

show ip sockets

To display IP socket information, use the **show ip sockets** command in user EXEC or privileged EXEC mode.

show ip sockets

Syntax Description This command has no arguments or keywords.

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

Command History	Release	Modification
	10.0 T	This command was introduced.
	12.2(2)T	Support for IPv6 socket information in the display output of the command was added.
	12.0(21)ST	This command was integrated into Cisco IOS Release 12.0(21)ST.
	12.0(22)S	This command was integrated into Cisco IOS Release 12.0(22)S.
	12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
	12.2(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(11)T	This command was replaced by the show udp , show sockets and show ip setp commands.
	12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.

Usage Guidelines Use this command to verify that the 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 ip sockets** command:

```
Router# show ip sockets
```

Proto	Remote	Port	Local	Port	In	Out	Stat	TTY	OutputIF
17	10.0.0.0	0	172.16.186.193	67	0	0	1	0	
17	172.16.191.135	514	172.16.191.129	1811	0	0	0	0	
17	172.16.135.20	514	172.16.191.1	4125	0	0	0	0	
17	172.16.207.163	49	172.16.186.193	49	0	0	9	0	
17	10.0.0.0	123	172.16.186.193	123	0	0	1	0	
88	10.0.0.0	0	172.16.186.193	202	0	0	0	0	
17	172.16.96.59	32856	172.16.191.1	161	0	0	1	0	
17	--listen--		--any--	496	0	0	1	0	

The following sample output from the **show ip sockets** command shows IPv6 socket information:

Router# **show ip sockets**

```

Proto   Remote   Port    Local   Port    In     Out    Stat    TTY  OutputIF
17(v6)  --listen--  --any--  1024   0       0       0       0
17(v6)  --listen--  --any--   7      0       0       0       0
17(v6)  --listen--  --any--  161    0       0       0       0
17(v6)  --listen--  --any--  162    0       0       0       0
17      --listen--  --any--  1024   0       0       0       0
17      --listen--  --any--   7      0       0       0       0
17      --listen--  --any--   9      0       0       0       0
17      --listen--  --any--  19     0       0       0       0
17      --listen--  --any--  1645   0       0       0       0
17      --listen--  --any--  1646   0       0       0       0
17      --listen--  --any--  161    0       0       0       0
17      --listen--  --any--  162    0       0       0       0

```

Table 53 describes the significant fields shown in the display.

Table 53 *show ip sockets Field Descriptions*

Field	Description
Proto	Protocol type, for example, User Datagram Protocol (UDP) or TCP.
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--" displays.
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.
v6	IPv6 sockets.

Related Commands

Command	Description
show ip sctp	Displays information about SCTP.
show processes	Displays information about the active processes.
show sockets	Displays IP socket information.
show udp	Displays IP socket information about UDP processes.

show ip tcp header-compression

To display TCP/IP header compression statistics, use the **show ip tcp header-compression** command in user EXEC or privileged EXEC mode.

show ip tcp header-compression [*interface-type interface-number*] [**detail**]

Syntax Description	<i>interface-type</i>	(Optional) The interface type and number.
	<i>interface-number</i>	
	detail	(Optional) Displays details of each connection. This keyword is available only in privileged EXEC mode.

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

Command History	Release	Modification
		10.0
	12.4	This command was integrated into Cisco Release 12.4 and its command output was modified to include additional compression statistics.
	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.
	12.4(15)T12	This command was modified. Support was added for the special Van Jacobson (VJ) format of TCP header compression.

Examples

The following is sample output from the **show ip tcp header-compression** command:

```
Router# show ip tcp header-compression

TCP/IP header compression statistics:
  Interface Serial2/0 (compression on, IETF)
    Rcvd:   53797 total, 53796 compressed, 0 errors, 0 status msgs
           0 dropped, 0 buffer copies, 0 buffer failures
    Sent:   53797 total, 53796 compressed, 0 status msgs, 0 not predicted
           1721848 bytes saved, 430032 bytes sent
           5.00 efficiency improvement factor
    Connect: 16 rx slots, 16 tx slots,
             1 misses, 0 collisions, 0 negative cache hits, 15 free contexts
             99% hit ratio, five minute miss rate 0 misses/sec, 0 max
```

[Table 54](#) describes the significant fields shown in the display.

Table 54 *show ip tcp header-compression Field Descriptions*

Field	Description
Interface Serial2/0 (compression on, IETF)	Interface type and number on which compression is enabled.
Rcvd:	Received statistics described in subsequent fields.
total	Total number of TCP packets received on the interface.
compressed	Total number of TCP packets compressed.
errors	Number of packets received with errors.
status msgs	Number of resynchronization messages received from the peer.
dropped	Number of packets dropped due to invalid compression.
buffer copies	Number of packets that needed to be copied into bigger buffers for decompression.
buffer failures	Number of packets dropped due to a lack of buffers.
Sent:	Sent statistics described in subsequent fields.
total	Total number of TCP packets sent on the interface.
compressed	Total number of TCP packets compressed.
status msgs	Number of resynchronization messages sent from the peer.
not predicted	Number of packets taking a nonoptimal path through the compressor.
bytes saved	Total savings in bytes due to compression.
bytes sent	Total bytes sent after compression.
efficiency improvement factor	Improvement in line efficiency because of TCP header compression, expressed as the ratio of total packet bytes to compressed packet bytes. The ratio should be greater than 1.00.
Connect:	Connection statistics described in subsequent fields.
rx slots	Total number of receive slots.
tx slots	Total number of transmit slots.
misses	Indicates the number of times a match could not be made. If your output shows a large miss rate, then the number of allowable simultaneous compression connections may be too low.
collisions	Total number of collisions.
negative cache hits	Total number of negative cache hits. Note This field is not relevant for TCP header compression; it is used for Real-Time Transport Protocol (RTP) header compression.
free contexts	Total number of free contexts. Note Free contexts (also known as connections) are an indication of the number of resources that are available, but not currently in use, for TCP header compression.
hit ratio	Percentage of times the software found a match and was able to compress the header.

Table 54 *show ip tcp header-compression Field Descriptions (continued)*

Field	Description
Five minute miss rate 0 misses/sec	Calculates the miss rate over the previous five minutes for a longer-term (and more accurate) look at miss rate trends.
max	Maximum value of the previous field.

The following example for Cisco IOS Release 12.4(15)T12 shows that the TCP special VJ format is enabled:

```
Router# show ip tcp header-compression serial 5/0 detail
```

```
TCP/IP header compression statistics:
```

```
  DLCI 100      Link/Destination info: ip 10.72.72.2
```

```
Configured:
```

```
  Max Header 60 Bytes, Max Time 50 Secs, Max Period 32786 Packets, Feedback On, Spl-VJ On
```

```
Negotiated:
```

```
  Max Header 60 Bytes, Max Time 50 Secs, Max Period 32786 Packets, Feedback On, Spl-VJ On
```

```
TX contexts:
```

Related Commands

Command	Description
ip header-compression special-vj	Enables the special VJ format of TCP header compression.
ip tcp compression-connections	Specifies the total number of TCP header compression connections that can exist on an interface
special-vj	Enables the special VJ format of TCP header compression so that context IDs are included in compressed packets.

show ip traffic

To display the global or system-wide IP traffic statistics for one or more interfaces, use the **show ip traffic** command in user EXEC or privileged EXEC mode.

```
show ip traffic [interface type number]
```

Syntax Description

interface type number (Optional) Displays the global or system-wide IP traffic statistics for a specific interface. If the **interface** keyword is used, the *type* and *number* arguments are required.

Command Default

Using the **show ip traffic** command with no keywords or arguments displays the global or system-wide IP traffic statistics for all interfaces.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.2	The output was enhanced to display the number of keepalive, open, update, route-refresh request, and notification messages received and sent by a Border Gateway Protocol (BGP) routing process.
12.2(25)S	The command output was modified.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB and implemented on the Cisco 10000 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
12.2(33)SXH5	This command was modified. The output was changed to display the ARP (proxy) reply counter as the number of ARP replies for real proxies only.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S. This command was modified to include the optional interface keyword and associated <i>type</i> and <i>number</i> arguments. These modifications were made to provide support for the IPv4 MIBs as described in RFC 4293: <i>Management Information Base for the Internet Protocol (IP)</i> .

Usage Guidelines

Using the **show ip traffic** command with the optional **interface** keyword displays the ipIfStatsTable counters for the specified interface if IPv4 addressing is enabled.

Examples

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

```
Router# show ip traffic

IP statistics:
  Rcvd: 27 total, 27 local destination
        0 format errors, 0 checksum errors, 0 bad hop count
        0 unknown protocol, 0 not a gateway
        0 security failures, 0 bad options, 0 with options
  Opts: 0 end, 0 nop, 0 basic security, 0 loose source route
        0 timestamp, 0 extended security, 0 record route
        0 stream ID, 0 strict source route, 0 alert, 0 cipso, 0 ump
        0 other
  Frags: 0 reassembled, 0 timeouts, 0 couldn't reassemble
        0 fragmented, 0 couldn't fragment
  Bcast: 27 received, 0 sent
  Mcast: 0 received, 0 sent
  Sent: 0 generated, 0 forwarded
  Drop: 0 encapsulation failed, 0 unresolved, 0 no adjacency
        0 no route, 0 unicast RPF, 0 forced drop
  Drop: 0 packets with source IP address zero

ICMP statistics:
  Rcvd: 0 format errors, 0 checksum errors, 0 redirects, 0 unreachable
        0 echo, 0 echo reply, 0 mask requests, 0 mask replies, 0 quench
        0 parameter, 0 timestamp, 0 info request, 0 other
        0 irdp solicitations, 0 irdp advertisements
        0 time exceeded, 0 timestamp replies, 0 info replies
  Sent: 0 redirects, 0 unreachable, 0 echo, 0 echo reply
        0 mask requests, 0 mask replies, 0 quench, 0 timestamp
        0 info reply, 0 time exceeded, 0 parameter problem
        0 irdp solicitations, 0 irdp advertisements

BGP statistics:
  Rcvd: 0 total, 0 opens, 0 notifications, 0 updates
        0 keepalives, 0 route-refresh, 0 unrecognized
  Sent: 0 total, 0 opens, 0 notifications, 0 updates
        0 keepalives, 0 route-refresh

EIGRP-IPv4 statistics:
  Rcvd: 0 total
  Sent: 0 total

TCP statistics:
  Rcvd: 0 total, 0 checksum errors, 0 no port
  Sent: 0 total

PIMv2 statistics: Sent/Received
  Total: 0/0, 0 checksum errors, 0 format errors
  Registers: 0/0 (0 non-rp, 0 non-sm-group), Register Stops: 0/0, Hellos: 0/0
  Join/Prunes: 0/0, Asserts: 0/0, grafts: 0/0
  Bootstraps: 0/0, Candidate_RP_Advertisements: 0/0
  State-Refresh: 0/0

IGMP statistics: Sent/Received
  Total: 0/0, Format errors: 0/0, Checksum errors: 0/0
  Host Queries: 0/0, Host Reports: 0/0, Host Leaves: 0/0
  DVMRP: 0/0, PIM: 0/0

UDP statistics:
  Rcvd: 185515 total, 0 checksum errors, 185515 no port
  Sent: 0 total, 0 forwarded broadcasts
```

```

OSPF statistics:
  Rcvd: 0 total, 0 checksum errors
        0 hello, 0 database desc, 0 link state req
        0 link state updates, 0 link state acks

  Sent: 0 total
        0 hello, 0 database desc, 0 link state req
        0 link state updates, 0 link state acks

Probe statistics:
  Rcvd: 0 address requests, 0 address replies
        0 proxy name requests, 0 where-is requests, 0 other
  Sent: 0 address requests, 0 address replies (0 proxy)
        0 proxy name replies, 0 where-is replies

ARP statistics:
  Rcvd: 1477 requests, 8841 replies, 396 reverse, 0 other
  Sent: 1 requests, 20 replies (0 proxy), 0 reverse
  Drop due to input queue full: 0

```

Cisco 10000 Series Routers Example

The following is sample output from the **show ip traffic** command when used on a Cisco 10000 series router:

```

Router# show ip traffic

IP statistics:
  Rcvd: 27 total, 27 local destination
        0 format errors, 0 checksum errors, 0 bad hop count
        0 unknown protocol, 0 not a gateway
        0 security failures, 0 bad options, 0 with options
  Opts: 0 end, 0 nop, 0 basic security, 0 loose source route
        0 timestamp, 0 extended security, 0 record route
        0 stream ID, 0 strict source route, 0 alert, 0 cipso, 0 ump
        0 other
  Frags: 0 reassembled, 0 timeouts, 0 couldn't reassemble
        0 fragmented, 0 couldn't fragment
  Bcast: 27 received, 0 sent
  Mcast: 0 received, 0 sent
  Sent: 0 generated, 0 forwarded
  Drop: 0 encapsulation failed, 0 unresolved, 0 no adjacency
        0 no route, 0 unicast RPF, 0 forced drop
        0 options denied, 0 source IP address zero

```

[Table 55](#) describes the significant fields shown in the display.

Table 55 *show ip traffic* Field Descriptions

Field	Description
format errors	Indicates a gross error in the packet format, such as an impossible Internet header length.
bad hop count	Occurs when a packet is discarded because its time-to-live (TTL) field was decremented to zero.
encapsulation failed	Usually indicates that the router had no Address Resolution Protocol (ARP) request entry and therefore did not send a datagram.
no route	Counted when the Cisco IOS software discards a datagram that it did not know how to route.

■ show ip traffic

Related Commands

Command	Description
clear ip traffic	Clears the global or system-wide IP traffic statistics for one or more interfaces.

show ip wccp

To display the Web Cache Communication Protocol (WCCP) global configuration and statistics, use the **show ip wccp** command in user EXEC or privileged EXEC mode.

```
show ip wccp [summary] [capabilities] [vrf vrf-name] [service-number | interfaces [cef | counts
| detail] | web-cache | all [view | {assignment | service | clients [id ip-address] | full | detail
[counters] [internal]]]
```

Syntax Description

summary	(Optional) Displays a summary of WCCP services.
capabilities	(Optional) Displays WCCP platform capabilities information.
vrf vrf-name	(Optional) Specifies a VRF associated with a service group to display.
<i>service-number</i>	(Optional) Identification number of the web cache service group being controlled by the cache. The number can be from 0 to 254. For web caches using Cisco cache engines, the reverse proxy service is indicated by a value of 99.
interfaces	(Optional) WCCP redirect interfaces.
cef	(Optional) CEF interface statistics, including the number of input, output, dynamic, static, and multicast services.
counts	(Optional) WCCP interface count statistics, including the number of CEF and process-switched output and input packets redirected.
detail	(Optional) WCCP interface configuration statistics, including the number of input, output, dynamic, static, and multicast services.
web-cache	(Optional) Statistics for the web cache service.
all	(Optional) Statistics for all known services.
view	(Optional) Other members of a particular service group, or all service groups, have or have not been detected.
assignment	(Optional) Service group assignment information.
service	(Optional) Detailed information about a service, including the service definition and all other per-service information.
clients	(Optional) Detailed information about the clients of a service, displaying all per-client information. No per-service information or traffic counters are displayed.
id ip-address	(Optional) Restricts the output to display per-client information relating only to the specified client, instead of all clients of the service. If the specified client does not exist, no output is displayed.
full	(Optional) Detailed information about a service and all the clients of the service. Displays the per-service information and all of the per-client information.
detail	(Optional) Information about the router and all web caches.
counters	(Optional) Displays traffic counters.
internal	(Optional) Displays internal information. This output is considered useful only to Cisco IOS developers.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
11.1CA	This command was introduced for Cisco 7200 and 7500 platforms.
11.2P	Support for this command was added to a variety of Cisco platforms.
12.0(3)T	The detail and view keywords were added.
12.3(7)T	The output was enhanced to display the bypass counters (process, fast, and Cisco Express Forwarding) when WCCP is enabled.
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(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.3(14)T	The output was enhanced to display the maximum number of service groups.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(11)T	This command was enhanced to display information about the WCCP service mode.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 2.2	This command was integrated into Cisco IOS XE Release 2.2.
15.0(1)M	This command was modified. The summary keyword and the vrf vrf-name keyword and argument pair were added.
12.2(33)SRE	This command was modified. The summary keyword and the vrf vrf-name keyword and argument pair were added.
Cisco IOS XE Release 3.1S	This command was modified. The following keywords and arguments were added: all , assignment , summary , service , clients , full , capabilities , counters , id ip-address , vrf vrf-name .

Usage Guidelines

Use the **clear ip wccp** command to reset the counter for the “Packets Redirected” information.

Use the **show ip wccp service-number** command to provide the “Total Packets Redirected” count. The “Total Packets Redirected” count is the number of flows, or sessions, that are redirected.

Use the **show ip wccp service-number detail** command to provide the “Packets Redirected” count. The “Packets Redirected” count is the number of flows, or sessions, that are redirected.

Use the **show ip wccp web-cache detail** command to provide an indication of how many flows, rather than packets, are using Layer 2 redirection.

Use the **show ip wccp summary** command to show the configured WCCP services and a summary of their current state.

For cache-engine clusters using Cisco cache engines, the reverse proxy *service-number* is indicated by a value of 99.

On Cisco ASR 1000 Series Routers, nonzero values can only be seen for platform-specific counters because Cisco ASR 1000 Series Routers implement all redirection in hardware. Configuring the **counters** keyword also displays counters received in hardware.

Examples

This section contains examples and field descriptions for the following forms of this command:

- **show ip wccp *service-number*** (service mode displayed)
- **show ip wccp *service-number* view**
- **show ip wccp *service-number* detail**
- **show ip wccp interfaces**
- **show ip wccp web-cache**
- **show ip wccp web-cache counters**
- **show ip wccp web-cache detail**
- **show ip wccp web-cache detail** (bypass counters displayed)
- **show ip wccp web-cache service**
- **show ip wccp summary**

show ip wccp *service-number* (Service Mode Displayed)

The following is sample output from the **show ip wccp *service-number*** command:

```
Router# show ip wccp 90

Global WCCP information:
  Router information:
    Router Identifier:          100.1.1.16
    Protocol Version:          2.0

  Service Identifier: 90
    Number of Service Group Clients: 1
    Number of Service Group Routers: 1
    Total Packets s/w Redirected: 0
      Process: 0
      CEF: 0
    Service mode: Closed
    Service Access-list: tcp91
    Total Packets Dropped Closed: 0
    Redirect Access-list: -none-
    Total Packets Denied Redirect: 0
    Total Packets Unassigned: 0
    Group Access-list: -none-
    Total Messages Denied to Group: 0
    Total Authentication failures: 0
    Total Bypassed Packets Received: 0
```

[Table 56](#) describes the significant fields shown in the display.

Table 56 *show ip wccp *service-number* Field Descriptions*

Field	Description
Router information	A list of routers detected by the current router.
Protocol Version	The version of WCCP being used by the router in the service group.
Service Identifier	Indicates which service is detailed.
Number of Service Group Clients:	The number of clients that are visible to the router and other clients in the service group.
Number of Service Group Routers	The number of routers in the service group.

Table 56 *show ip wccp service-number Field Descriptions (continued)*

Field	Description
Total Packets s/w Redirected	Total number of packets redirected by the router.
Service mode: Closed	Identifies the WCCP service mode. Options are open or closed.
Service Access-list	A named extended IP access list that defines the packets that will match the service.
Total Packets Dropped Closed	Total number of packets that were dropped when WCCP is configured for closed services and an intermediary device is not available to process the service.
Redirect Access-list	The name or number of the access list that determines which packets will be redirected.
Total Packets Denied Redirect	Total number of packets that were not redirected because they did not match the access list.
Total Packets Unassigned	Number of packets that were not redirected because they were not assigned to any cache engine. Packets may not be assigned during initial discovery of cache engines or when a cache is dropped from a cluster.
Group Access-list	Indicates which cache engine is allowed to connect to the router.
Total Messages Denied to Group	Indicates the number of packets denied by the <i>group-list</i> access list.
Total Authentication failures	The number of instances where a password did not match.
Total Bypassed Packets Received	The number of packets that have been bypassed. Process, fast, and Cisco Express Forwarding (CEF) are switching paths within Cisco IOS software.

show ip wccp service-number view

The following is sample output from the **show ip wccp service-number view** command for service group 1:

```
Router# show ip wccp 1 view

WCCP Router Informed of:
 10.168.88.10
 10.168.88.20

WCCP Cache Engines Visible
 10.168.88.11
 10.168.88.12

WCCP Cache Engines Not Visible:
 -none-
```

**Note**

The number of maximum service groups that can be configured is 256.

If any web cache is displayed under the WCCP Cache Engines Not Visible field, the router needs to be reconfigured to map the web cache that is not visible to it.

Table 58 *show ip wccp interfaces Field Descriptions (continued)*

Field	Description
Mcast services	Indicates the number of multicast services configured on the interface.
Exclude In	Displays whether traffic on the interface is excluded from redirection.

show ip wccp web-cache

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

```
Router# show ip wccp web-cache

Global WCCP information:
  Router information:
    Router Identifier:          R1
    Protocol Version:          2.0

  Service Identifier: web-cache
    Number of Service Group Clients: 0
    Number of Service Group Routers: 0
    Total Packets Redirected:      213
    Process:                       0
    CEF:                            0
    Platform:                       0
    Service mode:                   Open
    Service Access-list:            -none-
    Total Packets Dropped Closed:   0
    Redirect access-list:          no_linux
    Total Packets Denied Redirect: 0
    Total Packets Unassigned:      0
    Group access-list:             -none-
    Total Messages Denied to Group: 0
    Total Authentication failures: 0
    Total GRE Bypassed Packets Received: 0
    Process:                       0
    CEF:                            0
    Platform:                       0
```

[Table 59](#) describes the significant fields shown in the display.

Table 59 *show ip wccp web-cache Field Descriptions*

Field	Description
Protocol Version	Indicates whether WCCPv1 or WCCPv2 is enabled.
Service Identifier	Indicates which service is detailed.
Number of Service Group Clients	Number of clients using the router as their home router.
Number of Service Group Routers	The number of routers in the service group.
Total Packets Redirected	Total number of packets redirected by the router.
Service mode	Indicates whether WCCP open or closed mode is configured.
Service Access-list	The name or number of the service access list that determines which packets will be redirected.
Redirect access-list	The name or number of the access list that determines which packets will be redirected.

Table 59 *show ip wccp web-cache Field Descriptions (continued)*

Field	Description
Total Packets Denied Redirect	Total number of packets that were not redirected because they did not match the access list.
Total Packets Unassigned	Number of packets that were not redirected because they were not assigned to any cache engine. Packets may not be assigned during initial discovery of cache engines or when a cache is dropped from a cluster.
Group access-list	Indicates which cache engine is allowed to connect to the router.
Total Messages Denied to Group	Indicates the number of packets denied by the <i>group-list</i> access list.
Total Authentication failures	The number of instances where a password did not match.

show ip wccp web-cache counters

The following example displays web cache engine information and WCCP traffic counters:

```
Router# show ip wccp web-cache counters
```

```
WCCP Service Group Counters:
  Redirected Packets:
    Process:          4
    CEF:              5
  Non-Redirected Packets:
    Action - Forward:
      Reason - no assignment:
        Process:      2
        CEF:          1
      Action - Ignore (forward):
        Reason - redir ACL check:
          Process:    2
          CEF:        3
    Action - Discard:
      Reason - closed services:
        Process:      0
        CEF:          0
  GRE Bypassed Packets:
    Process:          4
    CEF:              5
  GRE Bypassed Packet Errors:
    Total Errors:
      Process:        0
      CEF:            0

WCCP Client Counters:
  WCCP Client ID: 10.1.1.82
  Redirect Assignments:
    Received:        1
    Invalid:         0
    Duplicate:       0
  Redirected Packets:
    Process:          4
    CEF:              5
  GRE Bypassed Packets:
    Process:          4
    CEF:              5
```

Table 60 describes the significant fields shown in the display.

Table 60 *show ip wccp web-cache counters Field Descriptions*

Field	Description
Redirected Packets	Total number of packets redirected by the router.
Non-Redirected Packets	Total number of packets not redirected by the router.
Platform	Total number of packets redirected or not redirected in hardware.

show ip wccp web-cache detail

The following example displays web cache engine information and WCCP router statistics for the web cache service:

```
Router# show ip wccp web-cache detail

WCCP Client information:
  WCCP Client ID:      10.20.1.10 (IP address: 10.20.1.2)
  Protocol Version:    2.0
  State:               Usable
  Redirection:         L2
  Packet Return:       GRE
  Assignment:          MASK
  Connect Time:        00:18:22
  Redirected Packets:
    Process:           0
    CEF:               0
    Platform:          39
  GRE Bypassed Packets:
    Process:           0
    CEF:               0
  Mask Allotment:      64 of 64 (100.00%)

  Mask  SrcAddr  DstAddr  SrcPort  DstPort
  ----  -
  0000: 0x00001741 0x00000000 0x0000  0x0000

  Value SrcAddr  DstAddr  SrcPort  DstPort
  ----  -
  0000: 0x00000000 0x00000000 0x0000  0x0000
  0001: 0x00000001 0x00000000 0x0000  0x0000
  0002: 0x00000040 0x00000000 0x0000  0x0000
  0003: 0x00000041 0x00000000 0x0000  0x0000
  .
  .
  .
```

Table 61 describes the significant fields shown in the display.

Table 61 *show ip wccp web-cache detail Field Descriptions*

Field	Description
WCCP Client Information	The header for the area that contains fields for information on clients.
IP Address	The IP address of the cache engine in the service group.
Protocol Version	The version of WCCP being used by the cache engine in the service group.

Table 61 *show ip wccp web-cache detail Field Descriptions (continued)*

Field	Description
State	Indicates whether the cache engine is operating properly and can be contacted by a router and other cache engines in the service group.
Packets Redirected	The number of packets that have been redirected to the cache engine.
Connect Time	The amount of time the cache engine has been connected to the router.

show ip wccp web-cache detail (Bypass Counters)

The following example displays web cache engine information and WCCP router statistics that include the bypass counters:

```
Router# show ip wccp web-cache detail
```

```
WCCP Router information:
  IP Address:10.168.88.10
  Protocol Version:2.0
```

```
WCCP Client Information
  IP Address:10.168.88.11
  Protocol Version:2.0
  State:Usable
  Initial Hash Info:AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
  Assigned Hash Info:FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
  Hash Allotment:256 (100.00%)
  Packets Redirected:21345
  Connect Time:00:13:46
  Bypassed Packets
    Process:          0
    Fast:             0
    CEF:              250
```

[Table 62](#) describes the significant fields shown in the display.

Table 62 *show ip wccp web-cache detail Field Descriptions*

Field	Description
WCCP Router information	The header for the area that contains fields for the IP address and the version of WCCP associated with the router connected to the cache engine in the service group.
IP Address	The IP address of the router connected to the cache engine in the service group.
Protocol Version	The version of WCCP that is being used by the router in the service group.
WCCP Client Information	The header for the area that contains fields for information on clients.
IP Address	The IP address of the cache engine in the service group.
Protocol Version	The version of WCCP that is being used by the cache engine in the service group.

Table 62 *show ip wccp web-cache detail Field Descriptions (continued)*

Field	Description
State	Indicates whether the cache engine is operating properly and can be contacted by a router and other cache engines in the service group.
Initial Hash Info	The initial state of the hash bucket assignment.
Assigned Hash Info	The current state of the hash bucket assignment.
Hash Allotment	The percent of buckets assigned to the current cache engine. Both a value and a percent figure are displayed.
Packets Redirected	The number of packets that have been redirected to the cache engine.
Connect Time	The amount of time the cache engine has been connected to the router.
Bypassed Packets	The number of packets that have been bypassed. Process, fast, and Cisco Express Forwarding (CEF) are switching paths within Cisco IOS software.

show ip wccp web-cache service

The following example displays information about a service, including the service definition and all other per-service information:

```
Router# show ip wccp web-cache service

WCCP service information definition:
  Type:          Standard
  Id:            0
  Priority:      240
  Protocol:      6
  Options:       0x00000512
  -----
  Mask/Value sets: 1
  Value elements: 4
  Dst Ports: 80 0 0 0 0 0 0 0
```

show ip wccp summary

The following example displays information on the configured WCCP services and a summary of their current state:

```
Router# show ip wccp summary

WCCP version 2 enabled, 2 services

Service      Clients  Routers  Assign      Redirect  Bypass
-----
Default routing table (Router Id: TBD):
90           0        0        HASH/MASK   GRE/L2    GRE/L2
VRF red (Router Id: 10.1.1.1):
90           1        1        HASH        L2        GRE
```

Table 63 describes the significant fields shown in the display.

Table 63 *show ip wccp summary detail Field Descriptions*

Field	Description
Service	Indicates which service is detailed.
Clients	Indicates the number of cache engines participating in the WCCP service.
Routers	Indicates the number of routers participating in the WCCP service.
Assign	Indicates the load-balancing method used. WCCP uses Hash or Mask assignment.
Redirect	Indicates the redirection method used. WCCP uses GRE or L2 to redirect IP traffic.
Bypass	Indicates the bypass method used. WCCP uses GRE or L2 to return packets to the router.

Related Commands

Command	Description
clear ip wccp	Clears the counter for packets redirected using WCCP.
ip wccp	Enables support of the WCCP service for participation in a service group.
ip wccp redirect	Enables packet redirection on an outbound or inbound interface using WCCP.
ip wccp web-cache accelerated	Enables the hardware acceleration for WCCP version 1.
show ip interface	Lists a summary of the IP information and status of an interface.
show ip wccp global counters	Displays global WCCP information for packets that are processed in software.
show platform software wccp	Displays global statistics related to WCCP on Cisco ASR 1000 Series Routers.

show ip wccp global counters

To display global Web Cache Communication Protocol (WCCP) information for packets that are processed in software, use the **show ip wccp global counters** command in user EXEC or privileged EXEC mode.

show ip wccp global counters

Syntax Description This command has no arguments or keywords.

Command Modes User EXEC (>
Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Release 3.1S	This command was introduced.

Usage Guidelines The **show ip wccp global** command displays counters for packets that are processed in software. These counters are always zero on the Cisco ASR 1000 Series Routers.

Examples The following example displays global WCCP information for packets that are processed in the software:

```
Router# show ip wccp global counters
```

```
WCCP Global Counters:
```

```
Packets Seen by WCCP
Process:      8
CEF (In):    14
CEF (Out):    0
```

Related Commands	Command	Description
	clear ip wccp	Clears the counters for packets redirected using WCCP.
	ip wccp	Enables support of the WCCP service for participation in a service group.
	ip wccp redirect	Enables packet redirection on an outbound or inbound interface using WCCP.
	ip wccp web-cache accelerated	Enables the hardware acceleration for WCCP version 1.
	show ip interface	Lists a summary of the IP information and the status of an interface.
	show ip wccp	Displays the WCCP global configuration and statistics.

show ip wccp web-caches

The **show ip wccp web-caches** command has been replaced by the **show ip wccp web-cache detail** command. See the description of the **show ip wccp** command in this book for more information.

show platform hardware qfp active feature wccp

To display the Web Cache Communication Protocol (WCCP) service group information in the active Cisco Quantum Flow Processor (QFP), use the **show platform hardware qfp active feature wccp** command in privileged EXEC mode.

```
show platform hardware qfp active feature wccp [vrf vrf-id] service id service-id
```

Syntax Description	vrf <i>vrf-id</i>	(Optional) Specifies a VRF associated with a service group to display.
	service id <i>service-id</i>	Specifies the WCCP service group ID.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
		Cisco IOS XE Release 2.2
	Cisco IOS XE Release 3.1S	This command was modified. The vrf keyword and <i>vrf-name</i> argument were added.

Examples

The following is a sample output from the **show platform hardware qfp active feature wccp** command:

```
Router# show platform hardware qfp active feature wccp service id 1

Service ID: 0
Service Priority: 240
CG ID: 0
Mode: Open
Num bind objs: 64
Number of Caches in this service: 1
  ce index: 0
  cache_id : 15
  Cache ip addr : 0x5a140102
  Cache cfg ppe addr : 0x8b480000
  Cache oce ppe addr : 0x89b01480
  Cache state ppe addr : 0x8b4d0400
Number of interfaces using this service: 1
  Interface: GigabitEthernet0/3/1
  cpp-if-h: 18
  Dir: 0
  pal-if-h: 20
```

Table 64 describes the significant fields shown in the display.

Table 64 *show platform hardware qfp active feature wccp Field Descriptions*

Field	Description
Service ID	Service group number (0 for webcache and 1 to 254 for dynamic services).
Service Priority	Priority of the service group.
CG ID	Class Group ID, which is the same value as the Service ID.
Mode	Specifies whether the service group has been defined as an open service group (default value) or closed service group.
Num bind objs	Number of access control entries (ACEs) in the merged access control list (ACL) for this service group. On the Quantum Flow Processor (QFP), each ACE is programmed as a bind object under a class group specified by the CG ID.
Number of Caches in this service	The number of cache engines available for this service group.
Number of interfaces using this service	The number of interfaces on which this service group has been configured (both inbound as well as outbound redirection).

show platform software wccp

To display platform specific configuration and statistics related WCCP information on Cisco ASR 1000 Series Routers, use the **show platform software wccp** command in privileged EXEC mode.

```
show platform software wccp [service-number counters | [slot [service-number [access-list] | cache-info | interface | statistics | web-cache [access-list]] | [vrf vrf-identifier {service-number [access-list] | web-cache [access-list]}]] | interface counters | statistics | [vrf vrf-identifier {service-number counters | web-cache counters}] | web-cache counters]
```

Syntax Description

<i>service-number</i>	(Optional) Displays information for a dynamically defined service. The service number can be from 0 to 254.
counters	(Optional) Displays counter information.
<i>slot</i>	(Optional) Embedded Service Processor or Route Processor slot. Valid options are: <ul style="list-style-type: none"> • F0—Embedded Service Processor Slot 0 • F1—Embedded Service Processor Slot 1 • FP—Embedded Service Processor • R0—Route Processor Slot 0 • R1—Route Processor Slot 1 • RP—Route Processor
<i>service-number</i>	(Optional) Displays information for a dynamically defined service.
access-list	(Optional) Displays WCCP access list information.
cache-info	(Optional) Displays cache-engine information.
interface	(Optional) Displays information about interfaces bound to WCCP services.
statistics	(Optional) Displays internal messaging statistics for WCCP. Displayed counters are self-descriptive.
web-cache	(Optional) Displays information about the web cache service.
web-cache	(Optional) Displays web cache information.
vrf <i>vrf-identifier</i>	(Optional) Specifies a virtual routing and forwarding instance (VRF) associated with a service group to display.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 2.2	This command was introduced.
Cisco IOS XE Release 3.1S	This command was modified. The vrf <i>vrf-identifier</i> keyword and argument pair was added.

Usage Guidelines

Use the **show platform software wccp** to display global statistics and configuration information related to WCCP on the Cisco ASR 1000 Series Routers. The **show ip wccp** command displays information about software-based (process, fast, and Cisco Express Forwarding [CEF]) forwarding of WCCP packets. The Cisco ASR 1000 Services Routers implement WCCP in hardware, rather than in the CEF or process-switching paths. The **show ip wccp** displays WCCP counters, but only platform fields have nonzero values because redirection happens in hardware.

Examples

The following is sample output from the **show platform software wccp counters** command:

```
Router# show platform software wccp 61 counters

Service Group (1, 61) counters
  Unassigned count = 0
  Dropped due to closed service count = 0
  Bypass count = 0
  Bypass failed count = 0
  Denied count = 0
  Redirect count = 313635910244
CE = 10.1.1.2, obj_id = 58, Redirect Packets = 42768533218
CE = 10.2.1.2, obj_id = 165, Redirect Packets = 45619768766
.
.
.
```

[Table 65](#) describes the significant fields shown in the display.

Table 65 *show platform software wccp counters Field Descriptions*

Field	Description
Service Group (1, 61) counters	Dynamic service group 61 counters.
Unassigned count	Number of packets that were not redirected because they were not assigned to any cache engine. Packets may not be assigned during initial discovery of cache engines or when a cache is dropped from a cluster.
Dropped due to closed service count = 0	This output field is not supported in Cisco IOS XE Release 2.2 and always returns a value of 0.
Bypass count	The number of packets that have been bypassed.
Bypass failed count	Number of bypass packets that WCCP could not find the original input interface.
Denied count	Total number of packets that were not redirected because they did not match the access list.
Redirect count	Total number of packets redirected by the router.
CE = 10.1.1.2, obj_id = 58, Redirect Packets = 42768533218	The number of packets redirected to each cache-engine.

The following is sample output from the **show platform software wccp slot interface** command:

```
Router# show platform software wccp f0 interface

Interface FastEthernet0/1/0
if_handle: 11, direction: In
Standard web-cache service
```

Table 66 describes the significant fields shown in the display.

Table 66 *show platform software wccp slot interface Field Descriptions*

Field	Description
Interface FastEthernet0/1/0	Name of the interface on which the WCCP service is applied.
if_handle	The internal interface index associated with the above interface.
direction: In	Specifies if the service is applied inbound or outbound. Note WCCP Outbound services are not supported in Cisco IOS XE Release 2.2.
Standard web-cache service	Description of the service which is applied. In this output it is the standard webcache service.

The following is sample output from the **show platform software wccp interface counters** command:

```
Router# show platform software wccp interface counters

Interface FastEthernet0/1/0
  Input Redirect Packets = 0
  Output Redirect Packets = 0
```

Table 67 describes the significant fields shown in the display.

Table 67 *show platform software wccp interface counters Field Descriptions*

Field	Description
Input Redirect Packets	The number of input packets that have been redirected to the cache engine.
Output Redirect Packets	The number of output packets that have been redirected to the cache engine.

The following is sample output from the **show platform software wccp web-cache counters** command:

```
Router# show platform software wccp web-cache counters

Service Group (0, 0) counters
  Unassigned count = 0
  Dropped due to closed service count = 0
  Bypass count = 0
  Bypass failed count = 0
  Denied count = 0
  Redirect count = 0
```

Table 68 describes the significant fields shown in the display.

Table 68 *show platform software wccp web-cache counters Field Descriptions*

Field	Description
Unassigned count	Number of packets that were not redirected because they were not assigned to any cache engine. Packets may not be assigned during initial discovery of cache engines or when a cache is dropped from a cluster.
Dropped due to closed service count	Total number of packets that were dropped when WCCP is configured for closed services and an intermediary device is not available to process the service.
Bypass count	The number of packets that have been bypassed.
Bypass failed count	Number of bypass packets that WCCP could not find the original input interface.
Denied count	Total number of packets that were not redirected because they did not match the access list.
Redirect count	Total number of packets redirected by the router.

Related Commands

Command	Description
ip wccp	Enables support of the WCCP service for participation in a service group.
ip wccp redirect	Enables packet redirection on an outbound or inbound interface using WCCP.

show sctp association

To display accumulated information for a specific Stream Control Transmission Protocol (SCTP) association, use the **show sctp association** command in privileged EXEC mode.

show sctp association *assoc-id*

Syntax Description	<i>assoc-id</i>	Association identifier, which can be obtained from the output of the show sctp association list command.
---------------------------	-----------------	---

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

Command History	Release	Modification
	12.4(11)T	This command was introduced.
	12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines This command shows only the information that has become available since the last time a **clear sctp statistics** command was executed.

Because thousands of associations can be on a single socket and instance ID, this command has been created to limit the output by displaying the status of one particular association ID.

Examples The following sample output shows the established associations:

```
Router# show sctp association list

** Sctp Association List **

AssocID: 3011699535, Instance ID: 1
Current state: ESTABLISHED
Local port: 2000, Addrs: 10.1.0.1 10.2.0.1 10.3.0.1 10.0.20.105
Remote port: 1000, Addrs: 10.1.0.1 10.2.0.1 10.3.0.1 10.0.20.105

AssocID: 2740019456, Instance ID: 0
Current state: ESTABLISHED
Local port: 1000, Addrs: 10.1.0.1 10.2.0.1 10.3.0.1 10.0.20.105
Remote port: 2000, Addrs: 10.1.0.1 10.2.0.1 10.3.0.1 10.0.20.105
```

The following sample output shows information for Sctp association 3011699535:

```
Router# show sctp association 3011699535

AssocID: 3011699535, Instance ID: 1
Current state: ESTABLISHED
Local port: 2000, Addrs: 10.1.0.1 10.2.0.1 10.3.0.1 10.0.20.105
Remote port: 1000, Addrs: 10.1.0.1 10.2.0.1 10.3.0.1 10.0.20.105
```

Table 69 describes the significant fields shown in the display.

Table 69 *show sctp association Field Descriptions*

Field	Description
AssocID/Instance ID	Sctp association identifier and instance identifier.
Current state	State of Sctp association.
Local port	Port number for the local Sctp endpoint.
Remote port	Port number for the remote Sctp endpoint.
Addrs	IP addresses for the local and remote Sctp endpoints.

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for Sctp.
debug ip sctp api	Reports Sctp diagnostic information and messages.
show iua as	Displays information about the current condition of an application server.
show iua asp	Displays information about the current condition of an application server process.
show sctp association list	Displays a list of all current Sctp associations.
show sctp association parameters	Displays the parameters configured for the association defined by the association identifier.
show sctp errors	Displays error counts logged by Sctp.
show sctp instance	Displays information about Sctp endpoint information for one specific currently configured instance.
show sctp instances	Displays all currently defined Sctp instances.
show sctp statistics	Displays overall statistics counts for Sctp.

show sctp association list

To display identifiers and information for current Stream Control Transmission Protocol (SCTP) associations and instances, use the **show sctp association list** command in privileged EXEC mode.

show sctp association list

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	12.4(11)T	This command was introduced. This command replaces the show ip sctp association list command.
	12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines Use this command to display the current SCTP association and instance identifiers, the current state of SCTP associations, and the local and remote port numbers and addresses that are used in the associations.

Examples The following is sample output from this command for three association identifiers:

```
Router# show sctp association list

*** SCTP Association List ***

AssocID:0, Instance ID:0
Current state:ESTABLISHED
Local port:8989, Addrs:10.1.0.2 10.2.0.2
Remote port:8989, Addrs:10.6.0.4 10.5.0.4

AssocID:1, Instance ID:0
Current state:ESTABLISHED
Local port:8989, Addrs:10.1.0.2 10.2.0.2
Remote port:8990, Addrs:10.6.0.4 10.5.0.4

AssocID:2, Instance ID:0
Current state:ESTABLISHED
Local port:8989, Addrs:10.1.0.2 10.2.0.2
Remote port:8991, Addrs:10.6.0.4 10.5.0.4
```

[Table 70](#) describes the significant fields shown in the display.

Table 70 *show sctp association list Field Descriptions*

Field	Description
AssocID	SCTP association identifier.
Instance ID	SCTP association instance identifier.
Current state	SCTP association state, which can be ESTABLISHED, CLOSED, COOKIE-WAIT, and COOKIE-ECHOED.
Local port, Addr	Port and IP address for the local SCTP endpoint.
Remote port, Addr	Port and IP address for the remote SCTP endpoint.

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for SCTP.
debug ip sctp api	Reports SCTP diagnostic information and messages.
show sctp association parameters	Displays the parameters configured for the association defined by the association identifier.
show sctp association statistics	Displays the current statistics for the association defined by the association identifier.
show sctp errors	Displays error counts logged by SCTP.
show sctp instances	Displays the currently defined SCTP instances.
show sctp statistics	Displays the overall statistics counts for SCTP.
show iua as	Displays information about the current condition of an application server.
show iua asp	Displays information about the current condition of an application server process.

show sctp association parameters

To display configured and calculated parameters for the specified Stream Control Transmission Protocol (SCTP) association, use the **show sctp association parameters** command in privileged EXEC mode.

show sctp association parameters *assoc-id*

Syntax Description

<i>assoc-id</i>	Association identifier. Shows the associated ID statistics for the SCTP association.
-----------------	--

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(11)T	This command was introduced. This command replaces the show ip sctp association parameters command.
12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines

The **show sctp association parameters** command provides information to determine the stability of SCTP associations, dynamically calculated statistics about destinations, and values to assess network congestion. This command also displays parameter values for the specified association.

This command requires an association identifier. Association identifiers can be obtained from the output of the **show sctp association list** command.

Many parameters are defined for each association. Some are configured parameters, and others are calculated. Three main groupings of parameters are displayed by this command:

- Association configuration parameters
- Destination address parameters
- Association boundary parameters

The association configuration section displays information similar to that in the **show sctp association list** command, including association identifiers, state, and local and remote port and address information. The current primary destination is also displayed.

Examples

The following sample output shows the IP SCTP association parameters for association 0:

```
Router# show sctp association parameters 0

** Sctp Association Parameters **

AssocID: 0 Context: 0 InstanceID: 1
Assoc state: ESTABLISHED Uptime: 19:05:57.425
Local port: 8181
Local addresses: 10.1.0.3 10.2.0.3

Remote port: 8181
Primary dest addr: 10.5.0.4
Effective primary dest addr: 10.5.0.4
Destination addresses:

10.5.0.4: State: ACTIVE
Heartbeats: Enabled Timeout: 30000 ms
RTO/RTT/SRTT: 1000/16/38 ms TOS: 0 MTU: 1500
cwnd: 5364 ssthresh: 3000 outstand: 768
Num retrans: 0 Max retrans: 5 Num times failed: 0

10.6.0.4: State: ACTIVE
Heartbeats: Enabled Timeout: 30000 ms
RTO/RTT/SRTT: 1000/4/7 ms TOS: 0 MTU: 1500
cwnd: 3960 ssthresh: 3000 outstand: 0
Num retrans: 0 Max retrans: 5 Num times failed: 0

Local vertag: 9A245CD4 Remote vertag: 2A08D122
Num inbound streams: 10 outbound streams: 10
Max assoc retrans: 5 Max init retrans: 8
CumSack timeout: 200 ms Bundle timeout: 100 ms
Min RTO: 1000 ms Max RTO: 60000 ms
LocalRwnd: 18000 Low: 13455 RemoteRwnd: 15252 Low: 13161
Congest levels: 0 current level: 0 high mark: 325
```

[Table 71](#) describes the significant fields shown in the display.

Table 71 *show sctp association parameters Field Descriptions*

Field	Description
AssocID	SCTP association identifier.
Context	Internal upper-layer handle.
InstanceID	SCTP association instance identifier.
Assoc state	SCTP association state, which can be ESTABLISHED, CLOSED, COOKIE-WAIT, and COOKIE-ECHOED.
Uptime	How long the association has been active.
Local port	Port number for the local SCTP endpoint.
Local addresses	IP addresses for the local SCTP endpoint.
Remote port	Port number for the remote SCTP endpoint.
Primary dest addr	Primary destination address.
Effective primary dest addr	Current primary destination address.
Heartbeats	Status of heartbeats.
Timeout	Heartbeat timeout.

Table 71 *show sctp association parameters Field Descriptions (continued)*

Field	Description
RTO/RTT/SRTT	Retransmission timeout, round trip time, and smoothed round trip time, calculated from network feedback.
TOS	IP precedence setting.
MTU	Maximum transmission unit size, in bytes, that a particular interface can handle.
cwnd	Congestion window value calculated from network feedback. This value is the maximum amount of data that can be outstanding in the network for that particular destination.
ssthresh	Slow-start threshold value calculated from network feedback.
outstand	Number of outstanding bytes.
Num retrans	Current number of times that data has been retransmitted to that address.
Max retrans	Maximum number of times that data has been retransmitted to that address.
Num times failed	Number of times that the address has been marked as failed.
Local vertag, Remote vertag	Verification tags (vertags). Tags are chosen during association initialization and do not change.
Num inbound streams, Num outbound streams	Maximum inbound and outbound streams. This number does not change.
Max assoc retrans	Maximum association retransmit limit. Number of times that any particular chunk may be retransmitted before a declaration that the association failed, which indicates that the chunk could not be delivered on any address.
Max init retrans	Maximum initial retransmit limit. Number of times that the chunks for initialization may be retransmitted before a declaration that the attempt to establish the association failed.
CumSack timeout	Cumulative selective acknowledge (SACK) timeout. The maximum time that a SACK may be delayed while attempting to bundle together with data chunks.
Bundle timeout	Maximum time that data chunks may be delayed while attempts are made to bundle them with other data chunks.
Min RTO, Max RTO	Minimum and maximum retransmit timeout values allowed for the association.
LocalRwnd, RemoteRwnd	Local and remote receive windows.
Congest levels: current level, high mark	Current congestion level and highest number of packets queued.

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for SCTP.
debug ip sctp api	Reports SCTP diagnostic information and messages.
show sctp association list	Displays a list of all current SCTP associations.

Command	Description
show sctp association statistics	Displays the current statistics for the association defined by the association identifier.
show sctp errors	Displays error counts logged by Sctp.
show sctp instances	Displays all currently defined Sctp instances.
show sctp statistics	Displays overall statistics counts for Sctp.
show iua as	Displays information about the current condition of an application server.
show iua asp	Displays information about the current condition of an application server process.

show sctp association statistics

To display statistics that have accumulated for the specified Stream Control Transmission Protocol (SCTP) association, use the **show sctp association statistics** command in privileged EXEC mode.

show sctp association statistics *assoc-id*

Syntax Description	<i>assoc-id</i>	Association identifier, which can be obtained from the output of the show sctp association list command.
---------------------------	-----------------	---

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

Command History	Release	Modification
	12.4(11)T	This command was introduced. This command replaces the show ip sctp association statistics command.
	12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines	This command shows only the information that has become available since the last time a clear sctp statistics command was executed.
-------------------------	--

Examples The following sample output shows the statistics accumulated for SCTP association 0:

```
Router# show sctp association statistics 0

** SCTP Association Statistics **

AssocID/InstanceID: 0/1
Current State: ESTABLISHED
Control Chunks
  Sent: 623874  Rcvd: 660227
Data Chunks Sent
  Total: 14235644  Retransmitted: 60487
  Ordered: 6369678  Unordered: 6371263
  Avg bundled: 18  Total Bytes: 640603980
Data Chunks Rcvd
  Total: 14496585  Discarded: 1755575
  Ordered: 6369741  Unordered: 6371269
  Avg bundled: 18  Total Bytes: 652346325
  Out of Seq TSN: 3069353
```

```

ULP Dgrams
  Sent: 12740941  Ready: 12740961  Rcvd: 12740941

```

Table 69 describes the significant fields shown in the display.

Table 72 *show sctp association statistics Field Descriptions*

Field	Description
AssocID/InstanceID	SCTP association identifier and instance identifier.
Current State	State of SCTP association.
Control Chunks	SCTP control chunks sent and received.
Data Chunks Sent	SCTP data chunks sent, ordered and unordered.
Data Chunks Rcvd	SCTP data chunks received, ordered and unordered.
ULP Dgrams	Number of datagrams sent, ready, and received by the Upper-Layer Protocol (ULP).

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for SCTP.
debug ip sctp api	Reports SCTP diagnostic information and messages.
show sctp association list	Displays a list of all current SCTP associations.
show sctp association parameters	Displays the parameters configured for the association defined by the association identifier.
show sctp errors	Displays error counts logged by SCTP.
show sctp instances	Displays all currently defined SCTP instances.
show sctp statistics	Displays overall statistics counts for SCTP.
show iua as	Displays information about the current condition of an application server.
show iua asp	Displays information about the current condition of an application server process.

show sctp errors

To display the error counts logged by the Stream Control Transmission Protocol (SCTP), use the **show sctp errors** command in privileged EXEC mode.

show sctp errors

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	12.4(11)T	This command was introduced. This command replaces the show ip sctp errors command.
	12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines This command displays all errors across all associations that have been logged since the last time that the SCTP statistics were cleared with the **clear sctp statistics** command. If no errors have been logged, this is indicated in the output.

Examples The following sample output shows a session with no errors:

```
Router# show sctp errors

*** Sctp Error Statistics ***

No Sctp errors logged.
```

The following sample output shows a session that has SCTP errors:

```
Router# show sctp errors

** Sctp Error Statistics **

Invalid verification tag:      5
Communication Lost:           64
Destination Address Failed:   3
Unknown INIT params rcvd:     16
Invalid cookie signature:     5
Expired cookie:                1
Peer restarted:               1
No Listening instance:         2
```

Field descriptions are self-explanatory.

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for SCTP.
debug ip sctp api	Reports SCTP diagnostic information and messages.
show sctp association list	Displays a list of all current SCTP associations.
show sctp association parameters	Displays the parameters configured for the association defined by the association ID.
show sctp association statistics	Displays the current statistics for the association defined by the association ID.
show sctp instances	Displays the currently defined SCTP instances.
show sctp statistics	Displays overall statistics counts for SCTP.
show iua as	Displays information about the current condition of an AS.
show iua asp	Displays information about the current condition of an ASP.

show sctp instance

To display Stream Control Transmission Protocol (SCTP) endpoint information for one specific currently configured instance, use the **show sctp instance** command in user EXEC or privileged EXEC mode.

```
show sctp instance instance-id
```

Privileged EXEC Mode of Cisco 3845 Series Routers

```
show sctp instance [redundancy] instance-id
```

Syntax Description	Instance Identifier	Description
<i>instance-id</i>	Instance identifier, which is defined as the transport ID (TransID) value in the output from the show sockets command.	
redundancy	(Optional) Displays SCTP instance redundancy information.	

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

Command History	Release	Modification
	12.4(11)T	This command was introduced.
	15.0(1)M	This command was modified in a release earlier than Cisco IOS Release 15.0(1)M. The redundancy keyword was added on the Cisco 3845 series router.

Usage Guidelines

This command displays information for the currently configured instance with the ID specified in the command syntax. The instance number, local port, and address information are displayed. The instance state is either available or deletion pending. An instance enters the deletion pending state when a request is made to delete it but there are currently established associations for that instance. The instance cannot be deleted immediately and instead enters the pending state. No new associations are allowed in this instance, and when the last association is terminated or fails, the instance is deleted.

The default inbound and outbound stream numbers (see the “Examples” section) are used for establishing incoming associations, the maximum number of associations allowed for this instance is shown, and a snapshot of each existing association is shown, if any exists.

Examples

The following sample output displays information for SCTP instance 0. In this example, instance 0 is using local port 1000 and has three current associations. Field description is self-explanatory.

```
Router# show sctp instance 0

Instance ID:0 Local port:1000 State:available
Local addrs:10.1.0.2 10.2.0.2
Default streams inbound:1  outbound:1
Current associations: (max allowed:200)
AssocID:0 State:ESTABLISHED Remote port:8989
```

```

Dest addrs:10.6.0.4 10.5.0.4
AssocID:1 State:ESTABLISHED Remote port:8990
Dest addrs:10.6.0.4 10.5.0.4
AssocID:2 State:ESTABLISHED Remote port:8991
Dest addrs:10.6.0.4 10.5.0.4

```

The following sample output displays information for SCTP instance 1. In this example, instance 1 is using local port 9191 and has no current associations. Field description is self-explanatory.

```
Router# show sctp instance 1
```

```

Instance ID:1 Local port:9191 State:available
Local addrs:10.1.0.2 10.2.0.2
Default streams inbound:1 outbound:1

```

```

No current associations established for this instance.
Max allowed:6

```

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for SCTP.
debug ip sctp api	Reports SCTP diagnostic information and messages.
show iua as	Displays information about the current condition of an application server.
show iua asp	Displays information about the current condition of an application server process.
show sctp association list	Displays a list of all current SCTP associations.
show sctp association parameters	Displays the parameters configured for the association defined by the association identifier.
show sctp association statistics	Displays the current statistics for the association defined by the association identifier.
show sctp errors	Displays error counts logged by SCTP.
show sctp statistics	Displays the overall statistics counts for SCTP.
show sockets	Displays information about sockets.

show sctp instances

To display information for each of the currently configured Stream Control Transmission Protocol (SCTP) instances, use the **show sctp instances** command in privileged EXEC mode.

show sctp instances

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	12.4(11)T	This command was introduced. This command replaces the show ip sctp instances command.
	12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines

This command displays information for each of the currently configured instances. The instance number, local port, and address information are displayed. The instance state is either available or deletion pending. An instance enters the deletion pending state when a request is made to delete it but there are currently established associations for that instance. The instance cannot be deleted immediately and instead enters the pending state. No new associations are allowed in this instance, and when the last association is terminated or fails, the instance is deleted.

The default inbound and outbound stream numbers are used for establishing incoming associations, the maximum number of associations allowed for this instance is shown, and a snapshot of each existing association is shown, if any exists.

When you enter the **show sctp instances** command, you must type the complete word **instances** in the command syntax. If you try to enter an abbreviated form of this word, there will be a partial match that identifies the **show sctp instance *instance-id*** command.

Examples

The following sample output shows available IP SCTP instances. In this example, two current instances are active and available. The first is using local port 8989, and the second is using 9191. Instance identifier 0 has three current associations, and instance identifier 1 has no current associations.

```
Router# show sctp instances

*** SCTP Instances ***

Instance ID:0 Local port:8989
Instance state:available
Local addrs:10.1.0.2 10.2.0.2
Default streams inbound:1 outbound:1
  Current associations: (max allowed:6)
    AssocID:0 State:ESTABLISHED Remote port:8989
      Dest addrs:10.6.0.4 10.5.0.4
    AssocID:1 State:ESTABLISHED Remote port:8990
```

```

Dest addr:10.6.0.4 10.5.0.4
AssocID:2 State:ESTABLISHED Remote port:8991
Dest addr:10.6.0.4 10.5.0.4

```

```

Instance ID:1 Local port:9191
Instance state:available
Local addr:10.1.0.2 10.2.0.2
Default streams inbound:1 outbound:1

```

```

No current associations established for this instance.
Max allowed:6

```

Field descriptions are self-explanatory.

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for Sctp.
debug ip sctp api	Reports Sctp diagnostic information and messages.
show sctp association list	Displays a list of all current Sctp associations.
show sctp association parameters	Displays the parameters configured for the association defined by the association identifier.
show sctp association statistics	Displays the current statistics for the association defined by the association identifier.
show sctp errors	Displays error counts logged by Sctp.
show sctp statistics	Displays the overall statistics counts for Sctp.
show iua as	Displays information about the current condition of an AS.
show iua asp	Displays information about the current condition of an ASP.

show sctp statistics

To display the overall statistics counts for Stream Control Transmission Protocol (SCTP) activity, use the **show sctp statistics** command in privileged EXEC mode.

show sctp statistics

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	12.4(11)T	This command was introduced. This command replaces the show ip sctp statistics command.
	12.4(15)T	This command was moved to the Cisco IOS IP Application Services Command Reference.

Usage Guidelines This command displays the overall SCTP statistics accumulated since the last **clear sctp statistics** command. It includes numbers for all currently established associations, and for any that have been terminated. The statistics indicated are similar to those shown for individual associations.

Examples The following sample output shows SCTP statistics:

```
Router# show sctp statistics

*** SCTP Overall Statistics ****

Total Chunks Sent:          2097
Total Chunks Rcvd:         2766

Data Chunks Rcvd In Seq:   538
Data Chunks Rcvd Out of Seq: 0
Total Data Chunks Sent:    538
Total Data Chunks Rcvd:    538
Total Data Bytes Sent:     53800
Total Data Bytes Rcvd:     53800
Total Data Chunks Discarded: 0
Total Data Chunks Retrans: 0

Total SCTP Dgrams Sent:    1561
Total SCTP Dgrams Rcvd:    2228
Total ULP Dgrams Sent:     538
Total ULP Dgrams Ready:    538
Total ULP Dgrams Rcvd:     538
```

Field descriptions are self-explanatory.

Related Commands

Command	Description
clear sctp statistics	Clears statistics counts for Sctp.
debug ip sctp api	Reports Sctp diagnostic information and messages.
show sctp association list	Displays a list of all current Sctp associations.
show sctp association parameters	Displays the parameters configured and calculated for the association defined by the association identifier.
show sctp association statistics	Displays the current statistics for the association defined by the association identifier.
show sctp errors	Displays error counts logged by Sctp.
show sctp instances	Displays all currently defined Sctp instances.
show iua as	Displays information about the current condition of an AS.
show iua asp	Displays information about the current condition of an ASP.

show sockets

To display IP socket information, use the **show sockets** command in user EXEC or privileged EXEC mode.

```
show sockets process-id [detail] [events]
```

Syntax Description		
	<i>process-id</i>	Identifier of the IP process to be displayed.
	detail	(Optional) Displays detailed information about the selected socket process.
	events	(Optional) Displays information about IP socket events.

Command Default IP socket information 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 display the number of sockets currently open and their distribution with respect to the transport protocol process specified by the *process-id* argument.

Use the optional **detail** keyword to display additional information including the local and remote port, protocol type, sub-type for Stream Control Transmission Protocol (SCTP) sockets, IP version, and socket state. Use the optional **events** keyword to display information about the status of the event model for the specified socket. The **events** keyword also displays the events being watched using the event model, events being watched using select calls, and any current events present on the socket.

Use the **show processes** command to display the list of running processes and their associated process IDs.

Examples The following is sample output from the **show sockets** command when there are no sockets open for the specified process:

```
Router# show sockets 99
```

```
There are no open sockets for this process
```

The following example displays the total number of open sockets for the specified process:

```
Router# show sockets 35
```

```
Total open sockets - TCP:7, UDP:0, SCTP:0
```

The following example shows how to display detailed information about open sockets:

```
Router# show sockets 35 detail

    FD LPort FPort Proto Type   TransID
    0  5000  0      TCP  STREAM 0x6654DEBC
State: SS_ISBOUND
Options: SO_ACCEPTCONN

    1  5001  0      TCP  STREAM 0x6654E494
State: SS_ISBOUND
Options: SO_ACCEPTCONN

    2  5002  0      TCP  STREAM 0x656710B0
State: SS_ISBOUND
Options: SO_ACCEPTCONN

    3  5003  0      TCP  STREAM 0x65671688
State: SS_ISBOUND
Options: SO_ACCEPTCONN

    4  5004  0      TCP  STREAM 0x65671C60
State: SS_ISBOUND
Options: SO_ACCEPTCONN

    5  5005  0      TCP  STREAM 0x65672238
State: SS_ISBOUND
Options: SO_ACCEPTCONN

    6  5006  0      TCP  STREAM 0x64C7840C
State: SS_ISBOUND
Options: SO_ACCEPTCONN

Total open sockets - TCP:7, UDP:0, SCTP:0
```

The following example displays IP socket event information:

```
Router# show sockets 35 events

Events watched for this process: READ
FD Watched Present Select Present

0 --- --- R-- R--
```

[Table 73](#) describes the significant fields shown in the displays.

Table 73 *show sockets Field Descriptions*

Field	Description
FD	Feasible distance. The feasible distance is the best metric to reach the destination or the best metric that was known when the route went active. This value is used in the feasibility condition check. If the reported distance of the router (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it need not send a query for that destination.
LPort	Local TCP port.
FPort	Foreign port.

Table 73 *show sockets Field Descriptions (continued)*

Field	Description
Proto	Protocol type, such as UDP, TCP, or SCTP.
Type	Type of socket being displayed. Possible socket types include: <ul style="list-style-type: none"> • STREAM—TCP socket. • DGRAM—UDP socket. • SEQPACKET—SCTP socket.
TransID	Transaction ID number.
State:	Current state of the socket. Possible socket state flags include: <ul style="list-style-type: none"> • SS_NOFDREF—No file descriptor reference for this socket. • SS_ISCONNECTING—Socket connecting is in progress. • SS_ISBOUND—Socket is bound to TCP. • SS_ISCONNECTED—Socket is connected to peer. • SS_ISDISCONNECTING—Socket disconnecting is in progress. • SS_CANTSENDMORE—Cannot send more data to peer. • SS_CANTRCVMORE—Cannot receive more data from peer. • SS_ISDISCONNECTED—Socket is disconnected. Connection is fully closed.
Options:	Displays socket options. Possible socket options include: <ul style="list-style-type: none"> • SO_ACCEPTCONN—Socket is accepting a connection. • SO_NBIO—Socket is in a non-blocking I/O mode. • SO_LINGER—Socket waits for a time before all data is sent out.
Events watched for this process:	Details the events that are being watched by the application.
READ	Read events being watched by the application.
Watched	Events being watched by the application.
Present	Watched events that are present on the socket.
Select	Events being watched by the application using the select () call.

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 udp	Displays IP socket information about UDP processes.