



## **show adjacency through show ip cef with source**

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# 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

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

| Release     | Modification   |
|-------------|--|
| 12.2(2)T    | This command was integrated into Cisco IOS Release 12.2(2)T, and the <b>detail</b> keyword was added.  |
| 12.2(13)T   | The <b>policy-statistics</b> keyword was added.  |
| 12.0(22)S   | The <b>input</b> and <b>output</b> keywords were added.<br><br>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. |
| 12.3(4)T    | The <b>input</b> and <b>output</b> keywords were added.<br><br>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 <b>internal</b> 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
```

The table below describes the significant fields shown in the displays.

**Table 1: 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. |

| Field   | Description   |
|---|---|
| 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.   |
| 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.  |

| Field            | Description   |
|------------------|---|
| Input fast flags | <p>Indicates the input status of various switching features:</p> <ul style="list-style-type: none"> <li>• 0x0001 (input Access Control List [ACL] enabled)</li> <li>• 0x0002 (policy routing enabled)</li> <li>• 0x0004 (input rate limiting)</li> <li>• 0x0008 (MAC/Prec accounting)</li> <li>• 0x0010 (DSCP/PREC/QOS GROUP)</li> <li>• 0x0020 (input named access lists)</li> <li>• 0x0040 (NAT enabled on input)</li> <li>• 0x0080 (crypto map on input)</li> <li>• 0x0100 (QPPB classification)</li> <li>• 0x0200 (inspect on input)</li> <li>• 0x0400 (input classification)</li> <li>• 0x0800 (<sup>1</sup>casa input enable)</li> <li>• 0x1000 (Virtual Private Network [VPN] enabled on a <sup>2</sup>swidb)</li> <li>• 0x2000 (input idle timer enabled)</li> <li>• 0x4000 (unicast Reverse Path Forwarding [RPF] check)</li> <li>• 0x8000 (per-address ACL enabled)</li> <li>• 0x10000 (deaggregating a packet)</li> <li>• 0x20000 (<sup>3</sup>GPRS enabled on input)</li> <li>• 0x40000 (URL RenDezvous)</li> <li>• 0x80000 (QoS classification)</li> <li>• 0x100000 (FR switching on interface)</li> <li>• 0x200000 (<sup>4</sup>WCCP redirect on input)</li> <li>• 0x400000 (input classification)</li> </ul> |

| Field                      | Description   |
|----------------------------|---|
| Output fast flags          | <p>Indicates the output status of various switching features, as follows:</p> <ul style="list-style-type: none"> <li>• 0x0001 (output ACL enabled)</li> <li>• 0x0002 (IP accounting enabled)</li> <li>• 0x0004 (WCC redirect enabled interface)</li> <li>• 0x0008 (rate limiting)</li> <li>• 0x0010 (MAC/Prec accounting)</li> <li>• 0x0020 (DSCP/PREC/QOS GROUP)</li> <li>• 0x0040 (D-QOS classification)</li> <li>• 0x0080 (output named access lists)</li> <li>• 0x0100 (NAT enabled on output)</li> <li>• 0x0200 (TCP intercept enabled)</li> <li>• 0x0400 (crypto map set on output)</li> <li>• 0x0800 (output firewall)</li> <li>• 0x1000 (<sup>5</sup>RSVP classification)</li> <li>• 0x2000 (inspect on output)</li> <li>• 0x4000 (QoS classification)</li> <li>• 0x8000 (QoS preclassification)</li> <li>• 0x10000 (output stile)</li> </ul> |
| 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.  |

<sup>1</sup> Cisco applications and services architecture (CASA)

<sup>2</sup> Software interface descriptor block (SWIDB)

<sup>3</sup> General packet radio system (GPRS)

<sup>4</sup> Web cache communication protocol (WCCP)

<sup>5</sup> 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
```

The table below describes the significant fields shown in the display.

**Table 2: show cef interface policy-statistics Field Descriptions**

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

# 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

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

|                          |   |
|--------------------------|---|
| <b>dependents</b>        | (Optional) Displays all prefixes recursing through the FIB. |
| <b>same-routing</b>      | (Optional) Displays all prefixes with the same routing.     |
| <b>prefix-statistics</b> | (Optional) Displays nonzero prefix statistics.              |

**Command Modes**

User EXEC (&gt;) Privileged EXEC (#)

**Command History**

| <b>Release</b> | <b>Modification</b>   |
|----------------|---|
| 11.2GS         | This command was introduced on the Cisco 12012 Internet router.   |
| 11.1CC         | This command was modified. Multiple platform support was added.   |
| 12.0(5)T       | This command was integrated into Cisco IOS Release 12.0(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 <b>checksum</b> , <b>internal</b> , <b>platform</b> , and <b>prefix-statistics</b> 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 <b>dependents</b> , <b>longer-prefixes</b> , and <b>same-routing</b> 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
```

The table below describes the significant fields shown in the display.

**Table 3: 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.   |
| 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.  |

| Field    | Description   |
|----------|---|
| 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
```

The table above describes the significant fields shown in the display.

### Related Commands

| Command                   | Description  |
|---------------------------|--|
| <b>show cef</b>           | Displays the packets dropped by the line cards, or displays the packets that were not express forwarded. |
| <b>show cef interface</b> | 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.   |

