forwarded.
show cef interface	Displays Cisco Express Forwarding-related interface information.

show ip cef summary

To display a summary of the IP Cisco Express Forwarding table, use the **show ip cef summary** command in user EXEC or privileged EXEC mode.

show ip cef summary

Syntax Description

This command has no arguments and keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(25)S	The command output was changed to display IPv4 forwarding information only.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Examples

Sample Output for Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T, and Later Releases

This is sample output for the **show ip cef summary** command for IPv4 information:

```
Router# show ip cef summary

IPv4 CEF is enabled and running
VRF Default:
 22 prefixes (22/0 fwd/non-fwd)
 Table id 0, 1 resets
 Database epoch: 0 (22 entries at this epoch)
```

Table 41 describes the significant fields shown in the displays.

Table 41 show ip cef summary Field Descriptions

Field	Description
IPv4 CEF is enabled and running	Status of IPv4 Cisco Express Forwarding on the router.
22 prefixes (22/0 fwd/non-fwd)	Number of prefixes forwarded and not forwarded.

Table 41 show ip cef summary Field Descriptions (continued)

Field	Description
Table id 0, 1 resets	Forwarding table version and the number of times the table was reset.
Database epoch: 0 (22 entries at this epoch)	Database version and the number of entries in the database.

In Cisco IOS 12.2(25)S, IPv4 and IPv6 output was separated. To display Cisco Express Forwarding summary information for IPv6, use the **show ipv6 cef summary** command, for example:

```
Router# show ipv6 cef summary

IPv6 CEF is enabled and running
VRF Default:
 20 prefixes (20/0 fwd/non-fwd)
 Table id 0, 0 resets
 Database epoch: 0 (20 entries at this epoch)
```

Sample Output for Cisco IOS Releases Before Cisco IOS Release 12.2(25)S

This example shows how to display a summary of the IP Cisco Express Forwarding table:

```
Router# show ip cef summary

IP Distributed CEF with switching (Table Version 25), flags=0x0
  21 routes, 0 reresolve, 0 unresolved (0 old, 0 new), peak 1
  21 leaves, 16 nodes, 19496 bytes, 36 inserts, 15 invalidations
  0 load sharing elements, 0 bytes, 0 references
  universal per-destination load sharing algorithm, id 5163EC15
  3(0) CEF resets, 0 revisions of existing leaves
  Resolution Timer: Exponential (currently 1s, peak 1s)
  0 in-place/0 aborted modifications
  refcounts:  4377 leaf, 4352 node

  Table epoch: 0 (21 entries at this epoch)

Adjacency Table has 9 adjacencies
```

Table 42 describes the significant fields shown in the display.

Table 42 show ip cef summary Field Descriptions

Field	Description
routes	Total number of entries in the Cisco Express Forwarding table.
unresolved	Number of entries in the Cisco Express Forwarding table that do not have resolved recursions categorized by old and new routes.
peak	Highest number of unresolved recursions.
leaves, nodes, bytes	Number of elements in the Cisco Express Forwarding table and how much memory they use.
load sharing algorithm, id	Type of load sharing, whether the router is configured for per destination or per packet and the identifier.
Table epoch	Number indicating the version of a Cisco Express Forwarding table from 0 to 255.

Related Commands

Command	Description
show ip cef	Displays entries in the FIB or displays a summary of the FIB.
show ipv6 summary	Displays a summary of the entries in the IPv6 FIB.

show ip cef switching statistics

To display switching statistics in the Forwarding Information Base (FIB), use the **show ip cef switching statistics** command in privileged EXEC mode.

show ip cef switching statistics [**feature**]

Syntax Description

feature	(Optional) The output is ordered by feature.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced. This command replaces the **show cef drop** and the **show cef not-cef-switched** commands.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB and implemented on the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

If the optional **feature** keyword is not used, all switching statistics are displayed, without regard for feature order.

Examples

The following is sample output from the **show ip cef switching statistics** command:

```
Router# show ip cef switching statistics

Reason                                Drop       Punt  Punt2Host
RP LES Packet destined for us            0     132248          0
RP LES Multicast                         0          2          0
RP LES Link-local                        0         33          0
RP LES Total                             0     132283          0

Slot 4 Packet destined for us            0     129546          0
Slot 4 Link-local                        0         31          0
Slot 4 Total                             0     129577          0

All    Total                             0     261860          0
```

The following example shows how to display switching statistics for all features in a common format:

```
Router# show ip cef switching statistics feature

IPv4 CEF input features:
Path   Feature        Drop    Consume       Punt  Punt2Host    New i/f
LES    Access List       0          0          1          0          0
RSP    Access List       0          0          1          0          0
Slot 0 Access List      10          0          1          0          0
```

```
Slot 0 Verify Unicast     9           0           0           0           0
Slot 4 Verify Unicast     5           0           0           0           0
Total                    24           0           3           0           0

IPv4 CEF output features:
Path   Feature        Drop    Consume       Punt  Punt2Host    New i/f
Total                    0          0          0           0          0

IPv4 CEF post-encap features:
Path   Feature        Drop    Consume       Punt  Punt2Host    New i/f
Total                    0          0          0           0          0
```

Cisco 10000 Series Router Examples

The following is sample output from the **show ip cef switching statistics** command:

```
Router# show ip cef switching statistics

Path   Reason                          Drop       Punt  Punt2Host
RP LES Packet destined for us             0       1115          0
RP LES Total                              0       1115          0

RP PAS Packet destined for us             0        385          0
RP PAS TTL expired                        0          0       1833
RP PAS Total                              0        385       1833

All    Total                              0       1500       1833
```

The following example shows how to display switching statistics for all features in a common format:

```
Router# show ip cef switching statistics feature

IPv4 CEF input features:
Path   Feature                Drop    Consume       Punt  Punt2Host Gave route
Total                            0          0          0           0          0

IPv4 CEF output features:
Path   Feature                Drop    Consume       Punt  Punt2Host    New i/f
Total                            0          0          0           0          0

IPv4 CEF post-encap features:
Path   Feature                Drop    Consume       Punt  Punt2Host    New i/f
Total                            0          0          0           0          0
```

Table 43 describes the significant fields shown in the displays.

Table 43 show ip cef switching statistics Field Descriptions

Field	Description
Path	Switch path where the feature was executed. Available switch paths are platform-dependent. Following are example switch paths for the Cisco 7200 series router: • RIB—process switching with Cisco Express Forwarding assistance • (low-end switching [LES])—Cisco Express Forwarding switch path • PAS—Cisco Express Forwarding turbo switch path Following are example switch paths for the Cisco 7500 series router: • RIB—centralized process switching with Cisco Express Forwarding assistance • LES—centralized Cisco Express Forwarding switch path on the Route/Switch Processor (RSP) • RSP—centralized Cisco Express Forwarding turbo switch path on the RSP • Slot NN—distributed Cisco Express Forwarding turbo switch path on the Versatile Interface Processor (VIP) in the indicated slot number
Feature	Feature that returned the statistics.
Reason	Packet description.
Consume	Number of packets that the feature removed from the switch path (and will probably reintroduce to the switch path later). For example, with crypto with hardware acceleration, the feature might queue the packets to encryption and decryption; because hardware (and software) encryption is time-consuming, these packets are queued so the main processor can begin handling the next packet while the crypto module processes the removed packet. Also, for example, the feature might queue the packets for process switching through a private queue for that feature.
Drop	Number of packets dropped.
Punt	Number of packets that could not be switched in the normal path and were punted to the next-fastest switching vector.
Punt2Host	Number of packets that could not be switched in the normal path and were punted to the host. For switch paths other than a centralized turbo switch path, punt and punt2host function the same way. With punt2host from a centralized turbo switch path (PAS and RSP), punt will punt the packet to LES, but punt2host will bypass LES and punt directly to process switching.
New i/f	Number of packets for which the feature provided Cisco Express Forwarding with forwarding information (that is, bypassed the normal route lookup).

Related Commands

Command	Description
show cef interface	Displays Cisco Express Forwarding-related interface information.
show ip cef	Displays entries in the FIB.
show ip route	Displays router advertisement information received from onlink routers.

show ip cef traffic prefix-length

To display Cisco Express Forwarding traffic statistics by prefix size, use the **show ip cef traffic prefix-length** command in user EXEC or privileged EXEC mode.

show ip cef [**vrf** *vrf-name*] **traffic prefix-length**

Syntax Description

vrf	(Optional) A Virtual Private Network (VPN) routing and forwarding (VRF) instance.
vrf-name	(Optional) Name assigned to the VRF.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.1CC	This command was introduced.
12.0(5)T	The **vrf** keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is used to display Cisco Express Forwarding switched traffic statistics by destination prefix length. The **ip cef accounting prefix-length** command must be enabled for the counters to increment.

Examples

The following is sample output from the **show ip cef traffic prefix-length** command:

```
Router# show ip cef traffic prefix-length

IP prefix length switching statistics:
---------------------------------------
Prefix       Number of       Number of
Length       Packets         Bytes
---------------------------------------
     0               0               0
     1               0               0
     2               0               0
     3               0               0
     4               0               0
     5               0               0
.
.
.
    28               0               0
    29               0               0
    30               0               0
```

```
31                0                 0
32                0                 0
```

Table 44 describes the significant fields shown in the display.

Table 44 show ip cef traffic prefix-length Field Descriptions

Field	Description
Prefix Length	Destination IP prefix length for Cisco Express Forwarding switched traffic.
Number of Packets	Number of packets forwarded for the specified IP prefix length.
Number of Bytes	Number of bytes transmitted for the specified IP prefix length.

Related Commands

Command	Description
ip cef accounting	Enables network accounting of Cisco Express Forwarding.

show ip cef tree

To display summary information on the default tree in the Forwarding Information Base (FIB), use the **show ip cef tree** command in user EXEC or privileged EXEC mode.

Cisco 7500 Series Routers

show ip cef tree [**statistics** | **dependents** [*prefix-filter*]]

Cisco 10000 Series Routers

show ip cef tree [**statistics**]

Syntax Description

statistics	(Optional) Displays the default tree statistics.
dependents	(Optional) Displays the dependents of the selected tree with optional prefix filter.
prefix-filter	(Optional) A prefix filter on the dependents of the selected tree.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB and implemented on the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

If none of the optional keywords or argument is used, all summary information on the default tree in the IP FIB is shown.

Examples

The following is sample output from the **show ip cef tree** command:

Cisco 7500 Series Router Example

```
Router# show ip cef tree

VRF Default tree information:
 RTRIE storing IPv6 addresses
 6 entries (6/0 fwd/non-fwd)
 Forwarding & Non-forwarding tree:
  6 inserts, 0 delete
  8 nodes using 288 bytes
```

Table 45 describes the significant fields shown in the display for a Cisco 7500 series router.

Table 45 show ip cef tree Field Descriptions

Field	Description
RTRIE storing IPv6 addresses	Indicates the tree type as RTRIE.
6 entries (6/0 fwd/non-fwd)	Indicates total number of prefix entries as 6 forwarding and 0 nonforwarding entries.
Forwarding & Non-forwarding tree	Same tree is used for forwarding and nonforwarding.
6 inserts, 0 delete	Indicates that 6 entries were inserted and 0 entries were deleted from the tree.
8 nodes using 288 bytes	Indicates a total of 8 nodes using a total of 288 bytes of memory.
*calloc failures: *number* node	This line is not present in the example output. If this line is present in output, it indicates a memory allocation error at the indicated node.

Cisco 10000 Series Router Example

The following is sample output from the **show ip cef tree** command:

```
Router# show ip cef tree

VRF Default tree information:
 MTRIE/MTRIE storing IPv4 addresses
 42 entries (42/0 fwd/non-fwd)
 Forwarding tree:
  Forwarding lookup routine: IPv4 mtrie generic
  82 inserts, 40 deletes
  8-4-6-6-4-4 stride pattern
  short mask protection enabled for <= 4 bits without process suspension
  42 leaves (1176 bytes), 76 nodes (15744 bytes)
  18576 total bytes
  leaf ops: 82 inserts, 40 deletes
  leaf ops with short mask protection: 3 inserts, 1 delete
  per-prefix length stats: lookup off, insert off, delete off
  refcounts: 2933 leaf, 2848 node
  node pools:
   pool[C/4 bits]: 46 allocated (0 failed), 5472 bytes
   pool[C/6 bits]: 29 allocated (0 failed), 9216 bytes
   pool[C/8 bits]: 1 allocated (0 failed), 1056 bytes
 Non-Forwarding tree:
  122 inserts, 122 deletes
  8-4-6-6-4-4 stride pattern
  short mask protection enabled for <= 4 bits without process suspension
  0 leaves (0 bytes), 1 node (1040 bytes)
  2696 total bytes
  leaf ops: 122 inserts, 122 deletes
  leaf ops with short mask protection: 4 inserts, 4 deletes
  per-prefix length stats: lookup off, insert off, delete off
  refcounts: 0 leaf, 0 node
  node pools:
   pool[C/4 bits]: 0 allocated (0 failed), 0 bytes
   pool[C/6 bits]: 0 allocated (0 failed), 0 bytes
   pool[C/8 bits]: 1 allocated (0 failed), 1040 bytes
```

Table 46 describes the significant fields shown in the display for a Cisco 10000 series router.

Table 46 show ip cef tree Field Descriptions—Cisco 10000 Series Router

Field	Description
MTRIE storing IPv4 addresses	Indicates the tree type as MTRIE.
42 entries (42/0 fwd/ non-fwd)	Indicates total number of prefix entries as 42 forwarding and 0 nonforwarding entries.
Forwarding & Non-forwarding tree	Same tree is used for forwarding and nonforwarding.
82 inserts, 40 delete	Indicates that 82 entries were inserted and 40 entries were deleted from the tree.
76 nodes using 15744 bytes	Indicates a total of 76 nodes using a total of 15744 bytes of memory.
*calloc failures: *number* node	This line is not present in the example output. If this line is present in output, it indicates a memory allocation error at the indicated node.

Related Commands

Command	Description
show ip cef	Displays entries in the FIB.

show ip cef unresolved

To display unresolved entries in the Forwarding Information Base (FIB), use the **show ip cef unresolved** command in user EXEC or privileged EXEC mode.

show ip cef unresolved [**detail | epoch** *epoch-number* **| internal | platform | source**]

Cisco 10000 Series Routers

show ip cef unresolved [**detail | internal | platform**]

Syntax Description

detail	(Optional) Displays detailed FIB entry information.
epoch *epoch-number*	(Optional) Displays the basic unresolved routes filtered by a specified epoch number. The epoch number range is from 0 to 255.
internal	(Optional) Displays data structures for unresolved routes.
platform	(Optional) Displays platform-specific information on unresolved routes.
source	(Optional) Displays source-specific information on unresolved routes.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0(22)S	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(25)S	The **platform**, **source**, and **epoch** keywords were added. The *epoch-number* argument was added. The output was changed to list only IPv4 unresolved prefixes.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB and implemented on the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

The **show ip cef unresolved detail** command displays detailed information for all unresolved FIB entries.

Examples

Sample Output for Cisco IOS Releases 12.2(25)S, 12.2(28)SB, 12.2(33)SRA, 12.2(33)SXH, 12.4(20)T, and Later Releases

The following is sample output for the **show ip cef unresolved** command:

```
Router# show ip cef unresolved detail

Prefix              Next Hop            Interface
```

Nothing is displayed if no unresolved adjacencies exist. For information about unresolved prefixes for IPv6, use the **show ipv6 unresolved** command.

Sample Output for Cisco IOS Releases Before Cisco IOS Release 12.2(25)S

The following is sample output from the **show ip cef unresolved** command:

```
Router# show ip cef unresolved

IP Distributed CEF with switching (Table Version 136632)
45776 routes, 13 unresolved routes (0 old, 13 new)
45776 leaves, 2868 nodes, 8441480 bytes, 136632 inserts, 90856 invalidations
1 load sharing elements, 208 bytes, 1 references
1 CEF resets, 1 revisions of existing leaves
refcounts: 527292 leaf, 465617 node
10.214.0.0/16, version 136622
0 packets, 0 bytes
  via 172.17.233.56, 0 dependencies, recursive
  unresolved
10.215.0.0/16, version 136623
0 packets, 0 bytes
  via 172.17.233.56, 0 dependencies, recursive
  unresolved
10.218.0.0/16, version 136624
0 packets, 0 bytes
```

Cisco 10000 Series Router Example

The following is sample output from the **show ip cef unresolved** command:

```
Router# show ip cef unresolved

10.214.0.0/16, version 136622
0 packets, 0 bytes
  via 172.17.233.56, 0 dependencies, recursive
  unresolved
10.215.0.0/16, version 136623
0 packets, 0 bytes
  via 172.17.233.56, 0 dependencies, recursive
  unresolved
10.218.0.0/16, version 136624
0 packets, 0 bytes
```

Related Commands

Command	Description
show cef interface	Displays Cisco Express Forwarding interface information.
show ip cef	Displays entries in the FIB.
show ip cef summary	Displays a summary of the entries in the FIB.
show ipv6 unresolved	Displays unresolved entries in the IPv6 FIB.

show ip cef vlan

To display the information about the IP Cisco Express Forwarding VLAN interface status, the configuration, and the prefixes for a specific interface, use the **show ip cef vlan** command in user EXEC or privileged EXEC mode.

show ip cef vlan *vlan-id* [**detail**]

Syntax Description

vlan-id	VLAN number; valid values are from 1 to 4094.
detail	(Optional) Displays the detailed information about the IP Cisco Express Forwarding VLAN interface.

Defaults

This command has no default settings.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the prefixes for a specific VLAN. The fields shown in the display are self-explanatory.

```
Router> show ip cef vlan 1003

Prefix              Next Hop            Interface
0.0.0.0/0           172.20.52.1         FastEthernet3/3
0.0.0.0/32          receive
10.7.0.0/16         172.20.52.1         FastEthernet3/3
10.16.18.0/23       172.20.52.1         FastEthernet3/3
Router>
```

This example shows how to display detailed IP Cisco Express Forwarding information for a specific VLAN. The fields shown in the display are self-explanatory.

```
Router> show ip cef vlan 1003 detail

IP Distributed CEF with switching (Table Version 2364), flags=0x0
  1383 routes, 0 reresolve, 0 unresolved (0 old, 0 new)
  1383 leaves, 201 nodes, 380532 bytes, 2372 inserts, 989 invalidations
  0 load sharing elements, 0 bytes, 0 references
  universal per-destination load sharing algorithm, id 9B6C9823
  3 CEF resets, 0 revisions of existing leaves
  refcounts:  54276 leaf, 51712 node
Adjacency Table has 5 adjacencies
```

show ip cef vrf

To display the Cisco Express Forwarding forwarding table associated with a Virtual Private Network (VPN) routing/forwarding instance (VRF), use the **show ip cef vrf** command in privileged EXEC mode.

show ip cef vrf *vrf-name* [*ip-prefix* [*mask* [**longer-prefixes**]] [**detail**] [*output-modifiers*]] [*interface interface-number*] [**adjacency** [*interface interface-number*] [**detail**] [**discard**] [**drop**] [**glean**] [**null**] [**punt**] [*output-modifiers*]] [**detail** [**output-modifiers**]] [**non-recursive** [**detail**] [*output-modifiers*]] [**summary** [*output-modifiers*]] [**traffic** [**prefix-length**] [*output-modifiers*]] [**unresolved** [**detail**] [*output-modifiers*]]

Syntax Description

vrf-name	Name assigned to the VRF.
ip-prefix	(Optional) IP prefix of entries to show, in dotted decimal format (A.B.C.D).
mask	(Optional) Mask of the IP prefix, in dotted decimal format.
longer-prefixes	(Optional) Displays table entries for all of the more specific routes.
detail	(Optional) Displays detailed information for each Cisco Express Forwarding table entry.
output-modifiers	(Optional) For a list of associated keywords and arguments, use context-sensitive help.
interface	(Optional) Type of network interface to use: ATM, Ethernet, Loopback, packet over SONET (POS) or Null.
interface-number	Number identifying the network interface to use.
adjacency	(Optional) Displays all prefixes resolving through adjacency.
discard	(Optional) Discards adjacency.
drop	(Optional) Drops adjacency.
glean	(Optional) Gleans adjacency.
null	(Optional) Nulls adjacency.
punt	(Optional) Punts adjacency.
non-recursive	(Optional) Displays only nonrecursive routes.
summary	(Optional) Displays a Cisco Express Forwarding table summary.
traffic	(Optional) Displays traffic statistics.
prefix-length	(Optional) Displays traffic statistics by prefix size.
unresolved	(Optional) Displays only unresolved routes.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(21)ST	This command was integrated into Cisco IOS Release 12.0(21)ST.
12.0(23)S	This command was integrated into Cisco IOS Release 12.0(23)S.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Release	Modification
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(33)SRE	This command was modified. Support for the BGP best external and BGP additional path features was added.
12.2(33)XNE	This command was integrated into Cisco IOS Release 12.2(33)XNE.
Cisco IOS XE Release 2.5	This command was integrated into Cisco IOS XE Release 2.5.

Usage Guidelines

Used with only the *vrf-name* argument, the **show ip cef vrf** command shows a shortened display of the Cisco Express Forwarding table.

Used with the **detail** keyword, the **show ip cef vrf** command shows detailed information for all Cisco Express Forwarding table entries.

Examples

This example shows the forwarding table associated with the VRF called vrf1:

```
Router# show ip cef vrf vrf1

Prefix              Next Hop            Interface
0.0.0.0/32           receive
10.11.0.0/8          10.50.0.1           Ethernet1/3
10.12.0.0/8          10.52.0.2           POS6/0
10.50.0.0/8          attached            Ethernet1/3
10.50.0.0/32         receive
10.50.0.1/32         10.50.0.1           Ethernet1/3
10.50.0.2/32         receive
10.50.255.255/32     receive
10.51.0.0/8          10.52.0.2            POS6/0
10.224.0.0/24        receive
10.255.255.255/32    receive
```

The following sample output from the **show ip cef vrf** *vrf-name ip-prefix* **detail** command shows the **recursive-via-host** and **recursive-via-connected** flags:

```
Router# show ip cef vrf vpn1 10.51.10.1 detail

10.51.10.1/24, epoch 0, flags rib defined all labels
  local label info: other/24
  recursive via 10.6.16.6 label 23
    nexthop 10.2.3.3 Ethernet1/0 label 17
  recursive via 10.1.2.1, repair
    attached
```

Table 47 describes the fields shown in the example.

Table 47 show ip cef vrf Field Descriptions

Field	Description
Prefix	Specifies the network prefix.
Next Hop	Specifies the Border Gateway Protocol (BGP) next hop address.
Interface	Specifies the VRF interface.

Related Commands

Command	Description
show ip route vrf	Displays the IP routing table associated with a VRF.
show ip vrf	Displays VRF interfaces.

show ip cef with epoch

To display Cisco Express Forwarding Forwarding Information Base (FIB) information filtered for a specific epoch, use the **show ip cef with epoch** command in privileged EXEC mode.

show ip cef with epoch *epoch-number* [**checksum** | **detail** | **internal** [**checksum**] | **platform** [**checksum** | **detail** | **internal** [**checksum**]]]

Syntax Description

epoch-number	Number of the epoch, from 0 to 255.
checksum	(Optional) Displays FIB entry checksums.
detail	(Optional) Displays detailed information about FIB epochs.
internal	(Optional) Displays internal data structure information.
platform	(Optional) Displays platform-specific data structures.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

Use this command to display information about prefix properties for a specified epoch in the Cisco Express Forwarding FIB. This command is similar to the **show ipv6 cef with epoch** command, except that it is IPv4 specific. Use the **show ip cef epoch** command to display the epoch number.

Examples

The following is sample output from the **show ip cef with epoch** command:

```
Router# show ip cef with epoch 0

Prefix               Next Hop             Interface
0.0.0.0/0            no route
0.0.0.0/8            drop
0.0.0.0/32           receive
10.1.1.1/32          receive              Loopback0
127.0.0.0/8          drop
224.0.0.0/4          drop
224.0.0.0/24         receive
240.0.0.0/4          drop
255.255.255.255/32   receive
```

Table 48 describes significant fields shown in the display.

Table 48 show ip cef with epoch Field Descriptions

Field	Description
Prefix	IP addresses in the FIB associated with the specified epoch.
Next Hop	What happens to the packet at the next hop.
Interface	Either the egress interface for the forwarded packet or the interface on which the packet is received.

The following is sample output from the **show ip cef with epoch detail** command:

```
Router# show ip cef with epoch 15 detail

IPv4 CEF is enabled and running
VRF Default:
 9 prefixes (9/0 fwd/non-fwd)
 Table id 0
 Database epoch:        0 (9 entries at this epoch)
```

Table 49 describes significant fields shown in the display.

Table 49 show ip cef with epoch detail Field Descriptions

Field	Description
IPv4 CEF is enabled and running	States whether Cisco Express Forwarding is enabled and running.
VRF Default	VRF table, in this instance, the default VRF.
9 prefixes ((9/0 fwd/non-fwd)	Number of prefixes in the VRF, how many of them are forwarded, and how many are not forwarded.
Table id 0	Table identification number.
Database epoch: 0 (9 entries at this epoch)	Value of the database epoch and number of entries in the epoch.

The following is sample output from the **show ip cef with epoch checksum** command:

```
Router# show ip cef with epoch 0 checksum

0.0.0.0/0
  FIB checksum: 0x353023B8
0.0.0.0/8
  FIB checksum: 0x6AAA2DEF
0.0.0.0/32
  FIB checksum: 0xC9136D79
10.1.1.1/32
  FIB checksum: 0x2DD79A12
127.0.0.0/8
  FIB checksum: 0x06E2709F
224.0.0.0/4
  FIB checksum: 0xC59D5F03
224.0.0.0/24
  FIB checksum: 0x9A64B149
240.0.0.0/4
  FIB checksum: 0x891B2D02
```

```
255.255.255.255/32
  FIB checksum: 0x72C832F4
```

Table 50 describes significant fields shown in the display.

Table 50 show ip cef with epoch checksum Field Descriptions

Field	Description
10.1.1.1/32	Prefix in epoch 0.
FIB checksum: 0x2DD79A12	FIB checksum associated with the named prefix.

The following is sample output from the **show ip cef with epoch platform** command:

```
Router# show ip cef with epoch 0 platform

0.0.0.0/0
0.0.0.0/8
0.0.0.0/32 receive
10.1.1.1/32 receive
127.0.0.0/8
224.0.0.0/4 multicast
224.0.0.0/24 multicast
240.0.0.0/4
255.255.255.255/32 receive
```

Table 51 describes significant fields shown in the display.

Table 51 show ip cef with epoch platform Field Descriptions

Field	Description
10.1.1.1/32 receive	Receive prefix in the specified database epoch.
224.0.0./4 multicast	Multicast address in the specified database epoch.

Related Commands

Command	Description
show ip cef	Displays entries in the FIB or displays a summary of the FIB.
show ip cef epoch	Displays epoch information for the adjacency table and all FIB tables.
show ipv6 cef with epoch	Displays Cisco Express Forwarding IPv6 FIB information filtered for a specific epoch.

show ip cef with source

To display Cisco Express Forwarding Information Base (FIB) information filtered for a specific source, use the **show ip cef with source** command in privileged EXEC mode.

show ip cef with source *source-type* [**checksum | detail | epoch | internal** [**checksum**] **| platform** [**checksum | detail | internal** [**checksum**]]]

Syntax Description

source-type	The *source-type* argument must be replaced by one of the following keywords that are supported for your release. Keywords for all supported Cisco IOS Releases: • **alias**—Displays alias address prefix sources in the Cisco Express Forwarding FIB. • **broadband**—Displays broadband receive prefix sources in the Cisco Express Forwarding FIB. • **fallback**—Displays fallback lookup prefix sources in the Cisco Express Forwarding FIB. • **interface**—Displays interface configuration prefix sources in the Cisco Express Forwarding FIB. • **NAT**—Displays Network Address Translation (NAT) prefix sources in the Cisco Express Forwarding FIB. • **rib**—Displays Routing Information Base (RIB) prefix sources in the Cisco Express Forwarding FIB. • **special**—Displays special prefix sources in the Cisco Express Forwarding FIB. • **test**—Displays test command prefix sources in the Cisco Express Forwarding FIB. • **virtual**—Displays virtual address prefix sources in the Cisco Express Forwarding FIB, for example, Virtual Router Redundancy Protocol (VRRP) and Hot Standby Router Protocol (HSRP) addresses. Additional keywords for Cisco IOS Releases 12.2(25)S, 12,2(28)SB, 12.2(33)SRA, and later releases: • **adjacency**—Displays adjacency prefix sources in the Cisco Express Forwarding FIB. • **default-route**—Displays default route handler prefix sources in the Cisco Express Forwarding FIB. • **inherited-path-list**—Displays inherited path list prefix source in the Cisco Express Forwarding FIB. Additional keywords for Cisco IOS Releases 12.2(33)SXH, 12.4(20)T, and later SX and T releases: • **adj**—Displays adjacency prefix sources in the Cisco Express orwarding FIB.

	• **defnet—**Displays default network prefix sources in the Cisco Express Forwarding FIB. • **defroutehandler**—Displays default route handler prefix sources in the Cisco Express Forwarding FIB. • **ipl**—Displays inherited path list prefix source in the Cisco Express Forwarding FIB. Additional keywords for Cisco IOS Release 12.2(33)SXH and later SX releases only: • **lte**—Displays Multiprotocol Label Switching (MPLS) label table entries. • **recursive-resolution**—Displays recursive resolution prefix sources in the Cisco Express Forwarding FIB.
checksum	(Optional) Displays FIB entry checksums.
detail	(Optional) Displays detailed information about FIB epochs.
epoch	(Optional) Displays information about epochs associated with the source prefix.
internal	(Optional) Displays internal data structure information.
platform	(Optional) Displays platform-specific data structures.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)S	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

Use this command to filter on a specified type of source prefix in the Cisco Express Forwarding FIB.

Examples

The following is sample output from the **show ip cef with source rib** command:

```
Router# show ip cef with source rib

Prefix               Next Hop            Interface
10.1.1.1/32          receive             Loopback0
```

Table 52 describes the significant fields shown in the display.

Table 52 show ip cef with source rib Field Descriptions

Field	Description
Prefix	List of prefixes in the Cisco Express Forwarding FIB whose source is the Routing Information Base (RIB).
Next Hop	Next-hop address, in general.
Interface	Either an egress interface or receive interface.

The following is sample output from the **show ip cef with source fib detail** command:

```
Router# show ip cef with source rib detail

IPv4 CEF is enabled and running
VRF Default:
 9 prefixes (9/0 fwd/non-fwd)
 Table id 0
 Database epoch:        0 (9 entries at this epoch)

10.1.1.1/32, epoch 0, flags attached, connected, receive
  Interface source: Loopback0
  receive for Loopback0
```

Table 53 describes the significant fields shown in the display.

Table 53 show ip cef with source rib detail Field Descriptions

Field	Description
VRF Default	Default VRF table.
9 prefixes (9/0 Fwd/non-fwd)	Number of prefixes in the VRF, how many of then are forwarded, and how many or not forwarded.
Table id 0	Table identification number.
Database epoch: 0 (9 entries at this epoch)	Number of the epoch (0) and number of entries in the epoch.
10.1.1.1/32, epoch 0, flags attached, connected, receive	Details about the prefix: the epoch in which it is found, and the flags that are set for the prefix: • attached—Prefix is connected to a network • connected—Prefix includes an address that is bound to an interface on the device • receive—Prefix is punted to and handled by the Process code rather than Cisco Express Forwarding
Interface source: Loopback0	Indicates that the source interface for the prefix was an interface, specifically Interface Loopback0.
receive for Loopback0	Indicates that the prefix is a receive type for the Lookback interface. Traffic matching this prefix will be punted to the process level and handled by the process code.

Related Commands

Command	Description
show ip cef	Displays entries in the FIB or displays a summary of the FIB.
show ip cef with epoch	Displays Cisco Express Forwarding FIB information filtered for a specific epoch.
show ipv6 cef with epoch	Displays Cisco Express Forwarding IPv6 FIB information filtered for a specific epoch.
show ipv6 cef with source	Displays Cisco Express Forwarding IPv6 FIB information filtered for a specific source.