show standby

To display Hot Standby Router Protocol (HSRP) information, use the **show standby** command in user EXEC or privileged EXEC mode.

show standby [*type number* [*group*]] [**all** | **brief**]

Syntax Description

type number	(Optional) Interface type and number for which output is displayed.
group	(Optional) Group number on the interface for which output is displayed.
all	(Optional) Displays information for groups that are learned or do not have the **standby ip** command configured.
brief	(Optional) A single line of output summarizes each standby group.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.2(8)T	The output for the command was made clearer and easier to understand.
12.3(2)T	The output was enhanced to display information about Message Digest 5 (MD5) authentication.
12.3(4)T	The output was enhanced to display information about HSRP version 2.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.4(4)T	IPv6 support was added.
12.4(6)T	The output for this command was enhanced to display information about HSRP master and client groups.
12.4(9)T	The output for this command was enhanced to display information about HSRP group shutdown configuration.
12.4(11)T	The output for this command was enhanced to display information about HSRP Bidirectional Forwarding Detection (BFD) peering.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SXI	The output for this command was enhanced to display information about gratuitous ARP packets.
12.4(24)T	This command was modified. The output was modified to hide configured passwords when MD5 key-string or text authentication is configured.
12.2(33)SXI1	This command was modified. The output was modified to hide configured passwords when MD5 key-string or text authentication is configured.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

Release	Modification
Cisco IOS XE Release 2.4	This command was modified. The output was modified to hide configured passwords when MD5 key-string or text authentication is configured.
12.2(33)SRE	This command was modified. The output was modified to hide configured passwords when MD5 key-string or text authentication is configured.

Usage Guidelines

To specify a group, you must specify an interface type and number.

Examples

The following is sample output from the **show standby** command:

```
Router# show standby

Ethernet0/1 - Group 1
  State is Active
   2 state changes, last state change 00:30:59
  Virtual IP address is 10.1.0.20
   Secondary virtual IP address 10.1.0.21
  Active virtual MAC address is 0004.4d82.7981
   Local virtual MAC address is 0004.4d82.7981 (bia)
  Hello time 4 sec, hold time 12 sec
   Next hello sent in 1.412 secs
  Gratuitous ARP 14 sent, next in 7.412 secs
  Preemption enabled, min delay 50 sec, sync delay 40 sec
  Active router is local
  Standby router is 10.1.0.6, priority 75 (expires in 9.184 sec)
  Priority 95 (configured 120)
   Tracking 2 objects, 0 up
      Down Interface Ethernet0/2, pri 15
      Down Interface Ethernet0/3
Group name is "HSRP1" (cfgd)
Follow by groups:
    Et1/0.3 Grp 2 Active 10.0.0.254 0000.0c07.ac02 refresh 30 secs (next 19.666)
    Et1/0.4 Grp 2 Active 10.0.0.254 0000.0c07.ac02 refresh 30 secs (next 19.491)
  Group name is "HSRP1", advertisement interval is 34 sec
```

The following is sample output from the **show standby** command when HSRP version 2 is configured:

```
Router# show standby

Ethernet0/1 - Group 1 (version 2)
  State is Speak
  Virtual IP address is 10.21.0.10
  Active virtual MAC address is unknown
   Local virtual MAC address is 0000.0c9f.f001 (v2 default)
  Hello time 3 sec, hold time 10 sec
   Next hello sent in 1.804 secs

  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 20 (configured 20)
  Group name is "hsrp-Et0/1-1" (default)

Ethernet0/2 - Group 1
  State is Speak
  Virtual IP address is 10.22.0.10
  Active virtual MAC address is unknown
    Local virtual MAC address is 0000.0c07.ac01 (v1 default)
```

```
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.804 secs
  Preemption disabled
  Active router is unknown
  Standby router is unknown
  Priority 90 (default 100)
    Track interface Serial2/0 state Down decrement 10
  Group name is "hsrp-Et0/2-1" (default)
```

The following is sample output from the **show standby** command with the **brief** keyword specified:

```
Router# show standby brief

Interface   Grp Prio P State    Active addr     Standby addr    Group addr
Et0         0   120    Init     10.0.0.1        unknown         10.0.0.12
```

The following is sample output from the **show standby** command when HSRP MD5 authentication is configured:

```
Router# show standby

Ethernet0/1 - Group 1
  State is Active
    5 state changes, last state change 00:17:27
  Virtual IP address is 10.21.0.10
  Active virtual MAC address is 0000.0c07.ac01
    Local virtual MAC address is 0000.0c07.ac01 (default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 2.276 secs
  Authentication MD5, key-string, timeout 30 secs
  Preemption enabled
  Active router is local
  Standby router is unknown
  Priority 110 (configured 110)
  Group name is "hsrp-Et0/1-1" (default)
```

The following is sample output from the **show standby** command when HSRP group shutdown is configured:

```
Router# show standby

Ethernet0/0 - Group 1
State is Init (tracking shutdown)
3 state changes, last state change 00:30:59
Track object 100 state Up
Track object 101 state Down
Track object 103 state Up
```

The following is sample output from the **show standby** command when HSRP BFD peering is enabled:

```
Router# show standby

Ethernet0/0 - Group 2
  State is Listen
    2 state changes, last state change 01:18:18
  Virtual IP address is 10.0.0.1
  Active virtual MAC address is 0000.0c07.ac02
    Local virtual MAC address is 0000.0c07.ac02 (v1 default)
  Hello time 3 sec, hold time 10 sec
  Preemption enabled
  Active router is 10.0.0.250, priority 120 (expires in 9.396 sec)
  Standby router is 10.0.0.251, priority 110 (expires in 8.672 sec)
    BFD enabled
  Priority 90 (configured 90)
```

```
  Group name is "hsrp-Et0/0-1" (default)
```

The following is sample output from the **show standby** command used to display the state of the standby RP:

```
Router# show standby

GigabitEthernet3/25 - Group 1
State is Init (standby RP, peer state is Active)
Virtual IP address is 10.0.0.1
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0c07.ac01 (v1 default)
Hello time 3 sec, hold time 10 sec
Preemption disabled
Active router is unknown
Standby router is unknown
Priority 100 (default 100)
Group name is "hsrp-Gi3/25-1" (default)
```

Table 74 describes the significant fields shown in the displays.

Table 74 show standby Field Descriptions

Field	Description
Ethernet - Group	Interface type and number and Hot Standby group number for the interface.
State is	State of local router; can be one of the following: • Active—Indicates the current Hot Standby router. • Standby—Indicates the router next in line to be the Hot Standby router. • Speak—Router is sending packets to claim the active or standby role. • Listen—Router is neither in the active nor standby state, but if no messages are received from the active or standby router, it will start to speak. • Init or Disabled—Router is not yet ready or able to participate in HSRP, possibly because the associated interface is not up. HSRP groups configured on other routers on the network that are learned via snooping are displayed as being in the Init state. Locally configured groups with an interface that is down or groups without a specified interface IP address appear in the Init state. For these cases, the Active addr and Standby addr fields will show "unknown." The state is listed as disabled in the fields when the **standby ip** command has not been specified. • Init (tracking shutdown)—HSRP groups appear in the Init state when HSRP group shutdown has been configured and a tracked object goes down.
Virtual IP address is, Secondary virtual IP addresses	All secondary virtual IP addresses are listed on separate lines. If one of the virtual IP addresses is a duplicate of an address configured for another device, it will be marked as "duplicate." A duplicate address indicates that the router has failed to defend its ARP (Address Resolution Protocol) cache entry.
Active virtual MAC address	Virtual MAC address being used by the current active router.
Local virtual MAC address	Virtual MAC address that would be used if this router became the active router. The origin of this address (displayed in parentheses) can be "default," "bia," (burned-in address) or "confgd" (configured).

Table 74 show standby Field Descriptions (continued)

Field	Description
Hello time, hold time	The hello time is the time between hello packets (in seconds) based on the command. The holdtime is the time (in seconds) before other routers declare the active or standby router to be down, based on the **standby timers** command. All routers in an HSRP group use the hello and hold- time values of the current active router. If the locally configured values are different, the variance appears in parentheses after the hello time and hold-time values.
Next hello sent in	Time in which the Cisco IOS software will send the next hello packet (in hours:minutes:seconds).
Gratuitous ARP 14 sent, next in 7.412 secs	Number of the gratuitous ARP packet HSRP has sent and the time in seconds when HSRP will send the next gratuitous ARP packet. This output appears only when HSRP sends gratuitous ARP packets.
Authentication	Authentication type configured based on the **standby authentication** command.
key-string	Indicates a key string is used for authentication. Configured key chains are not displayed.
timeout	Duration (in seconds) that HSRP will accept message digests based on both the old and new keys.
Preemption enabled, sync delay	Indicates whether preemption is enabled. If enabled, the minimum delay is the time a higher-priority nonactive router will wait before preempting the lower-priority active router. The sync delay is the maximum time a group will wait to synchronize with the IP redundancy clients.
Active router is	Value can be “local,” “unknown,” or an IP address. Address (and the expiration date of the address) of the current active Hot Standby router.
Standby router is	Value can be “local,” “unknown,” or an IP address. Address (and the expiration date of the address) of the “standby” router (the router that is next in line to be the Hot Standby router).
BFD enabled	Indicates that BFD peering is enabled on the router.
expires in	Time (in hours:minutes:seconds) in which the standby router will no longer be the standby router if the local router receives no hello packets from it.
Tracking	List of interfaces that are being tracked and their corresponding states. Based on the **standby track** command.
Group name is	The name of the HSRP group.
Follow by groups:	Indicates the client HSRP groups that have been configured to follow this HSRP group.
P	Indicates that the router is configured to preempt.

Related Commands

Command	Description
standby authentication	Configures an authentication string for the HSRP.
standby ip	Activates the HSRP.
standby mac-address	Specifies the virtual MAC address for the virtual router.
standby mac-refresh	Refreshes the MAC cache on the switch by periodically sending packets from the virtual MAC address.

Command	Description
standby preempt	Configures HSRP preemption and preemption delay.
standby priority	Configures Hot Standby priority of potential standby routers.
standby timers	Configures the time between hello messages and the time before other routers declare the active Hot Standby or standby router to be down.
standby track	Configures an interface so that the Hot Standby priority changes based on the availability of other interfaces.
standby use-bias	Configures HSRP to use the BIA of the interface as its virtual MAC address, instead of the preassigned MAC address (on Ethernet and FDDI) or the functional address (on Token Ring).

show standby arp gratuitous

To display the number and configured interval of gratuitous Address Resolution Protocol (ARP) packets sent by Hot Standby Router Protocol (HSRP), use the **show standby arp gratuitous** command in user EXEC or privileged EXEC configuration mode.

show standby arp gratuitous [*type number*]

Syntax Description

type number	(Optional) Interface type and number for which output is displayed.

Command Default

The number of user-configured gratuitous ARP packets is not displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

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

Usage Guidelines

This command displays the interface to which HSRP sends gratuitous ARP packets, the interval (in seconds) and the number. Gratuitous ARP packets are sent only when an HSRP group transitions to the Active state.

Examples

The following sample output displays information about HSRP gratuitous ARP packets:

```
Router# show standby arp gratuitous

HSRP Gratuitous ARP
Interface   Interval   Count
Ethernet0/0 3          2
```

Related Commands

Command	Description
debug standby events arp	Displays events related to HSRP.
standby arp gratuitous	Configures the number of gratuitous ARP packets sent by an active HSRP group, and how often they are sent.
standby send arp	Configures HSRP to check that all ARP entries for active HSRP addresses are correct prior to sending gratuitous ARP packets.

show standby capability

To display the limitation on how many virtual MAC addresses that some interfaces can listen to, use the **show standby capability** command in user EXEC or privileged EXEC mode.

show standby capability [*type number*]

Syntax Description

type number	(Optional) Interface type and number for which output is displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2	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

HSRP allows up to 256 groups to be configured on each interface, but it is possible that the MAC address filter of the interface does not support that many entries. For example, Versatile Interface Processor (VIP) interfaces only support 32 MAC addresses in their MAC address filter. If more HSRP groups are created than there are address filter entries, then it is likely that the router will stop listening to packets sent to the MAC address of an active HSRP group.

Examples

The following is sample output from the **show standby capability** command:

```
Router# show standby capability
7206VXR * indicates hardware may support HSRP
                                                |
Interface          Type                        H  Potential Max Groups
FastEthernet0/0    18  DEC21140A               *  256  (0x60194B00,
0x60194BE8)
FastEthernet1/0    18  DEC21140A               *  256  (0x60194B00,
0x60194BE8)
Ethernet2/0        61  AmdP2                   *  256  (0x601A252C,
0x601A25E4)
Ethernet2/1        61  AmdP2                   *  256  (0x601A252C,
0x601A25E4)
Ethernet2/2        61  AmdP2                   *  256  (0x601A252C,
0x601A25E4)
Ethernet2/3        61  AmdP2                   *  256  (0x601A252C,
0x601A25E4)
Ethernet2/4        61  AmdP2                   *  256  (0x601A252C,
0x601A25E4)
Ethernet2/5        61  AmdP2                   *  256  (0x601A252C,
0x601A25E4)
Ethernet2/6        61  AmdP2                   *  256  (0x601A252C,
```

```
0x601A25E4)
Ethernet2/7         61  AmdP2                *  256  (0x601A252C,
0x601A25E4)
ATM3/0              74  ENHANCED ATM PA      *  256  LAN emulation
TokenRing4/0        66  HAWKEYE              *  3    HSRP TR functional
addresses (0x6076A590)
TokenRing4/1        66  HAWKEYE              *  3    HSRP TR functional
addresses (0x6076A590)
TokenRing4/2        66  HAWKEYE              *  3    HSRP TR functional
addresses (0x6076A590)
TokenRing4/3        66  HAWKEYE              *  3    HSRP TR functional
addresses (0x6076A590)
Serial5/0           67  M4T                     -
Serial5/1           67  M4T                     -
Serial5/2           67  M4T                     -
Serial5/3           67  M4T                     -
FastEthernet6/0     18  DEC21140A            *  256  (0x60194B00,
0x60194BE8)
VoIP-Null0          102 VoIP-Null               -
```

Table 75 describes the significant fields in the display.

Table 75 show standby capability Field Descriptions

Field	Description
Interface	Interface type and number for the interface.
Type	Hardware type.
*	Indicates hardware may support HSRP.
Potential Max Groups	An estimate of the number of HSRP groups that a MAC address filter can process for an interface.

show standby delay

To display Hot Standby Router Protocol (HSRP) information about delay periods, use the **show standby delay** command in user EXEC or privileged EXEC mode.

show standby delay [*type number*]

Syntax Description

type number	(Optional) Interface type and number for which output is displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2	This command was introduced.
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 Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

The following is sample output from the **show standby delay** command:

```
Router# show standby delay

 Interface          Minimum Reload
 Ethernet0/3        1       5
```

Table 76 describes the significant fields shown in the display.

Table 76 show standby delay Field Descriptions

Field	Description
Interface	Interface type and number.
Minimum	Minimum time (in seconds) to delay HSRP group initialization after an interface comes up.
Reload	Time (in seconds) to delay after the router has reloaded.

Related Commands

Command	Description
standby delay minimum reload	Delays the initialization of HSRP groups.

show standby internal

To display Hot Standby Routing Protocol (HSRP) internal flags and conditions, use the **show standby internal** command in user EXEC or privileged EXEC mode.

show standby internal [*interface-type interface-number* [*group* | **summary** [**all**]] | **summary**]

Syntax Description

interface-type interface-number	(Optional) Interface type and number for which output is displayed.
group	(Optional) Group number on the interface for which output is displayed. The range is 0 to 255.
summary	(Optional) Displays the number of configured and learned HSRP groups in various states on the interface.
all	(Optional) Displays HSRP groups on all subinterfaces if the specified interface is the main interface.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2	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.
12.2(33)SXI2	This command was modified. The *group* argument and the **summary** and **all** keywords were added.
12.2(33)SRE	This command was modified. The *group* argument and the **summary** and **all** keywords were added.
15.0(1)M	This command was modified. The *group* argument and the **summary** and **all** keywords were added.

Usage Guidelines

The **show standby internal** *interface-type interface-number* **summary** command applies to both the main interface and subinterfaces. When the command is used for the main interface the display output does not include groups on subinterfaces. This command displays all configured and learned HSRP groups in various states on the specified interface or subinterface.

The **show standby internal** *interface-type interface-number* **summary all** command applies only to the main interface, not to subinterfaces. It displays the total number of configured and learned HSRP groups in various states, including groups on all subinterfaces under the main interface.

The **show standby internal summary** command displays all configured and learned HSRP groups in various states on all interfaces.

Examples

The following example shows a configuration example and sample output from the **show standby internal** command for the configuration. The output shows internal flags and hardware and software information for Ethernet interface 2/0. The output shows that HSRP group 1 is configured for priority and preemption, and that the **standby timers** and **standby-use bia** commands have been configured.

```
Router# show standby internal

interface Ethernet2/0
 ip address 10.0.0.254 255.255.0.0
 standby use-bia
 standby version 2
 standby 1 ip 10.0.0.1
 standby 1 timers 2 6
 standby 1 priority 110
 standby 1 preempt

Router# show standby internal

Global           Confg: 0000
Et2/0 If hw      AmdP2, State 0x210040
Et2/0 If hw      Confg: 0001, USEBIA
Et2/0 If hw      Flags: 0000
Et2/0 If sw      Confg: 0040, VERSION
Et2/0 If sw      Flags: 0001, USEBIA
Et2/0 Grp 1      Confg: 0072, IP_PRI, PRIORITY, PREEMPT, TIMERS
Et2/0 Grp 1      Flags: 0000
```

The following sample output from the **show standby internal ethernet0/1 summary all** command shows 400 active configured groups and no active learned groups for Ethernet interface 0/1:

```
Router# show standby internal ethernet 0/1 summary all

               Disable  Init     Learn    Listen   Speak    Standby  Active
Ethernet0/1
Configured     0        0        0        0        0        0        400
Learnt         0        0        0        0        0        0        0
```

Table 77 describes the significant fields shown in the display.

Table 77 show standby internal summary all Field Description

Field	Description
Disable	Number of HSRP groups in the disabled state. An HSRP group that is in the disabled state is not yet ready or able to participate in HSRP. All learned groups are always in the disabled state.
Init	Number of HSRP groups in the initial state. Locally configured groups with an interface that is down or groups without a specified interface IP address appear in the Init state.
Learn	Number of HSRP groups in the learned state. A group that is learned is neither in the active nor standby state, nor does it have enough information to attempt to claim the active or standby roles.

Table 77 show standby internal summary all Field Description

Field	Description
Listen	Number of HSRP groups in the listen state. A router in the listen state is neither in the active nor standby state, but if no messages are received from the active or standby router, it will start to speak.
Speak	Number of HSRP groups that are sending packets to claim the active or standby role.
Standby	Number of standby HSRP groups.
Active	Number of active HSRP groups.

Related Commands

Command	Description
show standby	Displays HSRP information.

show standby neighbors

To display information about Hot Standby Router Protocol (HSRP) peer routers on an interface, use the **show standby neighbors** command in privileged EXEC mode.

show standby neighbors [*interface-type interface-number*]

Syntax Description

interface-type interface-number	(Optional) Interface type and number for which output is displayed.

Command Default

HSRP neighbor information is displayed for all interfaces.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(11)T	This command was introduced.

Usage Guidelines

Use this command to display information about HSRP peer neighbors. This command displays the HSRP groups for which each neighbor is acting as the active and standby router and whether Bidirectional Forwarding Detection (BFD) peering is enabled for each neighbor.

Examples

The following example displays the HSRP neighbors on Ethernet interface 0/0. Neighbor 10.0.0.250 is active for group 2 and standby for groups 1 and 8, and is registered with BFD:

```
Router# show standby neighbors Ethernet0/0

HSRP neighbors on Ethernet0/0
  10.0.0.250
    Active groups: 2
    Standby groups: 1, 8
    BFD enabled
  10.0.0.251
    Active groups: 5, 8
    Standby groups: 2
    BFD enabled
  10.0.0.253
    No Active groups
    No Standby groups
    BFD enabled
```

The following example displays information for all HSRP neighbors:

```
Router# show standby neighbors

HSRP neighbors on FastEthernet2/0
  10.0.0.2
    No active groups
```

```
    Standby groups: 1
    BFD enabled

HSRP neighbors on FastEthernet2/0
  10.0.0.1
    Active groups: 1
    No standby groups
    BFD enabled
```

Table 78 describes the significant fields shown in the displays.

Table 78 show standby neighbors Field Descriptions

Field	Description
Active groups	HSRP groups for which an interface is acting as the active peer.
Standby groups	HSRP groups for which an interface is acting as the standby peer.
BFD enabled	Indicates that HSRP BFD peering is enabled.

Related Commands

Command	Description
bfd	Sets the baseline BFD session parameters on an interface.
debug standby events neighbor	Displays HSRP neighbor events.
show bfd neighbor	Displays a line-by-line listing of existing BFD adjacencies.
show standby	Displays information about HSRP.
standby bfd	Reenables HSRP BFD peering for a specified interface if it has been disabled.
standby ip	Activates HSRP.

show standby redirect

To display Internet Control Message Protocol (ICMP) redirect information on interfaces configured with the Hot Standby Router Protocol (HSRP), use the **show standby redirect** command in user EXEC or privileged EXEC mode.

show standby redirect [*ip-address* | *interface-type interface-number* [**active** | **passive** | **timers**]]

Syntax Description

ip-address	(Optional) Router IP address.
interface-type interface-number	(Optional) Interface type and number for which output is displayed.
active	(Optional) Active HSRP routers on the subnet.
passive	(Optional) Passive HSRP routers on the subnet.
timers	(Optional) HSRP ICMP redirect timers.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2	This command was introduced.
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.

Examples

The following is sample output from the **show standby direct** command with no optional keywords:

```
Router# show standby redirect

Interface          Redirects Unknown   Adv      Holddown
Ethernet0/2        enabled   enabled   30       180
Ethernet0/3        enabled   disabled  30       180

Active          Hits   Interface          Group Virtual IP      Virtual MAC
10.19.0.7       0      Ethernet0/2        3     10.19.0.13      0000.0c07.ac03
local           0      Ethernet0/3        1     10.20.0.11      0000.0c07.ac01
local           0      Ethernet0/3        2     10.20.0.12      0000.0c07.ac02

Passive         Hits   Interface          Expires in
10.19.0.6       0      Ethernet0/2        151.800
```

Table 79 describes the significant fields in the display.

Table 79 show standby redirects Field Descriptions

Field	Description
Interface	Interface type and number for the interface.
Redirects	Indicates whether redirects are enabled or disabled on the interface.
Unknown	Indicates whether redirects to an unknown router are enabled or disabled on the interface.
Adv	Number indicating the passive router advertisement interval in seconds.
Holddown	Number indicating the passive router hold interval in seconds.
Active	Active HSRP routers on the subnet.
Hits	Number of address translations required for ICMP information.
Interface	Interface type and number for the interface on the active router.
Group	Hot standby group number.
Virtual IP	Virtual IP address of the active HSRP router.
Virtual MAC	Virtual MAC address of the active HSRP router.
Passive	Passive HSRP routers on the subnet.
Hits	Number of address translations required for ICMP information.
Interface	Interface type and number for the interface on the passive router.
Expires in	Time in seconds for a virtual IP to expire and the holddown time to apply for filtering routes to the standby router.

The following is sample output from the **show standby redirect** command with a specific interface Ethernet 0/3:

```
Router# show standby redirect e0/3

Interface          Redirects Unknown   Adv      Holddown
Ethernet0/3        enabled   disabled  30       180

Active          Hits   Interface          Group Virtual IP      Virtual MAC
local           0      Ethernet0/3        1     10.20.0.11      0000.0c07.ac01
local           0      Ethernet0/3        2     10.20.0.12      0000.0c07.ac02
```

The following is sample output from the **show standby redirect** command showing all active routers on interface Ethernet 0/3:

```
Router# show standby redirect e0/3 active

Active          Hits   Interface          Group Virtual IP      Virtual MAC
local           0      Ethernet0/3        1     10.20.0.11      0000.0c07.ac01
local           0      Ethernet0/3        2     10.20.0.12      0000.0c07.ac02
```

The following is sample output from the **show standby redirect** *ip-address* command, where the IP address is the real IP address of the router:

```
Router# show standby redirect 10.19.0.7

Active          Hits   Interface          Group Virtual IP      Virtual MAC
10.19.0.7       0      Ethernet0/2        3     10.19.0.13      0000.0c07.ac03
```

Related Commands

Command	Description
show standby	Displays the HSRP information.
standby redirects	Enables ICMP redirect messages to be sent when HSRP is configured on an interface.

show tcp

To display the status of Transmission Control Protocol (TCP) connections when Cisco IOS or Cisco IOS Software Modularity images re running, use the **show tcp** command in user EXEC or privileged EXEC mode.

show tcp [*line-number*] [**tcb** *address*]

Syntax Description

line-number	(Optional) Absolute line number of the line for which you want to display Telnet connection status.
tcb	(Optional) Specifies the transmission control block (TCB) of the ECN-enabled connection that you want to display.
address	(Optional) TCB hexadecimal address. The valid range is from 0x0 to 0xFFFFFFFF.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.3(7)T	The **tcb** keyword and *address* argument were added.
12.4(2)T	The output is enhanced to display status and option flags.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB. The display output was modified to include the SSO capability flag and to indicate the reason that the SSO property failed on a TCP connection.
12.2(18)SXF4	This command was integrated into Cisco IOS Release 12.2(18)SXF4 to support Software Modularity images.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
15.0(1)S	This command was integrated into Cisco IOS Release 15.0(1)S.

Examples

Example output varies between Cisco IOS software images and Cisco IOS Software Modularity software images. To view the appropriate output, choose one of the following sections:

- Cisco IOS Software
- Cisco IOS Software Modularity

Cisco IOS Software

The following is sample output that displays the status and option flags:

```
Router# show tcp
.
```

```
.
.
Status Flags: passive open, active open, retransmission timeout, app closed

Option Flags: vrf id set

IP Precedence value: 6
.
.
.
SRTT: 273 ms, RTTO: 490 ms, RTV: 217 ms, KRTT: 0 ms
minRTT: 0 ms, maxRTT: 300 ms, ACK hold: 200 ms
 Status Flags: active open, retransmission timeout
 Option Flags: vrf id set
 IP Precedence value: 6
```

Table 80 contains the types of flags, all possible command output enhancements, and descriptions. See Table 81 through Table 85 for descriptions of the other fields in the sample output.

Table 80 Type of Flags, All Possible Output Enhancements, and Descriptions

Type of Flag	Output Enhancement	Description
Status		
	Passive open	Set if passive open was done.
	Active open	Set if active open was done.
	Retransmission timeout	Set if retransmission timeout aborts.
	Net output pending	Output to network is pending.
	Wait for FIN	Wait for FIN to be acknowledged.
	App closed	Application has closed the TCB.
	Sync listen	Listen and establish a handshake.
	Gen tcbs	TCBs are generated as passive listener.
	Path mtu discovery	Path maximum transmission unit (MTU) discovery is enabled.
	Half closed	TCB is half closed.
	Timestamp echo present	Echo segment is present.
	Stopped reading	Read half is shut down.
Option		
	VRF id set	Set if connection has a VRF table identifier.
	Idle user	Set if the connection is idle.
	Sending urgent data	Set if urgent data is being sent.
	Keepalive running	Set if keepalive timer is running, or if an Explicit Congestion Notification (ECN)-enabled connection, or a TCB address bind is in effect.
	Nagle	Set if performing the Nagle algorithm.
	Always push	All packets and full-sized segments (internal use) are pushed.
	Path mtu capable	Path MTU discovery is configured.

Table 80 Type of Flags, All Possible Output Enhancements, and Descriptions (continued)

Type of Flag	Output Enhancement	Description
	MD5	Message digest 5 (MD) messages are generated.
	Urgent data removed	Urgent data is removed.
	SACK option permitted	Peer permits a selective acknowledgment (SACK) option.
	Timestamp option used	Time-stamp option is in use.
	Reuse local address	Local address can be reused.
	Non-blocking reads	Nonblocking TCP is read.
	Non-blocking writes	Nonblocking TCP is written.
	No delayed ACK	No TCP delayed acknowledgment is sent.
	Win-scale	Peer permits window scaling.
	Linger option set	The linger-on close option is set.

The following is sample output from the **show tcp** command:

```
Router# show tcp

tty0, connection 1 to host cider
Connection state is ESTAB, I/O status: 1, unread input bytes: 0
Local host: 172.31.232.17, Local port: 11184
Foreign host: 172.31.1.137, Foreign port: 23

Enqueued packets for retransmit: 0, input: 0, saved: 0

Event Timers (current time is 67341276):
Timer:       Retrans   TimeWait    AckHold    SendWnd  KeepAlive
Starts:           30          0         32          0          0
Wakeups:           1          0         14          0          0
Next:              0          0          0          0          0

iss:   67317172  snduna:   67317228  sndnxt:   67317228     sndwnd:   4096
irs: 1064896000  rcvnxt: 1064897597  rcvwnd:       2144  delrcvwnd:      0

SRTT: 317 ms, RTTO: 900 ms, RTV: 133 ms, KRTT: 0 ms
minRTT: 4 ms, maxRTT: 300 ms, ACK hold: 300 ms
Flags: higher precedence, idle user, retransmission timeout
Datagrams (max data segment is 536 bytes):
Rcvd: 41 (out of order: 0), with data: 34, total data bytes: 1596
Sent: 57 (retransmit: 1), with data: 35, total data bytes: 55
```

Table 81 describes the first five lines of output shown in the above display.

Table 81 show tcp Field Descriptions—First Section of Output

Field	Description
tty	Identifying number of the line.
connection	Identifying number of the TCP connection.
to host	Name of the remote host to which the connection has been made.

Table 81 show tcp Field Descriptions—First Section of Output (continued)

Field	Description
Connection state is	A connection progresses through a series of states during its lifetime. The states that follow are shown in the order in which a connection progresses through them. • LISTEN—Waiting for a connection request from any remote TCP and port. • SYNSENT—Waiting for a matching connection request after having sent a connection request. • SYNRCVD—Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTAB—Indicates an open connection; data received can be delivered to the user. This is the normal state for the data transfer phase of the connection. • FINWAIT1—Waiting for a connection termination request from the remote TCP or an acknowledgment of the connection termination request previously sent. • FINWAIT2—Waiting for a connection termination request from the remote TCP host. • CLOSEWAIT—Waiting for a connection termination request from the local user. • CLOSING—Waiting for a connection termination request acknowledgment from the remote TCP host. • LASTACK—Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP host. • TIMEWAIT—Waiting for enough time to pass to be sure that the remote TCP host has received the acknowledgment of its connection termination request. • CLOSED—Indicates no connection state at all. • For more information about TCBs, see RFC 793, *Transmission Control Protocol Functional Specification.*
I/O status	Number that describes the current internal status of the connection.
unread input bytes	Number of bytes that the lower-level TCP processes have read but that the higher-level TCP processes have not yet processed.
Local host	IP address of the network server.
Local port	Local port number, as derived from the following equation: *line-number* + (512 * *random-number*). (The line number uses the lower nine bits; the other bits are random.)
Foreign host	IP address of the remote host to which the TCP connection has been made.
Foreign port	Destination port for the remote host.

Table 81 show tcp Field Descriptions—First Section of Output (continued)

Field	Description
Enqueued packets for retransmit	Number of packets that are waiting on the retransmit queue. These are packets on this TCP connection that have been sent but that have not yet been acknowledged by the remote TCP host.
input	Number of packets that are waiting on the input queue to be read by the user.
saved	Number of received out-of-order packets that are waiting for all packets in the datagram to be received before they enter the input queue. For example, if packets 1, 2, 4, 5, and 6 have been received, packets 1 and 2 would enter the input queue, and packets 4, 5, and 6 would enter the saved queue.

Note Use the **show tcp brief** command to display information about the ECN-enabled connections.

The following line of output shows the current elapsed time according to the system clock of the local host. The time shown is the number of milliseconds since the system started.

```
Event Timers (current time is 67341276):
```

The following lines of output display the number of times that various local TCP timeout values were reached during this connection. In this example, the local host re-sent data 30 times because it received no response from the remote host, and it sent an acknowledgment many more times because there was no data.

```
Timer:        Retrans    TimeWait     AckHold     SendWnd     Keepalive     GiveUp     PmtuAger
Starts:            30           0          32           0             0          0            0
Wakeups:            1           0          14           0             0          0            0
Next:               0           0           0           0             0          0            0
```

Table 82 describes the fields in the above lines of output.

Table 82 show tcp Field Descriptions—Second Section of Output

Field	Description
Timer	Names of the timer types in the output.
Starts	Number of times that the timer has been triggered during this connection.
Wakeups	Number of keepalives sent without receiving any response. (This field is reset to zero when a response is received.)
Next	System clock setting that triggers a timer for the next time an event (for example, TimeWait, AckHold, SendWnd, etc.) occurs.
Retrans	Retransmission timer is used to time TCP packets that have not been acknowledged and that are waiting for retransmission.
TimeWait	A time-wait timer ensures that the remote system receives a request to disconnect a session.
AckHold	An acknowledgment timer delays the sending of acknowledgments to the remote TCP in an attempt to reduce network use.

Table 82 show tcp Field Descriptions—Second Section of Output (continued)

Field	Description
SendWnd	A send-window timer ensures that there is no closed window due to a lost TCP acknowledgment.
KeepAlive	A keepalive timer controls the transmission of test messages to the remote device to ensure that the link has not been broken without the knowledge of the local device.
GiveUp	A give-up timer determines the amount of time a local host will wait for an acknowledgment (or other appropriate reply) of a transmitted message after the the maximum number of retransmissions has been reached. If the timer expires, the local host gives up retransmission attempts and declares the connection dead.
PmtuAger	A path MTU (PMTU) age timer is an interval that displays how often TCP estimates the PMTU with a larger maximum segment size (MSS). When the age timer is used, TCP path MTU becomes a dynamic process. If the MSS is smaller than what the peer connection can manage, a larger MSS is tried every time the age timer expires. The discovery process stops when the send MSS is as large as the peer negotiated or the timer has been manually disabled by being set to infinite.

The following lines of output display the sequence numbers that TCP uses to ensure sequenced, reliable transport of data. The local host and remote host each use these sequence numbers for flow control and to acknowledge receipt of datagrams.

```
iss:   67317172  snduna:   67317228  sndnxt:   67317228     sndwnd:   4096
irs: 1064896000  rcvnxt: 1064897597  rcvwnd:       2144  delrcvwnd:      0
```

Table 83 describes the fields shown in the display above.

Table 83 show tcp Field Descriptions—Sequence Numbers

Field	Description
iss	Initial send sequence number.
snduna	Last send sequence number that the local host sent but for which it has not received an acknowledgment.
sndnxt	Sequence number that the local host will send next.
sndwnd	TCP window size of the remote host.
irs	Initial receive sequence number.
rcvnxt	Last receive sequence number that the local host has acknowledged.
rcvwnd	TCP window size of the local host.
delrcvwnd	Delayed receive window—data that the local host has read from the connection but has not yet subtracted from the receive window that the host has advertised to the remote host. The value in this field gradually increases until it is larger than a full-sized packet, at which point it is applied to the rcvwnd field.

The following lines of output display values that the local host uses to keep track of transmission times so that TCP can adjust to the network that it is using.

```
SRTT: 317 ms, RTTO: 900 ms, RTV: 133 ms, KRTT: 0 ms
minRTT: 4 ms, maxRTT: 300 ms, ACK hold: 300 ms
Flags: higher precedence, idle user, retransmission timeout
```

Table 84 describes the significant fields shown in the output above.

Table 84 show tcp Field Descriptions—Line Beginning with "SRTT"

Field	Description
SRTT	A calculated smoothed round-trip timeout.
RTTO	Round-trip timeout.
RTV	Variance of the round-trip time.
KRTT	New round-trip timeout (using the Karn algorithm). This field separately tracks the round-trip time of packets that have been re-sent.
minRTT	Smallest recorded round-trip timeout (hard-wire value used for calculation).
maxRTT	Largest recorded round-trip timeout.
ACK hold	Time for which the local host will delay an acknowledgment in order to add data to it.
Flags	Properties of the connection.

Note For more information on the above fields, see *Round Trip Time Estimation*, P. Karn and C. Partridge, ACM SIGCOMM-87, August 1987.

The following lines of output display the number of datagrams that are transported with data.

```
Datagrams (max data segment is 536 bytes):
Rcvd: 41 (out of order: 0), with data: 34, total data bytes: 1596
Sent: 57 (retransmit: 1), with data: 35, total data bytes: 55
```

Table 85 describes the significant fields shown in the last lines of the **show tcp** command output.

Table 85 show tcp Field Descriptions—Last Section of Output

Field	Description
Rcvd	Number of datagrams that the local host has received during this connection (and the number of these datagrams that were out of order).
with data	Number of these datagrams that contained data.
total data bytes	Total number of bytes of data in these datagrams.
Sent	Number of datagrams that the local host sent during this connection (and the number of these datagrams that needed to be re-sent).
with data	Number of these datagrams that contained data.
total data bytes	Total number of bytes of data in these datagrams.

The following is sample output from the **show tcp tcb** command that displays detailed information by hexadecimal address about an ECN-enabled connection:

```
Router# show tcp tcb 0x62CD2BB8

Connection state is LISTEN, I/O status: 1, unread input bytes: 0
Connection is ECN enabled
Local host: 10.10.10.1, Local port: 179
Foreign host: 10.10.10.2, Foreign port: 12000

Enqueued packets for retransmit: 0, input: 0 mis-ordered: 0 (0 bytes)

Event Timers (current time is 0x4F31940):
Timer          Starts    Wakeups            Next
Retrans             0          0             0x0
TimeWait            0          0             0x0
AckHold             0          0             0x0
SendWnd             0          0             0x0
KeepAlive           0          0             0x0
GiveUp              0          0             0x0
PmtuAger            0          0             0x0
DeadWait            0          0             0x0

iss:          0 snduna:          0 sndnxt:          0     sndwnd:      0
irs:          0 rcvnxt:          0 rcvwnd:       4128  delrcvwnd:      0

SRTT: 0 ms, RTTO: 2000 ms, RTV: 2000 ms, KRTT: 0 ms
minRTT: 60000 ms, maxRTT: 0 ms, ACK hold: 200 ms
Flags: passive open, higher precedence, retransmission timeout

TCB is waiting for TCP Process (67)

Datagrams (max data segment is 516 bytes):
Rcvd: 6 (out of order: 0), with data: 0, total data bytes: 0
Sent: 0 (retransmit: 0, fastretransmit: 0), with data: 0, total data
bytes: 0
```

Cisco IOS Software Modularity

The following is sample output from the **show tcp tcb** command from a Software Modularity image:

```
Router# show tcp tcb 0x1059C10

Connection state is ESTAB, I/O status: 0, unread input bytes: 0
Local host: 10.4.2.32, Local port: 23
Foreign host: 10.4.2.39, Foreign port: 11000
VRF table id is: 0

Current send queue size: 0 (max 65536)
Current receive queue size: 0 (max 32768)  mis-ordered: 0 bytes

Event Timers (current time is 0xB9ACB9):
Timer          Starts    Wakeups            Next(msec)
Retrans             6          0                 0
SendWnd             0          0                 0
TimeWait            0          0                 0
AckHold             8          4                 0
KeepAlive          11          0           7199992
PmtuAger            0          0                 0
GiveUp              0          0                 0
Throttle            0          0                 0
```

```
irs:    1633857851  rcvnxt: 1633857890  rcvadv: 1633890620  rcvwnd:  32730
iss:    4231531315  snduna: 4231531392  sndnxt: 4231531392  sndwnd:   4052
sndmax: 4231531392  sndcwnd:     10220

SRTT: 84 ms,  RTTO: 650 ms,  RTV: 69 ms,  KRTT: 0 ms
minRTT: 0 ms,  maxRTT: 200 ms, ACK hold: 200 ms

Keepalive time: 7200 sec, SYN wait time: 75 sec
Giveup time: 0 ms, Retransmission retries: 0, Retransmit forever: FALSE

State flags: none

Feature flags: Nagle

Request flags: none
Window scales: rcv 0, snd 0, request rcv 0, request snd 0
Timestamp option: recent 0, recent age 0, last ACK sent          0

Datagrams (in bytes): MSS 1460, peer MSS 1460, min MSS 1460, max MSS 1460
Rcvd: 14 (out of order: 0), with data: 10, total data bytes: 38
Sent: 10 (retransmit: 0, fastretransmit: 0), with data: 5, total data bytes: 76

Header prediction hit rate: 72 %

Socket states: SS_ISCONNECTED, SS_PRIV

Read buffer flags: SB_WAIT, SB_SEL, SB_DEL_WAKEUP
Read notifications: 4

Write buffer flags: SB_DEL_WAKEUP
Write notifications: 0
Socket status: 0
```

Related Commands

Command	Description
show tcp brief	Displays a concise description of TCP connection endpoints.

show tcp brief

To display a concise description of TCP connection endpoints, use the **show tcp brief** command in user EXEC or privileged EXEC mode.

show tcp brief [**all** | **numeric**]

Syntax Description

all	(Optional) Displays status for all endpoints in Domain Name System (DNS) hostname format. Without this keyword, endpoints in the LISTEN state are not shown.
numeric	(Optional) Displays status for all endpoints in IP format.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.2	This command was introduced.
12.4(2)T	The **numeric** keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
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.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

Usage Guidelines

If the **ip domain lookup** command is enabled on the router, and you execute the **show tcp brief** command, the response time of the router to display the output is very slow. To get a faster response, you should disable the **ip domain lookup** command.

Examples

The following is sample output from the **show tcp brief** command while a user is connected to the system by using Telnet:

```
Router# show tcp brief

TCB       Local Address           Foreign Address        (state)
609789AC  Router.cisco.com.23     cider.cisco.com.3733   ESTAB
```

The following example shows the IP activity by using the **numeric** keyword to display the addresses in IP format:

```
Router# show tcp brief numeric

TCB           Local Address          Foreign Address     (state)
6523A4FC      10.1.25.3.11000        10.1.25.3.23         ESTAB
65239A84      10.1.25.3.23           10.1.25.3.11000      ESTAB
```

```
653FCBBC      *.1723 *.* LISTEN
```

Table 86 describes the significant fields shown in the display.

Table 86 show tcp brief Field Descriptions

Field	Description
TCB	An internal identifier for the endpoint.
Local Address	The local IP address and port.
Foreign Address	The foreign IP address and port (at the opposite end of the connection).
(state)	The state of the connection. States are described in the syntax description of the **show tcp** command.

Related Commands

Command	Description
ip domain lookup	Enables the IP DNS-based hostname-to-address translation.
show tcp	Displays the status of TCP connections.

show tcp statistics

To display TCP statistics, use the **show tcp statistics** command in user EXEC or privileged EXEC mode.

show tcp statistics

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.3	This command was introduced.
12.2(18)SXF4	This command was integrated into Cisco IOS Release 12.2(18)SXF4, and the output was modified to display Software Modularity information.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Cisco IOS Software Modularity

There are three transport protocols used in Software Modularity: TCP, UDP, and raw IP. The transport protocol statistics are generally counters, though some are averages and time stamps. Use the **show tcp statistics** command to display the TCP statistics and use the **clear tcp statistics** command to reset the TCP statistics. Many of the statistics are relevant to all of the transport protocols. To view the other transport protocol statistics used in Software Modularity, see the **show raw statistics** and **show udp statistics** commands.

Examples

Example output varies between Cisco IOS software images and Cisco IOS Software Modularity software images. To view the appropriate output, choose one of the following sections:

- Cisco IOS Software
- Cisco IOS Software Modularity

Cisco IOS Software

The following is sample output from the **show tcp statistics** command:

```
Router# show tcp statistics

Rcvd: 210 Total, 0 no port
      0 checksum error, 0 bad offset, 0 too short
      132 packets (26640 bytes) in sequence
      5 dup packets (502 bytes)
      0 partially dup packets (0 bytes)
      0 out-of-order packets (0 bytes)
      0 packets (0 bytes) with data after window
      0 packets after close
      0 window probe packets, 0 window update packets
      0 dup ack packets, 0 ack packets with unsend data
```

```
      69 ack packets (3044 bytes)
Sent: 175 Total, 0 urgent packets
      16 control packets (including 1 retransmitted)
      69 data packets (3029 bytes)
      0 data packets (0 bytes) retransmitted
      73 ack only packets (49 delayed)
      0 window probe packets, 17 window update packets
7 Connections initiated, 1 connections accepted, 8 connections established
8 Connections closed (including 0 dropped, 0 embryonic dropped)
1 Total rxmt timeout, 0 connections dropped in rxmt timeout
0 Keepalive timeout, 0 keepalive probe, 0 Connections dropped in keepalive
```

Table 87 describes the significant fields shown in the display.

Table 87 show tcp statistics Field Descriptions

Field	Description
Rcvd:	Statistics in this section refer to packets received by the router.
Total	Total number of TCP packets received.
no port	Number of packets received with no port.
checksum error	Number of packets received with checksum error.
bad offset	Number of packets received with bad offset to data.
too short	Number of packets received that were too short.
packets in sequence	Number of data packets received in sequence.
dup packets	Number of duplicate packets received.
partially dup packets	Number of packets received with partially duplicated data.
out-of-order packets	Number of packets received out of order.
packets with data after window	Number of packets received with data that exceeded the window size of the receiver.
packets after close	Number of packets received after the connection was closed.
window probe packets	Number of window probe packets received.
window update packets	Number of window update packets received.
dup ack packets	Number of duplicate acknowledgment packets received.
ack packets with unsend data	Number of acknowledgment packets received with unsent data.
ack packets	Number of acknowledgment packets received.
Sent:	Statistics in this section refer to packets sent by the router.
Total	Total number of TCP packets sent.
urgent packets	Number of urgent packets sent.
control packets	Number of control packets (SYN, FIN, or RST) sent.
data packets	Number of data packets sent.
data packets retransmitted	Number of data packets re-sent.
ack only packets	Number of packets sent that are acknowledgments only.
window probe packets	Number of window probe packets sent.
window update packets	Number of window update packets sent.
Connections initiated	Number of connections initiated.

Table 87 show tcp statistics Field Descriptions (continued)

Field	Description
connections accepted	Number of connections accepted.
connections established	Number of connections established.
Connections closed	Number of connections closed.
Total rxmt timeout	Number of times that the router tried to resend, but timed out.
connections dropped in rxmit timeout	Number of connections dropped in the resend timeout.
Keepalive timeout	Number of keepalive packets in the timeout.
keepalive probe	Number of keepalive probes.
Connections dropped in keepalive	Number of connections dropped in the keepalive.

Cisco IOS Software Modularity

The following is sample output from the **show tcp statistics** command when a Software Modularity image is running under Cisco IOS Release 12.2(18)SXF4:

```
Router# show tcp statistics

Current packet level is 0 (Clear)
Rcvd: 0 Total, 0 no port
      0 checksum error, 0 bad offset, 0 too short
      0 packets (0 bytes) in sequence
      0 dup packets (0 bytes)
      0 partially dup packets (0 bytes)
      0 out-of-order packets (0 bytes)
      0 packets (0 bytes) with data after window
      0 packets after close
      0 window probe packets, 0 window update packets
      0 dup ack packets, 0 ack packets for unsent data
      0 ack packets (0 bytes)
      0 packets dropped due to PAWS
      0 packets dropped due to receive packet limits
      0 packets dropped due to receive byte limits
Sent: 0 Total, 0 urgent packets
      0 control packets (including 0 retransmitted)
      0 data packets (0 bytes)
      0 data packets (0 bytes) retransmitted
      0 data packets (0 bytes) fastretransmitted
      0 Sack retransmitted bytes, 0 Sack skipped bytes
      0 ack only packets (0 delayed)
      0 window probe packets, 0 window update packets
0 Connections initiated, 0 connections accepted, 0 connections established
0 Connections closed (including 0 dropped, 0 embryonic dropped)
0 Total rxmt timeout, 0 connections dropped in rxmt timeout
0 RTO, 0 KRTO (milliseconds)
0 VJ SRTT, 0 variance (milliseconds)
0 min RTT, 0 max RTT (milliseconds)
0 Keepalive timeout, 0 keepalive probe, 0 Connections dropped in keepalive
0 increase MSS, 0 decrease MSS
15 Open sockets
0 Timer interrupts
0 Packets used by socket I/O
0 Packets used by TCP reassembly
0 Packets recovered after starvation
```

```
0 Packet memory warnings
0 Packet memory alarms
0 Packet allocation errors
0 Packet to octet switches due to send flow control
0 Packet to octet switches due to partial ACKs
0 Packet to octet switches due to inadequate resources
0 Output function calls
0 Truncated write I/O vectors
0 Transmission pulse errors
0 Packet punts from IP 0 Packet punts to IP
0 Packet punts from application
0 Packet punts to application
```

Table 88 describes the significant fields shown in the display that are different from Table 87 on page 514.

Table 88 show tcp statistics (Software Modularity) Field Descriptions

Field	Description
Current packet level	A packet level of 0 (Clear) shows that less than 67 percent of the packet supply is in use. A packet level of 1 (Warn) shows that at least 67 percent of the packet supply is in use, and a packet level of 2 (Alarm) shows that at least 90 percent of the packet supply is in use.
packets dropped due to PAWS	Number of packets dropped because of sequence number wrap-around on high speed, low latency networks.
packets dropped due to receive packet limits	Number of packets dropped after the receive packet limit is exceeded.
packets dropped due to receive byte limits	Number of packets dropped after the receive byte limit is exceeded.
data packets fastretransmitted	Number of packets retransmitted before timer expiry because of excessive duplicate ACKs.
Sack retransmitted bytes, Sack skipped bytes	Number of retransmitted bytes due to selective acknowledgement.
RTO, KRTO	RTO is the current retransmission timeout, as calculated by Van Jacobson's algorithm. KRTO is the exponentially backed off retransmission timeout.
VJ SRTT, variance	Scaled mean and variance round trip times used by Van Jacobson's algorithm.
min RTT, max RTT	Minimum and maximum round-trip time (RTT), in milliseconds.
increase MSS, decrease MSS	Number of times that the maximum segment size (MSS) changed because of path MTU discovery.
Open sockets	Number of open sockets.
Timer interrupts	Number of packets received with timer interrupts.
Packets used by socket I/O	Number of packets enqueued on socket send buffers, receive buffers, or reassembly queues. In summary, the number of packets currently being held by the transport protocol.
Packets used by TCP reassembly	Number of out of order segments that cannot be passed to application because of missing holes in the data stream. These holes will be filled when the peer retransmits.

Table 88 show tcp statistics (Software Modularity) Field Descriptions (continued)

Field	Description
Packets recovered after starvation	Number of packets released by the transport protocol due to memory warnings or memory alarms.
Packet memory warnings	Number of packets with memory warnings.
Packet memory alarms	Number of packets with memory alarms.
Packet allocation errors	Number of packets with allocation errors.
Packet to octet switches due to send flow control	Number of times that TCP switched from packet I/O to octet buffer I/O because of inadequate send window.
Packet to octet switches due to partial ACKs	Number of times that TCP switched from packet I/O to octet buffer I/O because of partially acknowledged data.
Packet to octet switches due to inadequate resources	Number of times that TCP switched from packet I/O to octet buffer I/O because of inadequate packet resources.
Output function calls	Number of times that the TCP output engine was invoked.
Truncated write I/O vectors	Number of truncated segments due to inadequate write buffers.
Transmission pulse errors	Number of transmission signaling mechanism errors.
Packet punts from IP, Packet punts to IP	Number of batches of packets moved from and to the IP layer.
Packet punts from application, Packet punts to application	Number of batches of packets moved from and to the application layers.

Related Commands

Command	Description
clear tcp statistics	Clears TCP statistics.
show raw statistics	Displays raw IP transport protocol statistics.
show udp statistics	Displays UDP transport protocol statistics.

show tech-support

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

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

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

Syntax Description

page	(Optional) Causes the output to display a page of information at a time.
password	(Optional) Leaves passwords and other security information in the output.
cef	(Optional) Displays **show** command output specific to Cisco Express Forwarding.
ipc	(Optional) Displays **show** command output specific to Inter-Process Communication (IPC).
ipmulticast	(Optional) Displays **show** command output related to the IP Multicast configuration, including Protocol Independent Multicast (PIM) information, Internet Group Management Protocol (IGMP) information, and Distance Vector Multicast Routing Protocol (DVMRP) information.
vrf *vrf-name*	(Optional) Specifies a multicast Virtual Private Network (VPN) routing and forwarding instance (VRF).
isis	(Optional) Displays **show** command output specific to Connectionless Network Service (CLNS) and Intermediate System-to-Intermediate System Protocol (IS-IS).
mpls	(Optional) Displays **show** command output specific to Multiprotocol Label Switching (MPLS) forwarding and applications.
ospf [*process-id* | **detail**]	(Optional) Displays **show** command output specific to Open Shortest Path First Protocol (OSPF) networking.
rsvp	(Optional) Displays **show** command output specific to Resource Reservation Protocol (RSVP) networking.
voice	(Optional) Displays **show** command output specific to voice networking.
wccp	(Optional) Displays **show** command output specific to Web Cache Communication Protocol (WCCP).
platform	(Optional) Displays platform-specific **show** command output.

Defaults

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.2	This command was introduced.
11.3(7), 11.2(16)	The output for this command was expanded to show additional information for **boot**, **bootflash**, **context**, and **traffic** for all enabled protocols.
12.0	The output for this command was expanded to show additional information for **boot**, **bootflash**, **context**, and **traffic** for all enabled protocols. The **cef**, **ipmulticast**, **isis**, **mlps**, and **ospf** keywords were added to this command.
12.2(13)T	Support for AppleTalk EIGRP, Apollo Domain, Banyan VINES, Novell Link-State Protocol, and XNS was removed from Cisco IOS software.
12.2(14)SX	Support for this command was added for the Supervisor Engine 720.
12.3(4)T	The output of this command was expanded to include the output from the **show inventory** command.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(30)S	The **show tech-support ipmulticast** command was changed as follows: • Support for bidirectional PIM and Multicast VPN (MVPN) was added. • The **vrf** *vrf-name* option was added. The output of the **show tech-support ipmulticast** command (without the **vrf** *vrf-name* keyword and argument) was changed to include the output from these commands: • **show ip pim int df** • **show ip pim mdt** • **show ip pim mdt bgp** • **show ip pim rp metric**
12.3(16)	This command was integrated into Cisco IOS Release 12.3(16).
12.2(18)SXF	The **show tech-support ipmulticast** command was changed as follows: • Support for bidirectional PIM and MVPN was added. • The **vrf** *vrf-name* option was added. The output of the **show tech-support ipmulticast vrf** command was changed to include the output from these commands: • **show mls ip multicast rp-mapping gm-cache** • **show mmls gc process** • **show mmls msc rpdf-cache** The output of the **show tech-support ipmulticast** command (without the **vrf** *vrf-name* keyword and argument) was changed to include the output from these commands: • **show ip pim int df** • **show ip pim mdt** • **show ip pim mdt bgp** • **show ip pim rp metric** Support to interrupt and terminate the **show tech-support** output was added.

Release	Modification
12.4(4)T	This command was integrated into Cisco IOS Release 12.4(4)T.
12.4(7)	This command was integrated into Cisco IOS Release 12.4(7).
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(9)T	The output of this command was expanded to include partial **show dmvpn details** command output.
15.0(1)M	This command was modified. The **wccp** and **voice** keywords were added.
12.2(33)SRE	This command was modified. The **wccp** keyword was added.
Cisco IOS XE Release 2.5	This command was modified. The **wccp** keyword was added.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

When the **show tech-support** command is entered on a virtual switch (VS), the output displays the output of the **show module** command and the **show power** command for both the active and standby switches.

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

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

- **show adjacency summary**
- **show cef drop**
- **show cef events**
- **show cef interface**

- **show cef not-cef-switched**
- **show cef timers**
- **show interfaces stats**
- **show ip cef events summary**
- **show ip cef inconsistency records detail**
- **show ip cef summary**

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

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

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

- **show ip wccp** *service-number*
- **show ip wccp interfaces cef**

Examples

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

Related Commands

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

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

Command	Description
show running-config	Displays the current configuration of your routing device.
show spanning-tree	Displays information about the spanning tree state.
show stacks	Displays the stack usage of processes and interrupt routines.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.
show vlan	Displays VLAN information.

show time-range ipc

To display the statistics about the time-range interprocess communications (IPC) messages between the Route Processor and line card, use the **show time-range ipc** command in user EXEC or privileged EXEC mode.

show time-range ipc

Syntax Description

This command has no argument or keywords.

Defaults

No default behavior or values.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(2)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

The **debug time-range ipc** EXEC command must be enabled for the **show time-range ipc** command to display the time-range IPC message statistics.

Examples

The following is sample output from the **show time-range ipc** command:

```
Router# show time-range ipc

RP Time range Updates Sent  :3
RP Time range Deletes Sent  :2
```

Table 89 describes the significant fields shown in the display.

Table 89 show time-range ipc Field Descriptions

Field	Description
RP Time range Updates Sent	Number of time-range updates sent by the Route Processor.
RP Time range Deletes Sent	Number of time-range deletes sent by the Route Processor.

Related Commands

Command	Description
clear time-range ipc	Clears the time-range IPC message statistics and counters between the Route Processor and the line card.
debug time-range ipc	Enables debugging output for monitoring the time-range IPC messages between the Route Processor and the line card.

show track

To display information about objects that are tracked by the tracking process, use the **show track** command in privileged EXEC mode.

show track [*object-number* [**brief**] | **interface** [**brief**] | **ip route** [**brief**] | **resolution** | **timers**]

Syntax Description

object-number	(Optional) Object number that represents the object to be tracked. The range is from 1 to 1000.
brief	(Optional) Displays a single line of information related to the preceding argument or keyword.
interface	(Optional) Displays tracked interface objects.
ip route	(Optional) Displays tracked IP-route objects.
resolution	(Optional) Displays resolution of tracked parameters.
timers	(Optional) Displays polling interval timers.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(15)T	This command was introduced.
12.3(8)T	The output was enhanced to include the track-list objects.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.4(2)T	The output was enhanced to display stub objects.
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.
12.4(9)T	This command was enhanced to display information about the status of an interface when carrier-delay detection has been enabled.
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 integrated into Cisco IOS XE Release 2.1.
12.4(20)T	The output was enhanced to display IP SLAs information.
15.1(3)T	This command was modified. The valid range of the *object-number* argument increased to 1000.
15.1(1)S	This command was modified. The valid range for the *object-number* argument increased to 1000.

Usage Guidelines

Use this command to display information about objects that are tracked by the tracking process. When no arguments or keywords are specified, information for all objects is displayed.

As of Cisco IOS Release 15.1(3)T, a maximum of 1000 objects can be tracked. Although 1000 tracked objects can be configured, each tracked object uses CPU resources. The amount of available CPU resources on a router is dependent upon variables such as traffic load and how other protocols are configured and run. The ability to use 1000 tracked objects is dependent upon the available CPU. Testing should be conducted on site to ensure that the service works under the specific site traffic conditions.

Examples

The following example shows information about the state of IP routing on the interface that is being tracked:

```
Router# show track 1

Track 1
 Interface Ethernet0/2 ip routing
 IP routing is Down (no IP addr)
  1 change, last change 00:01:08
 Tracked by:
  HSRP Ethernet0/3 1
```

The following example shows information about the line-protocol state on the interface that is being tracked:

```
Router# show track 1

Track 1
 Interface Ethernet0/1 line-protocol
 Line protocol is Up
  1 change, last change 00:00:05
 Tracked by:
  HSRP Ethernet0/3 1
```

The following example shows information about the reachability of a route that is being tracked:

```
Router# show track 1

Track 1
 IP route 10.16.0.0 255.255.0.0 reachability
 Reachability is Up (RIP)
  1 change, last change 00:02:04
 First-hop interface is Ethernet0/1
 Tracked by:
  HSRP Ethernet0/3 1
```

The following example shows information about the threshold metric of a route that is being tracked:

```
Router# show track 1

Track 1
 IP route 10.16.0.0 255.255.0.0 metric threshold
 Metric threshold is Up (RIP/6/102)
  1 change, last change 00:00:08
 Metric threshold down 255 up 254
 First-hop interface is Ethernet0/1
 Tracked by:
  HSRP Ethernet0/3 1
```

The following example shows the object type, the interval in which it is polled, and the time until the next poll:

```
Router# show track timers

 Object type   Poll Interval  Time to next poll
 interface     1              expired
```

```
 ip route      30             29.364
```

The following example shows the state of the IP SLAs tracking:

```
Router# show track 50

Track 50
  IP SLA 400 state
  State is Up
    1 change, last change 00:00:23
  Delay up 60 secs, down 30 secs
  Latest operation return code: Unknown
```

The following example shows whether a route is reachable:

```
Router# show track 3

Track 3
   IP SLA 1 reachability
   Reachability is Up
     1 change, last change 00:00:47
   Latest operation return code: over threshold
   Latest RTT (millisecs) 4
   Tracked by:
     HSRP Ethernet0/1 3
```

Table 90 describes the significant fields shown in the displays.

Table 90 show track Field Descriptions

Field	Description
Track	Object number that is being tracked.
Interface Ethernet0/2 ip routing	Interface type, interface number, and object that is being tracked.
IP routing is	State value of the object, displayed as Up or Down. If the object is down, the reason is displayed.
1 change, last change	Number of times that the state of a tracked object has changed and the time (in *hh:mm:ss*) since the last change.
Tracked by	Client process that is tracking the object.
First-hop interface is	Displays the first-hop interface.
Object type	Object type that is being tracked.
Poll Interval	Interval (in seconds) in which the tracking process polls the object.
Time to next poll	Period of time, in seconds, until the next polling of the object.

The following output shows that there are two objects. Object 1 has been configured with a weight of 10 “down,” and object 2 has been configured with a weight of 20 “up.” Object 1 is down (expressed as 0/10) and object 2 is up. The total weight of the tracked list is 20 with a maximum of 30 (expressed as 20/30). The “up” threshold is 20, so the list is “up.”

```
Router# show track

 Track 6
 List threshold weight
  Threshold weight is Up (20/30)
   1 change, last change 00:00:08
```

```
   object 1 Down (0/10)
   object 2 weight 20 Up (20/30)
  Threshold weight down 10 up 20
   Tracked by:
    HSRP Ethernet0/3 1
```

The following example shows information about the Boolean configuration:

```
Router# show track

 Track 3
 List boolean and
 Boolean AND is Down
  1 change, last change 00:00:08
   object 1 not Up
   object 2 Down
 Tracked by:
  HSRP Ethernet0/3 1
```

Table 91 describes the significant fields shown in the displays.

Table 91 show track Field Descriptions

Field	Description
Track	Object number that is being tracked.
Boolean AND is Down	Each object defined in the list must be in a down state.
1 change, last change	Number of times that the state of a tracked object has changed and the time (in *hh:mm:ss*) since the last change.
Tracked by	Client process that is tracking the object; in this case, HSRP.

The following example shows information about a stub object that has been created to be tracked using Embedded Event Manager (EEM):

```
Router# show track

Track 1
  Stub-object
  State is Up
    1 change, last change 00:00:04, by Undefined
```

The following example shows information about a stub object when the **brief** keyword is used:

```
Router# show track brief

Track   Object                          Parameter        Value Last Change
1       Stub-object Undefined                            Up    00:00:12
```

The following example shows information about the line-protocol state on an interface that is being tracked and which has carrier-delay detection enabled:

```
Router# show track

Track 101
Interface Ethernet1/0 line-protocol
Line protocol is Down (carrier-delay)
1 change, last change 00:00:03
```

Table 92 describes the significant fields shown in the displays.

Table 92 show track brief Field Descriptions

Field	Description
Track	Object number that is being tracked.
Interface Ethernet1/0 line-protocol	Interface type, interface number, and object that is being tracked.
Line protocol is Down (carrier-delay)	State of the interface with the carrier-delay parameter taken into consideration.
last change	Time (in *hh:mm:ss*) since the state of a tracked object last changed.

Table 93 describes the significant fields shown in the displays.

Table 93 show track brief Field Descriptions

Field	Description
Track	Object number that is being tracked.
Object	Definition of stub object.
Parameter	Tracking parameters.
Value	State value of the object, displayed as Up or Down.
last change	Time (in *hh:mm:ss*) since the state of a tracked object last changed.

Related Commands

Command	Description
track interface	Configures an interface to be tracked and enters tracking configuration mode.
track ip route	Tracks the state of an IP route and enters tracking configuration mode.

show udp

To display IP socket information about User Datagram Protocol (UDP) processes, use the **show udp** command in user EXEC or privileged EXEC mode.

show udp [**detail**]

Syntax Description

detail	(Optional) Displays detailed information about the selected socket process.

Command Default

IP socket information about UDP processes is not displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.4(11)T	This command was introduced.

Usage Guidelines

Use this command to verify that the UDP socket being used is opening correctly. If there is a local and remote endpoint, a connection is established with the ports indicated.

Examples

The following is sample output from the **show udp** command with the **detail** keyword specified:

```
Router# show udp detail

 Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17       10.0.0.0    0         10.0.21.70  67    0  0   2211 0
 Queues: output 0
         input  0 (drops 0, max 50, highwater 0)
 Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17       10.0.0.0    0         10.0.21.70  2517  0   0  11   0
 Queues: output 0
         input  0 (drops 0, max 50, highwater 0)
 Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17       10.0.0.0    0         10.0.21.70  5000  0  0   211  0
 Queues: output 0
         input  0 (drops 0, max 50, highwater 0)
 Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17       10.0.0.0    0         10.0.21.70  5001  0  0   211  0
 Queues: output 0
         input  0 (drops 0, max 50, highwater 0)
 Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17       10.0.0.0    0         10.0.21.70  5002  0  0   211  0
 Queues: output 0
         input  0 (drops 0, max 50, highwater 0)
 Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17       10.0.0.0    0         10.0.21.70  5003  0  0   211  0
 Queues: output 0
         input  0 (drops 0, max 50, highwater 0)
```

```
Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
17       10.0.0.0    0         10.0.21.70  5004  0  0   211  0
Queues: output 0
        input  0 (drops 0, max 50, highwater 0)
```

Table 94 describes the significant fields shown in the display.

Table 94 show udp Field Descriptions

Field	Description
Proto	Protocol type, such as UDP, TCP, or SCTP.
Remote	Remote address connected to this networking device. If the remote address is considered illegal, “--listen--” is displayed.
Port	Remote port. If the remote address is considered illegal, “--listen--” is displayed.
Local	Local address. If the local address is considered illegal or is the address 0.0.0.0, “--any--” is displayed.
Port	Local port.
In	Input queue size.
Out	Output queue size.
Stat	Various statistics for a socket.
TTY	The tty number for the creator of this socket.
OutputIF	Output IF string, if one exists.

Related Commands

Command	Description
clear sockets	Closes all IP sockets and clears the underlying transport connections and data structures.
show ip sctp	Displays information about SCTP.
show processes	Displays information about the active processes.
show sockets	Displays IP socket information.