



Transport Stack Commands

This chapter describes the Cisco IOS XR software commands used to configure and monitor features related to the transport stack (Stream Control Transmission Protocol [SCTP], TCP, User Datagram Protocol [UDP], and RAW). Any IP protocol other than TCP or UDP is known as a *RAW* protocol.

For detailed information about transport stack concepts, configuration tasks, and examples, refer to the *Cisco IOS XR IP Addresses and Services Configuration Guide for the Cisco XR 12000 Series Router*.

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clear nsr ncd client

To clear the counters of a specified client or all the clients of nonstop routing (NSR) Consumer Demuxer (NCD), use the **clear nsr ncd client** command in EXEC mode.

clear nsr ncd client {*PID value*| **all**} [**location** *node-id*]

Syntax Description

<i>PID value</i>	Process ID value of the client in which counters need to be cleared. The range is from 0 to 4294967295.
all	Clears the counters for all NCD clients.
location <i>node-id</i>	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

The default value for the *node-id* argument is the current node in which the command is being executed. The *PID value* argument does not have a default value.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

The active and standby instances of some NSR-capable applications communicate through two queues, and these applications are multiplexed onto these queues. NSR consumer demuxer (NCD) is a process that provides the demuxing services on the receiver side.

You can use the **clear nsr ncd client** command to troubleshoot traffic issues. If you clear the existing counters, it can help you to monitor the delta changes.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows how to clear all the counters for all NCD clients:

```
RP/0/0/CPU0:router# clear nsr ncd client all
RP/0/0/CPU0:router# show nsr ncd client all

Client PID                : 3874979
Client Protocol           : TCP
Client Instance           : 1
Total packets received    : 0
Total acks received       : 0
Total packets/acks accepted : 0
Errors in changing packet ownership : 0
Errors in setting application offset : 0
Errors in enqueueing to client : 0
Time of last clear        : Sun Jun 10 14:43:44 20

RP/0/0/CPU0:router# show nsr ncd client brief

Pid   Protocol  Instance  Total   Total   Accepted
      Packets  Acks     Packets Acks    Packets/Acks
3874979 TCP         1         0     0       0
```

Related Commands

Command	Description
clear nsr ncd queue, on page 5	Clears the counters for the NSR Consumer Demuxer (NCD) queue.
show nsr ncd client, on page 36	Displays information about the clients for NSR Consumer Demuxer (NCD).
show nsr ncd queue, on page 39	Displays information about the nonstop routing (NSR) Consumer Queue and Dispatch (QAD) queues.

clear nsr ncd queue

To clear the counters for the nonstop routing (NSR) Consumer Demuxer (NCD) queue, use the **clear nsr ncd queue** command in EXEC mode.

```
clear nsr ncd queue {all| high| low} [location node-id]
```

Syntax Description

all	Clears the counters for all the NCD queues.
high	Clears the counters for the high-priority NCD queue.
low	Clears the counters the low-priority NCD queue.
location <i>node-id</i>	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows how to clear the counters for all the NCD queues:

```
RP/0/0/CPU0:router# clear nsr ncd queue all
RP/0/0/CPU0:router# show nsr ncd queue all

Queue Name                               : NSR_LOW
Total packets received                    : 0
Total packets accepted                    : 0
Errors in getting datagram offset         : 0
Errors in getting packet length           : 0
```

clear nsr ncd queue

```

Errors in calculating checksum      : 0
Errors due to bad checksum         : 0
Errors in reading packet data     : 0
Errors due to bad NCD header      : 0
Drops due to a non-existent client : 0
Errors in changing packet ownership : 0
Errors in setting application offset : 0
Errors in enqueueing to client    : 0
Time of last clear                : Sun Jun 10 14:44:38 2007

```

```

Queue Name                        : NSR_HIGH
Total packets received            : 0
Total packets accepted            : 0
Errors in getting datagram offset : 0
Errors in getting packet length   : 0
Errors in calculating checksum     : 0
Errors due to bad checksum        : 0
Errors in reading packet data     : 0
Errors due to bad NCD header      : 0
Drops due to a non-existent client : 0
Errors in changing packet ownership : 0
Errors in setting application offset : 0
Errors in enqueueing to client    : 0
Time of last clear                : Sun Jun 10 14:44:38 2007

```

```
RP/0/0/CPU0:router# show nsr ncd queue brief
```

Queue	Total Packets	Accepted Packets
NSR_LOW	0	0
NSR_HIGH	0	0

Related Commands

Command	Description
clear nsr ncd client , on page 3	Clears the counters for the NSR Consumer Demuxer (NCD) client.
nsr process-failures switchover , on page 31	Configures failover as a recovery action for active instances to switch over to a standby route processor (RP) or a distributed route processor (DRP) to maintain nonstop routing (NSR).
show nsr ncd client , on page 36	Displays information about the clients for NSR Consumer Demuxer (NCD).
show nsr ncd queue , on page 39	Displays information about the nonstop routing (NSR) Consumer Queue and Dispatch (QAD) queues.

clear raw statistics pcb

To clear statistics for a single RAW connection or for all RAW connections, use the **clear raw statistics pcb** command in EXEC mode.

clear raw statistics pcb {all| pcb-address} [location node-id]

Syntax Description

all	Clears statistics for all RAW connections.
pcb-address	Clears statistics for a specific RAW connection.
location <i>node-id</i>	Clears statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

Use the **all** keyword to clear all RAW connections. To clear a specific RAW connection, enter the protocol control block (PCB) address of the RAW connection. Use the **show raw brief** command to obtain the PCB address.

Use the **location** keyword and *node-id* argument to clear RAW statistics for a designated node.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows how to clear statistics for a RAW connection with PCB address 0x80553b0:

```
RP/0/0/CPU0:router# clear raw statistics pcb 0x80553b0
RP/0/0/CPU0:router# show raw statistics pcb 0x80553b0

Statistics for PCB 0x80553b0
Send: 0 packets received from application
0 xipc pulse received from application
```

```

0 packets sent to network
0 packets failed getting queued to network
Rcvd: 0 packets received from network
0 packets queued to application
0 packets failed queued to application

```

The following example shows how to clear statistics for all RAW connections:

```

RP/0/0/CPU0:router# clear raw statistics pcb all
RP/0/0/CPU0:router# show raw statistics pcb all

```

```

Statistics for PCB 0x805484c
Send: 0 packets received from application
0 xipc pulse received from application
0 packets sent to network
0 packets failed getting queued to network
Rcvd: 0 packets received from network
0 packets queued to application
0 packets failed queued to application

```

```

Statistics for PCB 0x8054f80
Send: 0 packets received from application
0 xipc pulse received from application
0 packets sent to network
0 packets failed getting queued to network
Rcvd: 0 packets received from network
0 packets queued to application
0 packets failed queued to application

```

```

Statistics for PCB 0x80553b0
Send: 0 packets received from application
0 xipc pulse received from application
0 packets sent to network
0 packets failed getting queued to network
Rcvd: 0 packets received from network
0 packets queued to application
0 packets failed queued to application

```

Related Commands

Command	Description
show raw brief , on page 41	Displays information about active RAW IP sockets.
show raw statistics pcb , on page 47	Displays statistics for either a single RAW connection or all RAW connections.

clear tcp nsr client

To bring the nonstop routing (NSR) down on all the sessions that are owned by the specified client, use the **clear tcp nsr client** command in EXEC mode.

```
clear tcp nsr client {ccb-address| all} [location node-id]
```

Syntax Description

<i>ccb-address</i>	Client Control Block (CCB) of the NSR client.
all	Specifies all the clients.
location <i>node-id</i>	(Optional) Displays client information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

The location defaults to the current node in which the command is executing.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

The output of the **show tcp nsr client** command is used to locate the CCB of the desired client.

Use the **clear tcp nsr client** command to gracefully bring down NSR session that are owned by one client or all clients. In addition, the **clear tcp nsr client** command is used as a work around if the activity on the sessions freezes.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the nonstop routing (NSR) client is cleared for 0x482afacc : The two sessions had NSR already up before executing the **clear tcp nsr client** command. NSR is no longer up after executing the **clear tcp nsr client** command.

```
RP/0/0/CPU0:router# show tcp nsr client brief
```

clear tcp nsr client

```

CCB          Proc Name      Instance   Sets      Sessions/NSR Up Sessions
0x482c10e0   mpls_ldp      1         2         3/1
0x482afacc   mpls_ldp      2         1         2/2

```

```

RP/0/0/CPU0:router# clear tcp nsr client 0x482afacc
RP/0/0/CPU0:router# show tcp nsr client brief

```

```

CCB          Proc Name      Instance   Sets      Sessions/NSR Up Sessions
0x482c10e0   mpls_ldp      1         2         3/1
0x482afacc   mpls_ldp      2         1         2/0

```

Related Commands

Command	Description
nsr process-failures switchover, on page 31	Configures failover as a recovery action for active instances to switch over to a standby route processor (RP) or a distributed route processor (DRP) to maintain nonstop routing (NSR).
show tcp nsr client brief, on page 76	Displays brief information about the state of nonstop routing (NSR) of TCP clients on different nodes.

clear tcp nsr pcb

To bring the nonstop routing (NSR) down on a specified connection or all connections, use the **clear tcp nsr pcb** command in EXEC mode.

clear tcp nsr pcb {*pcb-address*| **all**} [**location** *node-id*]

Syntax Description

<i>pcb-address</i>	PCB address range for the specific connection information. 0 to ffffffff. For example, the address range can be 0x482a4e20.
all	Specifies all the connections.
location <i>node-id</i>	(Optional) Displays connection information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **location** keyword is used so that active and standby TCP instances are independently queried.

The output of the **show tcp nsr brief** command is used to locate the Protocol Control Block (PCB) of a desired connection.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the information for TCP connections is cleared:

```
RP/0/0/CPU0:router# show tcp nsr brief
```

clear tcp nsr pcb

PCB	Local Address	Foreign Address	NSR	RcvOnly
0x482d7470	5.1.1.1:646			
	5.1.1.2:14142	Up	No	
0x482d2844	5.1.1.1:646			
	5.1.1.2:15539	Up	No	
0x482d3bc0	5.1.1.1:646			
	5.1.1.2:25671	Up	No	
0x482d4f3c	5.1.1.1:646			
	5.1.1.2:32319	Up	No	
0x482d87ec	5.1.1.1:646			
	5.1.1.2:39592	Up	No	
0x482cd670	5.1.1.1:646			
	5.1.1.2:43447	Up	No	
0x482d14c8	5.1.1.1:646			
	5.1.1.2:45803	Up	No	
0x482bdee4	5.1.1.1:646			
	5.1.1.2:55844	Up	No	
0x482d62b8	5.1.1.1:646			
	5.1.1.2:60695	Up	No	
0x482d0310	5.1.1.1:646			
	5.1.1.2:63007	Up	No	

```

RP/0/0/CPU0:router# clear tcp nsr pcb 0x482d7470
RP/0/0/CPU0:router# clear tcp nsr pcb 0x482d2844
RP/0/0/CPU0:router# show tcp nsr brief

```

PCB	Local Address	Foreign Address	NSR	RcvOnly
0x482d7470	5.1.1.1:646			
	5.1.1.2:14142	Down	No	
0x482d2844	5.1.1.1:646			
	5.1.1.2:15539	Down	No	
0x482d3bc0	5.1.1.1:646			
	5.1.1.2:25671	Up	No	
0x482d4f3c	5.1.1.1:646			
	5.1.1.2:32319	Up	No	
0x482d87ec	5.1.1.1:646			
	5.1.1.2:39592	Up	No	
0x482cd670	5.1.1.1:646			
	5.1.1.2:43447	Up	No	
0x482d14c8	5.1.1.1:646			
	5.1.1.2:45803	Up	No	
0x482bdee4	5.1.1.1:646			
	5.1.1.2:55844	Up	No	
0x482d62b8	5.1.1.1:646			
	5.1.1.2:60695	Up	No	
0x482d0310	5.1.1.1:646			
	5.1.1.2:63007	Up	No	

Related Commands

Command	Description
show tcp nsr brief, on page 74	Displays the key nonstop routing (NSR) state of TCP connections on different nodes.
show tcp nsr detail pcb, on page 80	Displays detailed information about the state of nonstop routing (NSR) for TCP connections.

clear tcp nsr session-set

To clear the nonstop routing (NSR) on all the sessions in the specified session-set or all session sets, use the **clear tcp nsr session-set** command in EXEC mode.

clear tcp nsr session-set { *sscb-address* | **all** } [**location** *node-id*]

Syntax Description

<i>sscb-address</i>	Session-Set Control Block (SSCB) address range for the specific session set information. 0 to ffffffff. For example, the address range can be 0x482a4e20.
all	Specifies all the session sets.
location <i>node-id</i>	(Optional) Displays session set information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

The output of the **show tcp nsr session-set brief** command is used to locate the SSCB of the desired session-set.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the information for the session sets is cleared:

```
RP/0/0/CPU0:router# show tcp nsr client brief
CCB          Proc Name      Instance  Sets      Sessions/NSR Up Sessions
0x482b5ee0   mpls_ldp       1         1         10/10

RP/0/0/CPU0:router# clear tcp nsr client 0x482b5ee0
RP/0/0/CPU0:router# show tcp nsr client brief
```

CCB	Proc Name	Instance	Sets	Sessions/NSR Up	Sessions
0x482b5ee0	mpls_ldp	1	1	10/0	

Related Commands

Command	Description
show tcp nsr detail session-set, on page 83	Displays detailed information about the nonstop routing (NSR) state of the session sets on different nodes.
show tcp nsr session-set brief, on page 85	Displays brief information about the session sets for the state of nonstop routing (NSR) on different nodes.

clear tcp nsr statistics client

To clear the nonstop routing (NSR) statistics of the client, use the **clear tcp nsr statistics client** command in EXEC mode.

clear tcp nsr statistics client [*ccb-address*] **all** [**location** *node-id*]

Syntax Description

<i>ccb-address</i>	Client Control Block (CCB) of the desired client. For example, the address range can be 0x482a4e20.
all	Specifies all the clients.
location <i>node-id</i>	(Optional) Displays client information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the statistics for the NSR clients is cleared:

```
RP/0/0/CPU0:router# show tcp nsr statistics client all
```

```
=====
CCB: 0x482b5ee0
Name: mpls_ldp, Job ID: 365
```



```

Connected at: Thu Aug 16 18:20:32 2007

Notification Statistics :   Queued   Failed   Delivered Dropped
Init-Sync Done         :         2     0         2         0
Replicated Session Ready:         0     0         0         0
Operational Down       :        12     0        12         0
Last clear at: Never Cleared

RP/0/0/CPU0:router# clear tcp nsr statistics client all

RP/0/0/CPU0:router# show tcp nsr statistics client all

=====
CCB: 0x482b5ee0
Name: mpls_ldp, Job ID: 365
Connected at: Thu Aug 16 18:20:32 2007

Notification Statistics :   Queued   Failed   Delivered Dropped
Init-Sync Done         :         0     0         0         0
Replicated Session Ready:         0     0         0         0
Operational Down       :         0     0         0         0
Last clear at: Thu Aug 16 18:28:38 2007
    
```

Related Commands

Command	Description
show tcp nsr statistics client, on page 87	Displays the nonstop routing (NSR) statistics for the client.

clear tcp nsr statistics pcb

To clear the nonstop routing (NSR) statistics for TCP connections, use the **clear tcp nsr statistics pcb** command in EXEC mode.

clear tcp nsr statistics pcb [*pcb-address*| **all**] [**location** *node-id*]

Syntax Description

<i>pcb-address</i>	PCB address range for the specific connection information. 0 to ffffffff. For example, the address range can be 0x482a4e20.
all	Specifies all the connections.
location <i>node-id</i>	(Optional) Displays connection information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the NSR statistics for TCP connections is cleared:

```
RP/0/0/CPU0:router# show tcp nsr statistics pcb 0x482d14c8
=====
PCB 0x482d14c8
Number of times NSR went up: 1
Number of times NSR went down: 0
Number of times NSR was disabled: 0
Number of times switch-over occurred : 0
IACK RX Message Statistics:
    Number of iACKs dropped because SSO is not up          : 0
```

```

Number of stale iACKs dropped : 1070
Number of iACKs not held because of an immediate match : 98
TX Message Statistics:
Data transfer messages:
  Sent 317, Dropped 0, Data (Total/Avg.) 2282700/7200
  Rcvd 0
    Success : 0
    Dropped (Trim) : 0
Segmentation instructions:
  Sent 1163, Dropped 0, Units (Total/Avg.) 4978/4
  Rcvd 0
    Success : 0
    Dropped (Trim) : 0
    Dropped (TCP) : 0
NACK messages:
  Sent 0, Dropped 0
  Rcvd 0
    Success : 0
    Dropped (Data snd): 0
Cleanup instructions :
  Sent 8, Dropped 0
  Rcvd 0
    Success : 0
    Dropped (Trim) : 0
Last clear at: Never cleared

```

```

RP/0/0/CPU0:router# clear tcp nsr statistics pcb 0x482d14c8
RP/0/0/CPU0:router# show tcp nsr statistics pcb 0x482d14c8

```

```

=====
PCB 0x482d14c8
Number of times NSR went up: 0
Number of times NSR went down: 0
Number of times NSR was disabled: 0
Number of times switch-over occurred : 0
IACK RX Message Statistics:
  Number of iACKs dropped because SSO is not up : 0
  Number of stale iACKs dropped : 0
  Number of iACKs not held because of an immediate match : 0
TX Message Statistics:
Data transfer messages:
  Sent 0, Dropped 0, Data (Total/Avg.) 0/0
  Rcvd 0
    Success : 0
    Dropped (Trim) : 0
Segmentation instructions:
  Sent 0, Dropped 0, Units (Total/Avg.) 0/0
  Rcvd 0
    Success : 0
    Dropped (Trim) : 0
    Dropped (TCP) : 0
NACK messages:
  Sent 0, Dropped 0
  Rcvd 0
    Success : 0
    Dropped (Data snd): 0
Cleanup instructions :
  Sent 0, Dropped 0
  Rcvd 0
    Success : 0
    Dropped (Trim) : 0
Last clear at: Thu Aug 16 18:32:12 2007

```

Related Commands

Command	Description
show tcp nsr statistics pcb, on page 89	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).

clear tcp nsr statistics session-set

To clear the nonstop routing (NSR) statistics for session sets, use the **clear tcp nsr statistics session-set** command in EXEC mode.

clear tcp nsr statistics session-set *{sscb-address| all}* [**location** *node-id*]

Syntax Description

<i>sscb-address</i>	Session-Set Control Block (SSCB) address range for the specific session set information. 0 to ffffffff. For example, the address range can be 0x482a4e20.
all	Specifies all the session sets.
location <i>node-id</i>	(Optional) Displays session set information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the NSR statistics for session sets is cleared:

```
RP/0/0/CPU0:router# show tcp nsr statistics session-set all
=====Session Set Stats =====
SSCB 0x482b6684, Set ID: 1
Number of times init-sync was attempted :3
```

```

Number of times init-sync was successful :3
Number of times init-sync failed       :0
Number of times switch-over occurred   :0
Last clear at: Never Cleared

RP/0/0/CPU0:router# clear tcp nsr statistics session-set all
RP/0/0/CPU0:router# show tcp nsr statistics session-set all
    
```

```

=====Session Set Stats =====
SSCB 0x482b6684, Set ID: 1
Number of times init-sync was attempted :0
Number of times init-sync was successful :0
Number of times init-sync failed       :0
Number of times switch-over occurred   :0
Last clear at: Thu Aug 16 18:37:00 2007
    
```

Related Commands

Command	Description
show tcp nsr statistics session-set, on page 91	Displays nonstop routing (NSR) statistics for a session set.

clear tcp nsr statistics summary

To clear the nonstop routing (NSR) statistics summary, use the **clear tcp nsr statistics summary** command in EXEC mode.

clear tcp nsr statistics summary [*location node-id*]

Syntax Description

location <i>node-id</i>	(Optional) Displays statistics summary information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows how to clear the summary statistics:

```
RP/0/0/CPU0:router# clear tcp nsr statistics summary
```

Related Commands

Command	Description
show tcp nsr statistics summary, on page 93	Displays the nonstop routing (NSR) summary statistics across all TCP sessions.

clear tcp pcb

To clear TCP protocol control block (PCB) connections, use the **clear tcp pcb** command in EXEC mode.

```
clear tcp pcb {pcb-address| all} [location node-id]
```

Syntax Description

<i>pcb-address</i>	Clears the TCP connection at the specified PCB address.
all	Clears all open TCP connections.
location <i>node-id</i>	Clears the TCP connection for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

The **clear tcp pcb** command is useful for clearing hung TCP connections. Use the [show tcp brief](#), on page 66 command to find the PCB address of the connection you want to clear.

If the **clear tcp pcb all** command is used, the software does not clear a TCP connection that is in the listen state. If a specific PCB address is specified, then a connection in listen state is cleared.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows that the TCP connection at PCB address 60B75E48 is cleared:

```
RP/0/0/CPU0:router# clear tcp pcb 60B75E48
```

clear tcp pcb**Related Commands**

Command	Description
show tcp brief , on page 66	Displays the TCP summary table.

clear tcp statistics

To clear TCP statistics, use the **clear tcp statistics** command in EXEC mode.

```
clear tcp statistics {pcb {all | pcb-address}| summary} [location node-id]
```

Syntax Description

pcb all	(Optional) Clears statistics for all TCP connections.
pcb <i>pcb-address</i>	(Optional) Clears statistics for a specific TCP connection.
summary	(Optional) Clears summary statistic for a specific node or connection.
location <i>node-id</i>	(Optional) Clears TCP statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.
Release 3.3.0	The summary keyword was added.

Usage Guidelines

Use the **clear tcp statistics** command to clear TCP statistics. Use the [show tcp statistics, on page 72](#) command to display TCP statistics. You might display TCP statistics and then clear them before you start debugging TCP.

The optional **location** keyword and *node-id* argument can be used to clear TCP statistics for a designated node.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows how to clear TCP statistics:

```
RP/0/0/CPU0:router# clear tcp statistics
```

Related Commands

Command	Description
show tcp statistics, on page 72	Displays TCP statistics.

clear udp statistics

To clear User Datagram Protocol (UDP) statistics, use the **clear udp statistics** command in EXEC mode.

clear udp statistics {**pcb** {**all** | *pcb-address*} | **summary**} [**location** *node-id*]

Syntax Description

pcb <i>all</i>	Clears statistics for all UDP connections.
pcb <i>pcb-address</i>	Clears statistics for a specific UDP connection.
summary	Clears UDP summary statistics.
location <i>node-id</i>	Clears UDP statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

Use the **clear udp statistics** command to clear UDP statistics. Use the [show udp statistics, on page 101](#) command to display UDP statistics. You might display UDP statistics and then clear them before you start debugging UDP.

The optional **location** keyword and *node-id* argument can be used to clear UDP statistics for a designated node.

Task ID

Task ID	Operations
transport	execute

Examples

The following example shows how to clear UDP summary statistics:

```
RP/0/0/CPU0:router# clear udp statistics summary
```

Related Commands

Command	Description
show udp statistics, on page 101	Displays UDP statistics.

forward-protocol udp

To configure the system to forward any User Datagram Protocol (UDP) datagrams that are received as broadcast packets to a specified helper address, use the **forward-protocol udp** command in Global Configuration mode. To restore the system to its default condition with respect to this command, use the **no** form of this command.

```
forward-protocol udp {port-number| disable| domain| nameserver| netbios-dgm| netbios-ns| tacacs| tftp}
no forward-protocol udp {port-number| disable| domain| nameserver| netbios-dgm| netbios-ns| tacacs| tftp}
```

Syntax Description

<i>port-number</i>	Forwards UDP broadcast packets to a specified port number. Range is 1 to 65535.
disable	Disables IP Forward Protocol UDP.
domain	Forwards UDP broadcast packets to Domain Name Service (DNS, 53).
nameserver	Forwards UDP broadcast packets to IEN116 name service (obsolete, 42).
netbios-dgm	Forwards UDP broadcast packets to NetBIOS datagram service (138).
netbios-ns	Forwards UDP broadcast packets to NetBIOS name service (137).
tacacs	Forwards UDP broadcast packets to TACACS (49).
tftp	Forwards UDP broadcast packets to TFTP (69).

Command Default

Disabled

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

Use the **forward-protocol udp** command to specify that UDP broadcast packets received on the incoming interface are forwarded to a specified helper address.

When you configure the **forward-protocol udp** command, you must also configure the **helper-address** command to specify a helper address on an interface. The helper address is the IP address to which the UDP datagram is forwarded. Configure the **helper-address** command with IP addresses of hosts or networking

devices that can handle the service. Because the helper address is configured per interface, you must configure a helper address for each incoming interface that will be receiving broadcasts that you want to forward.

You must configure one **forward-protocol udp** command per UDP port you want to forward. The port on the packet is either port 53 (**domain**), port 69 (**tftp**), or a port number you specify.

The **forward-protocol udp** command is by default enabled on the following ports: domain, nameserver, netbios-dgm, netbios-ns, tacacs, tftp. This feature can be disabled using the **forward-protocol udp disable** command.

Task ID

Task ID	Operations
transport	read, write

Examples

The following example shows how to specify that all UDP broadcast packets with port 53 or port 69 received on incoming MgmtEth interface 0/0/CPU0/0 are forwarded to 172.16.0.1. MgmtEth interface 0/0/CPU0/0 receiving the UDP broadcasts is configured with a helper address of 172.16.0.1, the destination address to which the UDP datagrams are forwarded.

```
RP/0/0/CPU0:router(config)# forward-protocol udp domain disable
RP/0/0/CPU0:router(config)# forward-protocol udp tftp disable
RP/0/0/CPU0:router(config)# interface MgmtEth 0/0/CPU0/0
RP/0/0/CPU0:router(config-if)# ipv4 helper-address 172.16.0.1
```

nsr process-failures switchover

To configure failover as a recovery action for active instances to switch over to a standby route processor (RP) or a standby distributed route processor (DRP) to maintain nonstop routing (NSR), use the **nsr process-failures switchover** command in Global Configuration mode. To disable this feature, use the **no** form of this command.

nsr process-failures switchover
no nsr process-failures switchover

Syntax Description This command has no keywords or arguments.

Command Default If not configured, a process failure of the active TCP or its applications (for example LDP, BGP, and so forth) can cause sessions to go down, and NSR is not provided.

Command Modes Global Configuration mode

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	transport	read, write

Examples The following example shows how to use the **nsr process-failures switchover** command:

```
RP/0/0/CPU0:router(config)# nsr process-failures switchover
```

service tcp-small-servers

To enable small TCP servers such as the ECHO, use the **service tcp-small-servers** command in Global Configuration mode. To disable the TCP server, use the **no** form of this command.

```
service {ipv4| ipv6} tcp-small-servers [max-servers number| no-limit] [ access-list-name ]
```

```
no service {ipv4| ipv6} tcp-small-servers [max-servers number | no-limit] [ access-list-name ]
```

Syntax Description

ip4	Specifies IPv4 small servers.
ipv6	Specifies IPv6 small servers.
max-servers	(Optional) Sets the number of allowable TCP small servers.
<i>number</i>	(Optional) Number value. Range is 1 to 2147483647.
no-limit	(Optional) Sets no limit to the number of allowable TCP small servers.
<i>access-list-name</i>	(Optional) The name of an access list.

Command Default

TCP small servers are disabled.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

The TCP small servers currently consist of three services: Discard (port 9), Echo (port 7), and Chargen (port 19). These services are used to test the TCP transport functionality. The Discard server receives data and discards it. The Echo server receives data and echoes the same data to the sending host. The Chargen server generates a sequence of data and sends it to the remote host.

Task ID

Task ID	Operations
ipv4	read, write
ip-services	read, write

Examples

In the following example, small IPv4 TCP servers are enabled:

```
RP/0/0/CPU0:router(config)# service ipv4 tcp-small-servers max-servers 5 ac1100
```

Related Commands

Command	Description
service udp-small-servers, on page 34	Enables small UDP servers such as the ECHO.
show cinetd services	Displays the services whose processes are spawned by cinetd.

service udp-small-servers

To enable small User Datagram Protocol (UDP) servers such as the ECHO, use the **service udp-small-servers** command in Global Configuration mode. To disable the UDP server, use the **no** form of this command.

```
service {ipv4| ipv6} udp-small-servers [max-servers number| no-limit] [ access-list-name ]
```

```
no service {ipv4| ipv6} udp-small-servers [max-servers number | no-limit] [ access-list-name ]
```

Syntax Description

ip4	Specifies IPv4 small servers.
ipv6	Specifies IPv6 small servers.
max-servers	(Optional) Sets the number of allowable UDP small servers.
<i>number</i>	(Optional) Number value. Range is 1 to 2147483647.
no-limit	(Optional) Sets no limit to the number of allowable UDP small servers.
<i>access-list-name</i>	(Optional) Name of an access list.

Command Default

UDP small servers are disabled.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

The UDP small servers currently consist of three services: Discard (port 9), Echo (port 7), and Chargen (port 19). These services are used to test the UDP transport functionality. The discard server receives data and discards it. The echo server receives data and echoes the same data to the sending host. The chargen server generates a sequence of data and sends it to the remote host.

Task ID

Task ID	Operations
ipv6	read, write
ip-services	read, write

Examples

The following example shows how to enable small IPv6 UDP servers and set the maximum number of allowable small servers to 10:

```
RP/0/0/CPU0:router(config)# service ipv6 udp-small-servers max-servers 10
```

Related Commands

Command	Description
service tcp-small-servers, on page 32	Enables small TCP servers such as the ECHO.

show nsr ncd client

To display information about the clients for nonstop routing (NSR) Consumer Demuxer (NCD), use the **show nsr ncd client** command in EXEC mode.

show nsr ncd client {*PID value*| **all**| **brief**} [**location** *node-id*]

Syntax Description

<i>PID value</i>	Process ID (PID) information for a specific client. The range is from 0 to 4294967295.
all	Displays detailed information about all the clients.
brief	Displays brief information about all the clients.
location <i>node-id</i>	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows detailed information about all the clients:

```
RP/0/0/CPU0:router# show nsr ncd client all
Client PID                : 3874979
Client Protocol           : TCP
Client Instance           : 1
Total packets received    : 28
Total acks received      : 0
```

```
Total packets/acks accepted      : 28
Errors in changing packet ownership : 0
Errors in setting application offset : 0
Errors in enqueueing to client     : 0
Time of last clear                 : Never cleared
```

The following sample output shows brief information about all the clients:

```
RP/0/0/CPU0:router# show nsr ncd client brief

Pid   Protocol  Instance  Total  Total  Accepted
3874979 TCP        1         28    0      28
```

This table describes the significant fields shown in the display.

Table 1: show nsr ncd client Command Field Descriptions

Field	Description
Client PID	Process ID of the client process.
Client Protocol	Protocol of the client process. The protocol can be either TCP, OSPF, or BGP.
Client Instance	Instance number of the client process. There can be more than one instance of a routing protocol, such as OSPF.
Total packets received	Total packets received from the partner stack on the partner route processor (RP).
Total acks received	Total acknowledgements received from the partner stack on the partner RP for the packets sent to the partner stack.
Total packets/acks accepted	Total packets and acknowledgements received from the partner stack on the partner RP.
Errors in changing packet ownership	NCD changes the ownership of the packet to that of the client before queueing the packet to the client. This counter tracks the errors, if any, in changing the ownership.
Errors in setting application offset	NCD sets the offset of the application data in the packet before queueing the packet to the client. This counter tracks the errors, if any, in setting this offset.
Errors in enqueueing to client	Counter tracks any queueing errors.
Time of last clear	Statistics last cleared by the user.

Related Commands

Command	Description
clear nsr ncd client, on page 3	Clears the counters for the NSR Consumer Demuxer (NCD) client.
clear nsr ncd queue, on page 5	Clears the counters for the NSR Consumer Demuxer (NCD) queue.
show nsr ncd queue, on page 39	Displays information about the nonstop routing (NSR) Consumer Queue and Dispatch (QAD) queues.

show nsr ncd queue

To display information about the queues that are used by the nonstop routing (NSR) applications to communicate with their partner stacks on the partner route processors (RPs), use the **show nsr ncd queue** command in EXEC mode.

```
show nsr ncd queue {all| brief| high| low} [location node-id]
```

Syntax Description

all	Displays detailed information about all the consumer queues.
brief	Displays brief information about all the consumer queues.
high	Displays information about high-priority Queue and Dispatch (QAD) queues.
low	Displays information about low-priority QAD queues.
location <i>node-id</i>	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows brief information about all the consumer queues:

```
RP/0/0/CPU0:router# show nsr ncd queue brief
      Queue          Total      Accepted
              Packets      Packets
```

```

NSR_LOW          992          992
NSR_HIGH         0            0

```

This table describes the significant fields shown in the display.

Table 2: show nsr ncd queue Command Field Descriptions

Field	Description
Total Packets	Total number of packets that are received from the partner stack.
Accepted Packets	Number of received packets that were accepted after performing some validation tasks.
Queue	Name of queue. NSR_HIGH and NSR_LOW are the two queues. High priority packets flow on the NSR_HIGH queue. Low priority packets flow on the NSR_LOW queue.

Related Commands

Command	Description
clear nsr ncd client, on page 3	Clears the counters for the NSR consumer demuxer (NCD) client.
clear nsr ncd queue, on page 5	Clears the counters for the NSR consumer demuxer (NCD) queue.
show nsr ncd client, on page 36	Displays information about the clients for NSR consumer demuxer(NCD).

show raw brief

To display information about active RAW IP sockets, use the **show raw brief** command in EXEC mode.

show raw brief [*location node-id*]

Syntax Description

location <i>node-id</i>	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	--

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

Protocols such as Open Shortest Path First (OSPF) and Protocol Independent Multicast (PIM) use long-lived RAW IP sockets. The **ping** and **traceroute** commands use short-lived RAW IP sockets. Use the **show raw brief** command if you suspect a problem with one of these protocols.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show raw brief** command:

```
RP/0/0/CPU0:router# show raw brief
PCB      Recv-Q  Send-Q  Local Address      Foreign Address  Protocol
0x805188c      0       0  0.0.0.0           0.0.0.0         2
0x8051dc8      0       0  0.0.0.0           0.0.0.0        103
0x8052250      0       0  0.0.0.0           0.0.0.0        255
```

This table describes the significant fields shown in the display.

Table 3: show raw brief Command Field Descriptions

Field	Description
PCB	Protocol control block address. This is the address to a structure that contains connection information such as local address, foreign address, local port, foreign port, and so on.
Recv-Q	Number of bytes in the receive queue.
Send-Q	Number of bytes in the send queue.
Local Address	Local address and local port.
Foreign Address	Foreign address and foreign port.
Protocol	Protocol that is using the RAW IP socket. For example, the number 2 is IGMP, 103 is PIM, and 89 is OSPF.

show raw detail pcb

To display detailed information about active RAW IP sockets, use the **show raw detail pcb** command in EXEC mode.

show raw detail pcb {*pcb-address*| **all**} **location** *node-id*

Syntax Description		
	<i>pcb-address</i>	Displays statistics for a specified RAW connection.
	all	Displays statistics for all RAW connections.
	location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default No default behavior or values

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.2	This command was supported.
	Release 3.3.0	The command name was changed from show raw pcb to show raw detail pcb .

Usage Guidelines The **show raw detail pcb** command displays detailed information for all connections that use the RAW transport. Information that is displayed includes family type (for example, 2 for AF_INET also known as IPv4), PCB address, Layer 4 (also known as transport) protocol, local address, foreign address, and any filter that is being used.

Task ID	Task ID	Operations
	transport	read

Examples The following is sample output from the **show raw detail pcb** command:

```
RP/0/0/CPU0:router# show raw detail pcb 0x807e89c
=====
```

```

PCB is 0x807e89c, Family: 2, PROTO: 89, VRF: 0x0
Local host: 0.0.0.0
Foreign host: 0.0.0.0

Current send queue size: 0
Current receive queue size: 0
Paw socket: Yes

```

This table describes the significant fields shown in the display.

Table 4: show raw detail pcb Command Field Descriptions

Field	Description
JID	Job ID of the process that created the socket.
Family	Network protocol. IPv4 is 2; IPv6 is 26.
PCB	Protocol control block address.
L4-proto	Layer 4 (also known as transport) protocol.
Laddr	Local address.
Faddr	Foreign address.
ICMP error filter mask	If an ICMP filter is being set, output in this field has a nonzero value.
LPTS socket options	If an LPTS option is being set, output in this field has a nonzero value.
Packet Type Filters	Packet filters that are being set for a particular RAW socket, including the number of packets for that filter type. Multiple filters can be set.

show raw extended-filters

To display information about active RAW IP sockets, use the **show raw extended-filters** command in EXEC mode.

```
show raw extended-filters {interface-filter location node-id | location node-id | paktype-filter location node-id}
```

Syntax Description

interface-filter	Displays the protocol control blocks (PCBs) with configured interface filters.
location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
paktype-filter	Displays the PCBs with configured packet type filters.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.
Release 3.3.0	The command name was changed from show raw pcb to show raw extended-filters .

Usage Guidelines

The **show raw extended-filters** command displays detailed information for all connections that use the RAW transport. Information that is displayed includes family type (for example, 2 for AF_INET also known as IPv4), PCB address, Layer 4 (also known as transport) protocol, local address, foreign address, and any filter that is being used.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show raw extended-filters** command:

```
RP/0/0/CPU0:router# show raw extended-filters 0/0/CPU0

Total Number of matching PCB's in database: 1
JID: 0/0
Family: 2
PCB: 0x0803dd38
L4-proto: 1
Laddr: 0.0.0.0
Faddr: 0.0.0.0
ICMP error filter mask: 0x3ff
LPTS socket options: 0x0020
Packet Type Filters:
0
[220 pkts in]
3
[0 pkts in]
4
[0 pkts in]
```

This table describes the significant fields shown in the display.

Table 5: show raw extended-filters Output Command Field Descriptions

Field	Description
JID	Job ID of the process that created the socket.
Family	Network protocol. IPv4 is 2; IPv6 is 26.
PCB	Protocol control block address.
L4-proto	Layer 4 (also known as transport) protocol.
Laddr	Local address.
Faddr	Foreign address.
ICMP error filter mask	If an ICMP filter is being set, output in this field has a nonzero value.
LPTS socket options	If an LPTS option is being set, output in this field has a nonzero value.
Packet Type Filters	Packet filters that are being set for a particular RAW socket, including the number of packets for that filter type. Multiple filters can be set.

show raw statistics pcb

To display statistics for a single RAW connection or for all RAW connections, use the **show raw statistics pcb** command in EXEC mode.

```
show raw statistics pcb {all| pcb-address} location node-id
```

Syntax Description

all	Displays statistics for all RAW connections.
pcb-address	Displays statistics for a specified RAW connection.
location node-id	Displays RAW statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

Use the **all** keyword to display all RAW connections. If a specific RAW connection is desired, then enter the protocol control block (PCB) address of that RAW connection. Use the **show raw brief** command to obtain the PCB address.

Use the **location** keyword and *node-id* argument to display RAW statistics for a designated node.

Task ID

Task ID	Operations
transport	read

Examples

In the following example, statistics for a RAW connection with PCB address 0x80553b0 are displayed:

```
RP/0/0/CPU0:router# show raw statistics pcb 0x80553b0

Statistics for PCB 0x80553b0
Send: 0 packets received from application
0 xipc pulse received from application
0 packets sent to network
```

```

0 packets failed getting queued to network
Rcvd: 0 packets received from network
0 packets queued to application
0 packets failed queued to application

```

In this example, statistics for all RAW connections are displayed:

```
RP/0/0/CPU0:router# show raw statistics pcb all
```

```

Statistics for PCB 0x805484c, Vrfid: 0x60000000
Send: 0 packets received from application
0 xipc pulse received from application
0 packets sent to network
0 packets failed getting queued to network
Rcvd: 0 packets received from network
0 packets queued to application
0 packets failed queued to application

```

This table describes the significant fields shown in the display.

Table 6: show raw statistics pcb Command Field Descriptions

Field	Description
Send:	Statistics in this section refer to packets sent from an application to RAW.
Vrfid	VPN routing and forwarding (VRF) identification (vrfid) number.
xipc pulse received from application	Number of notifications sent from applications to RAW.
packets sent to network	Number of packets sent to the network.
packets failed getting queued to network	Number of packets that failed to get queued to the network.
Rcvd:	Statistics in this section refer to packets received from the network.
packets queued to application	Number of packets queued to an application.
packets failed queued to application	Number of packets that failed to get queued to an application.

Related Commands

Command	Description
clear raw statistics pcb , on page 7	Clears statistics for either a single RAW connection or for all RAW connections.
show raw brief , on page 41	Displays information about active RAW IP sockets.

show sctp association brief

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

```
show sctp association brief all pcb address [location node-id]
```

Syntax Description

all	Displays all association information for the SCTP PCB in the current node.
pcb address	Displays all the associations for the PCB address, endpoint, or both.
location node-id	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The PCB address, which is used for this command, is obtained from the [show sctp pcb brief](#), on page 57 command with the **all** keyword.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output is from the **show sctp association brief** command:

```
RP/0/0/CPU0:router# show sctp association brief all pcb 0x4834e088
All associations for PCB: 0x4834e088
Asoc ID    VRF ID    RemotePort NextTSN    PeerRwnd    TotalFlight State
```

```
-----
0x4c6c35ee 0x60000000 5000          0xbaba612f 0x100000  0x0          OPEN
```

This table describes the significant fields shown in the display.

Table 7: show sctp association brief Command Field Descriptions

Field	Description
Asoc ID	Association ID for the mentioned association.
VRF ID	VRF ID to which the association belongs.
RemotePort	Port number on the remote endpoint of the association.
NextTSN	Transmission sequence number of the chunk that is lined up to be sent next on the wire.
PeerRwnd	Calculated receiver window, in bytes, of the peer.
TotalFlight	Amount of data, in bytes, currently in flight (on all destinations).
State	Present association status.

Related Commands

Command	Description
show sctp association detail, on page 51	Displays detailed statistics that have accumulated for the specified Stream Control Transmission Protocol (SCTP) association.
show sctp pcb brief, on page 57	Displays brief Stream Control Transmission Protocol (SCTP) endpoint Protocol Control Block (PCB) information.

show sctp association detail

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

show sctp association detail *association-id* [**location** *node-id*]

Syntax Description	
association-id	Specified association ID.
location <i>node-id</i>	(Optional) Displays detailed association information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default No default behavior or values

Command Modes EXEC

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	transport	read

Examples The following sample output is from the **show sctp association detail** command:

```
RP/0/0/CPU0:router# show sctp association detail 0x4c6c35ee
PCB 0x4834e088, Asoc 0x4c6c35ee, lport 56100, rport 5000, vrf 0x60000000, state OPEN
Local addr 0, remote addr 2, mtu 1500, v4 addr legal yes, v6 addr legal no
Vtag 0x4c6c35ee, Peer vtag 0xa65a0cf0, Vtag nonce 0xce545ca9, Peer vtag nonce 0x
c4b5e813
Pdapi ppid 0x0, context 0x0 refcount 0
Init seq 3132776750, Send seq 3132776751, Total in flight 0
Last acked seq 3132776750, SACK highest gap 3132776750
```

```

ASCONF: seqout 3132776750, seqin 166718713, STRRST: seqout 3132776750, seqin 1667187 14
Last strseq rcv 0, last stream num rcv 0

PeerRwnd 1048576, MyRwnd 1048576, Last reported rwnd 0, Rwnd ctrl len 0
InitialRTOMax 60000, InitialRTO 3000, MinRTO 1000, MaxRTO 60000

Last stream num of pdapi 0, Last ssn of pdapi 0, Last tsn of pd api 0
Stream locked 0, Stream lock num 0

no Strrst chunk pending to be read, no Strrst chunk pending to be sent
Delayed connect off, Fast retrans loss recovery off, Data chunks timer retransmitted y es
Chunk memory not freed 3, Last revoke count 0, Size/Count of data on all streams 0/0
Total output Q size 0, Chunks on outputQ 0, ECN echo count on ouput Q 0

Streamincnt 10, Streamoutcnt 10, Max burst 4, HB disabled no
Default TOS 0, ECN nonce allowed no, ECN allowed yes
Max init retrans 8, Max send retrans 10, Def net retrans 5,
HB delay 30000, Preopen stream 10 Max inbound stream 2048
Cookie life 6000, Delayed ACK yes, SACK freq 2

Peer hmac 0x1
Peer supports: ecn nonce : no, Asconf: yes, PRsctp: yes,
AUTH: yes, Stream Reset: yes, PKT Drop: yes

Send timers pending 0, Timeout init 1, Timeout data 1, timeout sack 0
Timeout shutdown 0, Timeout shutdownack 0 Timeout heartbeat 96 Timeout cookie 0

Send: total data sent 0, StmQ cnt 0, SendQ cnt 0,
SentQ cnt 0, SentQcntremovable 0, SendQ retrans cnt 0
Size/msg on reassemblyQ 0/0, Msg on strmbuf 0

Overall error cnt 0, Dup tsns rcv 0, Stale cookie 0,
Dropped special cnt 0 Enobuf 0

Asoc up sent to app 1
This table describes the significant fields shown in the display.

```

Table 8: show sctp association detail Command Field Descriptions

Field	Description
PCB	Protocol Control Block ID.
Asoc	Association ID.
lport	Local port number.
rport	Remote port number.
vrf	VRF ID of the PCB.
state	Present association state.
Local addr	Local addresses attached to the association.
remote addr	Remote addresses attached to the association.
mtu	MTU of the association.
v4 addr legal	Attached IPv4 addresses are valid.

Field	Description
v6 addr legal	Attached IPv6 addresses are valid.
Init seq	Association initialization sequence number that is used.
Send seq	Latest chunk sequence number that is sent.
Last acked seq	Last acknowledged chunk sequence number.
Total in flight	Amount of data, in bytes, currently in flight (on all destinations).
SACK highest gap	Largest unacknowledged gap in the selective acknowledgement (SACK) blocks.
ASCONF	ASCONF field displays the following fields: <ul style="list-style-type: none"> seqout—Displays the Address/Stream Configuration Change (ASCONF) next sequence that is being sent out (inits at init-tsn). seqin—Displays the ASCONF that is last received from the ASCONF peer. (starts at peer's TSN-1).
STRRST	STRRST field displays the following fields: <ul style="list-style-type: none"> seqout—Displays the next sequence that is being sent in stream reset messages. seqin—Displays the next sequence that is expected in stream reset messages.
PeerRwnd	Calculated receiver window size of the peer.
MyRwnd	Calculated receiver window size of current node
Last reported rwnd	Last reported receiver window size of current node.
Rwnd ctrl len	Shadow of stream buffer message and buffer count that is used for receiver window control.
InitialRTOMax	Initial RTO for INIT's.
InitialRTO	Initial sent RTO.
MinRTO	Per association RTO-MIN.
MaxRTO	Per association RTO-MAX.

Field	Description
Last stream num of pdapi	Stream number of the last delivered chunk for the partial delivery API.
Last ssn of pdapi	SSN of the last delivered chunk for the partial delivery API.
Last tsn of pd api	Transmission Sequence Number (TSN) of the last delivered chunk for the partial delivery API.
Stream locked	Stream locked waiting for acknowledgement or not.
Stream lock num	Lock flag of 0 and is ok to send. The value of 1+, duals as a retransmission count, and is awaiting acknowledgement.
Streamincnt	Count of incoming chunks that are on actual built streams.
Streamoutcnt	Count of outgoing chunks that are on actual built streams.
Max burst	Maximum burst value after fast retransmit completes.
HB disabled	Heartbeat disabled.
Default TOS	Default Type-of-Service (ToS) value.
ECN nonce allowed	Explicit Congestion Notification (ECN)-nonce is allowed.
ECN allowed	Flag to specify if ECN is allowed.
Max init retran	Maximum number of retransmissions of INIT.
Max send retran	Maximum number of retransmissions of SEND.
Def net retran	Maximum times to send before considering some peers dead.
HB delay	Heartbeat delay in ticks.
Preopen stream	Number of preopen streams.
Max inbound stream	Number of incoming streams supported.
Cookie life	Cookie life awarded for any cookie, in seconds.
Delayed ACK	Time for delaying acknowledgements.

Field	Description
SACK freq	Frequency of selective acknowledgements.
Peer hmac	Peer Hash Message Authentication Code (HMAC) ID to send.
Peer supports	Peer supports the following list: <ul style="list-style-type: none"> • ecn nonce—Peer support for ECN-nonce. • Asconf—Peer support for ASCONF. • PRsctp—Peer support for PR SCTP. • AUTH—Peer support for authentication. • Stream Reset—Peer support for stream reset. • PKT Drop—Peer support for packet drop.
Send timers pending	Number of expired for send timers.
Timeout init, Timeout data, Timeout sack, Timeout shutdown, Timeout shutdownack, Timeout heartbeat, Timeout cookie	Mapping array used to track out-of-order sequences above the last_acked_seq. The value of 0 indicates that the packet is missing. The value of 1 indicates that the packet is received. The packet rises up every time it is raised to last_acked_seq, and 0 trailing locations are out. If a TSN above the array is mappingArrayS, the datagram is discarded and a retransmit is allowed to happen.
Send	Send is listed as one of the following types: <ul style="list-style-type: none"> • total data sent—Total data sent out. • StmQ cnt—Number of datagrams in the individual stream queue. • SendQ cnt—Total number of datagrams waiting to be sent. • SentQ cnt—Total number of datagrams sent. • SentQcntremovable—Number of removable datagrams from the sent queue (PR-SCTP). • SendQ retran cnt—Number of sent queue that is marked for retransmission. When this value is 0, only one packet is sent for retransmissioned data.
Size/msg on reassemblyQ	Size or number of message on reassembly queue.
Msg on strmbuf	Number of messages in the stream buffer.

show sctp association detail

Field	Description
Overall error cnt	Total error count on this association.
Dup tsns rcv	Number of duplicate TSNS received.
Stale cookie	Total number of stale cookies.
Dropped special cnt	Number of dropped INITs.
Enobuf	ENOBUF is true or not. ENOBUF happens when no buffer space is available.
Asoc up sent to app	Notification of association is being up sent to the application or not.

Related Commands

Command	Description
show sctp association brief , on page 49	Displays brief association information for Stream Control Transmission Protocol (SCTP).

show sctp pcb brief

To display brief Stream Control Transmission Protocol (SCTP) endpoint Protocol Control Block (PCB) information, use the **show sctp pcb brief** command in EXEC mode.

show sctp pcb brief all [*location node-id*]

Syntax Description	
all	Displays all endpoint PCB brief information.
location node-id	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default No default behavior or values

Command Modes EXEC

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines The output from the **show sctp pcb brief** command is used for the [show sctp association brief](#), on page 49 command.

Task ID	Task ID	Operations
	transport	read

Examples The following sample output is from the **show sctp pcb brief** command for the **all** keyword:

```
RP/0/0/CPU0:router# show sctp pcb brief all
PCB          LocalPort  VRF ID      LAddrCnt  Flags      NumVRFs     TotalSend   TotalRecv
-----
0x4834e088  56100      0x60000000 000000000 0x5        000000001   000000001  000000000
0x4834ccc8  41384      0x60000000 000000000 0x5        000000001   000000001  000000000
0x4834b878  36423      0x60000000 000000000 0x5        000000001   000000001  000000000
0x4834a4b8  24295      0x60000000 000000000 0x5        000000001   000000001  000000000
0x48349068  55788      0x60000000 000000000 0x5        000000001   000000001  000000000
0x48347ca8  25376      0x60000000 000000000 0x5        000000001   000000001  000000000
0x48346978  34114      0x60000000 000000000 0x5        000000001   000000001  000000000
0x48345528  14875      0x60000000 000000000 0x5        000000001   000000001  000000000
0x483440d8  10467      0x60000000 000000000 0x5        000000001   000000001  000000000
```

```

0x48336bd0 57853      0x60000000 0000000000 0x5      0000000001 0000000001 0000000000
0x48335924 5000      0x60000000 0000000000 0x5      0000000001 0000000000 0000000010

```

This table describes the significant fields shown in the display.

Table 9: show sctp pcb brief Command Field Descriptions

Field	Description
PCB	Protocol Control Block ID.
LocalPort	Endpoint local port that is associated with the PCB.
VRF ID	VRF ID in which the PCB belongs.
LAddrCnt	Number of local IP addresses.
Flags	Flags set for the PCB.
NumVRFs	Number of VRFs in which the PCB is associated.
TotalSend	Total number of chunks sent through the PCB.
TotalRecv	Total number of chunks received through the PCB.

Related Commands

Command	Description
show sctp association brief, on page 49	Displays brief association information for Stream Control Transmission Protocol (SCTP).
show sctp pcb detail, on page 59	Displays detailed Stream Control Transmission Protocol (SCTP) endpoint Protocol Control Block (PCB) information.

show sctp pcb detail

To display detailed Stream Control Transmission Protocol (SCTP) endpoint Protocol Control Block (PCB) information, use the **show sctp pcb detail** command in EXEC mode.

show sctp pcb detail *pcb-address* [**location** *node-id*]

Syntax Description

pcb-address	PCB address range for the specific PCB of interest is from 0 to ffffffff. For example, the address range can be 0x807e89c.
location <i>node-id</i>	(Optional) Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output is from the **show sctp pcb detail** command for the PCB address of 0x4834e088:

```
RP/0/0/CPU0:router# show sctp pcb detail 0x4834e088

PCB: 0x4834e088, NON-PAW socket: 0x4834dee8, vrf: 0x60000000, local Port: 56100
Total VRFs: 1, VRF size: 4
Local address 0, associations: 1

Flags: 0x5, Features: 0xffc68, Refcount: 0, HashMark: 255
vFlag: 0x2, TTL: 0x40, TOS: 0x0, RESV: 0x0
Fragmentation Point: 65535, Partial Delivery Point 524288, SCTP Context 0x0, Last Abort
Code: 0x0
```

```

socket Q limit 0, Socket Q len 0

Send:  0 received from application
       1 sent to network  0 nospaces
Rcvd:  0 packets received from network  0 packets queued to application
       0 packets failed queued to application

```

This table describes the significant fields shown in the display.

Table 10: show sctp pcb detail Command Field Descriptions

Field	Description
Flags	Bitmask of flags set for the PCB.
Features	Bitmask of features enabled for the endpoint.
Refcount	Reference count of the PCB.
HashMark	Hash mark for the association.
vFlag	vFlags set.
TTL	Time-to-Live value.
TOS	ToS value.
RESV	Type of reservation.
Fragmentation Point	Point-of-fragmentation for the datagram.
Partial Delivery Point	Point up to which the datagram is partially delivered.
SCTP Context	SCTP context.
Last Abort Code	Error code for the last abort.
Socket Q limit	Maximum value for socket queue.
Socket Q len	Current length of socket queue.

Related Commands

Command	Description
show sctp pcb brief , on page 57	Displays brief Stream Control Transmission Protocol (SCTP) endpoint Protocol Control Block (PCB) information.

show sctp statistics

To display the overall statistics counts for the 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 keywords or arguments.

Command Default No default behavior or values

Command Modes EXEC

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The statistics displayed are for the current node.

Task ID	Task ID	Operations
	transport	read

Examples The following sample output shows SCTP statistics from the **show sctp statistics** command:

```
Input Statistics:
 1979 total input packets
 1979 total input datagrams
 10 total packets that had data
 10 total input SACK chunks
 10 total input DATA chunks
 2 total input duplicate DATA chunks
1000 total input HB chunks
 910 total input HB-ACK chunks
 0 total input ECNE chunks
 0 total input AUTH chunks
 0 total input chunks missing AUTH
 0 total number of invalid HMAC ids received
 0 total number of invalid secret ids received
 0 total number of auth failed
 0 total fast path receives all one chunk
```

show sctp statistics

```

    0 total fast path multi-part data
Output Statistics:
  3466 total output packets
  12 total output SACKs
  10 total output DATA chunks
  8 total output retransmitted DATA chunks
  0 total output fast retransmitted DATA chunks
  0 total FR's that happened more than once to same chunk (u-del multi-fr algo).
  2367 total output HB chunks
  0 total output ECNE chunks
  0 total output AUTH chunks
  0 ip_output error counter
Packet Dropped Statistics:
  0 packet drop from middle box
  0 packet drop from end host
  0 packet drops with data
  0 packet drops, non-data, non-endhost
  0 packet drop, non-endhost, bandwidth rep only
  0 packet drop, not enough for chunk header
  0 packet drop, not enough data to confirm
  0 packet drop, where process_chunk_drop said break
  0 packet drop, could not find TSN
  0 packet drop, attempt reverse TSN lookup
  0 packet drop, e-host confirms zero-rwnd
  0 packet drop, midbox confirms no space
  0 packet drop, data did not match TSN
  0 packet drop, TSN's marked for Fast Retran
Timeouts:
  0 number of iterator timers that fired
  8 number of T3 data time outs
  0 number of window probe (T3) timers that fired
  22 number of INIT timers that fired
  2 number of sack timers that fired
  0 number of shutdown timers that fired
  2348 number of heartbeat timers that fired
  6 number of times a cookie timeout fired
  11 number of times an endpoint changed its cookie secret
  240 number of PMTU timers that fired
  0 number of shutdown ack timers that fired
  0 number of shutdown guard timers that fired
  0 number of stream reset timers that fired
  0 number of early FR timers that fired
  0 number of times an asconf timer fired
  0 number of times auto close timer fired
  0 number of asoc free timers expired
  0 number of inp free timers expired
Other Counters:
  0 packet shorter than header
  0 checksum error
  0 no endpoint for port
  0 bad v-tag
  0 bad SID
  0 no memory
  0 number of multiple FR in a RTT window
  8 sctps_markedretrans
  10 nagle allowed sending
  0 nagle doesn't allow sending
  0 max burst doesn't allow sending
  0 look ahead tells us no memory in interface ring buffer or we had a send error and
  are queuing one send.
  0 total number of window probes sent
  0 total times an output error causes us to clamp down on next user send.
  0 total times sctp_senderrors were caused from a user send from a user invoked send
  not a sack response
  0 number of in data drops due to chunk limit reached
  0 number of in data drops due to rwnd limit reached
  0 number of times a ECN reduced the cwnd
  1942 used express lookup via vtag
  0 collision in express lookup.
  0 number of times the sender ran dry of user data on primary
  0 same for above
  0 sacks the slow way
  0 window update only sacks sent

```

```

0 number of sends with sinfo_flags !=0
0 number of unordered sends
0 number of sends with EOF flag set
0 number of sends with ABORT flag set
0 number of times protocol drain called
0 number of times we did a protocol drain
0 number of times recv was called with peek
3355 number of cached chunks used
0 number of cached stream oq's used
0 number of unread message abandoned by close
0 send burst avoidance, already max burst inflight to net
0 send cwnd full avoidance, already max burst inflight to net
0 number of map array over-runs via fwd-tsn's

```

This table describes the significant fields shown in the display.

Table 11: show sctp statistics Field Descriptions

Field	Description
Input Statistics	Cumulative total of all the input packets, datagrams, and so forth.
Output Statistics	Cumulative total of all the output packets, selective acknowledgements, and so forth.
Packet Dropped Statistics	Cumulative total of all dropped packets grouped by location, type of drop, and so forth.
Timeouts	Cumulative total of timer expirations due to different events.
Other Counters	Cumulative total of all other types of counters that are used in SCTP.

Related Commands

Command	Description
show sctp summary , on page 64	Displays summary information for Stream Control Transmission Protocol (SCTP) on a node.

show sctp summary

To display summary information for Stream Control Transmission Protocol (SCTP) on a node, use the **show sctp summary** command in EXEC mode.

show sctp summary

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes EXEC

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The statistics displayed are for the current node.

Task ID	Operations
transport	read

Examples The following sample output is from the **show sctp summary** command:

```
RP/0/0/CPU0:router# show sctp summary

PCB Summary
-----
Total End Points           :      11
Total Associations         :      20
Total Local Addresses      :       0
Total Remote Addresses    :      40
Total chunk count         :      54
Total Readq count         :       0
Total chunk frees         :      54
Total Output Stream queues :       0

Other Summary
-----
Total VRFs                 :       1
```



```
Total IFAs           :           3
Total IFNs           :           3
```

This table describes the significant fields shown in the display.

Table 12: show sctp summary Command Field Descriptions

Field	Description
Total End Points	Total number of logical senders or receivers of SCTP packets.
Total Associations	Total number of associations on all nodes.
Total Local Addresses	Total number of local addresses.
Total Remote Addresses	Total number of remote addresses.
Total chunk count	Total count of chunks.
Total Readq count	Total count of the read queue.
Total chunk frees	Total number of free chunks.
Total Output Stream queues	Total number of output stream queues.
Total VRFs	Total number of VRFs in the system.
Total IFAs	Total number of active interface IP addresses.
Total IFNs	Total number of active interfaces.

Related Commands

Command	Description
show sctp statistics , on page 61	Displays the overall statistics counts for the Stream Control Transmission Protocol (SCTP) activity.

show tcp brief

To display a summary of the TCP connection table, use the **show tcp brief** command in EXEC mode.

show tcp brief [*location node-id*]

Syntax Description

location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/0/CPU0:router# show tcp brief
TCPCB      Recv-Q  Send-Q  Local Address      Foreign Address    State
0x80572a8  0       0       0.0.0.0:513       0.0.0.0:0         LISTEN
0x8056948  0       0       0.0.0.0:23        0.0.0.0:0         LISTEN
0x8057b60  0       3       10.8.8.2:23       10.8.8.1:1025     ESTAB
```

This table describes the significant fields shown in the display.

Table 13: show tcp brief Command Field Descriptions

Field	Description
TCPCB	Memory address of the TCP control block.

Field	Description
Recv-Q	Number of bytes waiting to be read.
Send-Q	Number of bytes waiting to be sent.
Local Address	Source address and port number of the packet.
Foreign Address	Destination address and port number of the packet.
State	State of the TCP connection.

Related Commands

Command	Description
clear tcp pcb, on page 23	Clears the TCP connection.

show tcp detail

To display the details of the TCP connection table, use the **show tcp detail** command in EXEC mode.

show tcp detail pcb [*value*] **all**

Syntax Description

pcb	Displays TCP connection information.
<i>value</i>	Displays a specific connection information. Range is from 0 to ffffffff.
all	Displays all connections information.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/0/CPU0:router# show tcp detail pcb all

Connection state is LISTEN, I/O status: 0, socket status: 0
PCB 0x8092774, vrfid 0x0
Local host: 0.0.0.0, Local port: 23
Foreign host: 0.0.0.0, Foreign port: 0

Current send queue size: 0 (max 16384)
Current receive queue size: 0 (max 16384)  mis-ordered: 0 bytes

Timer           Starts    Wakeups    Next (msec)
Retrans         0         0          0
SendWnd         0         0          0
TimeWait       0         0          0
```

```
AckHold          0          0          0
KeepAlive        0          0          0
PmtuAger         0          0          0
GiveUp           0          0          0
Throttle         0          0          0
iss: 0           snduna: 0   sndnxt: 0
sndmax: 0        sndwnd: 0   sndcwnd: 1073725440
irs: 0           rcvnxt: 0   rcvwnd: 16384  rcvadv: 0
```

show tcp extended-filters

To display the details of the TCP extended-filters, use the **show tcp extended-filters** command in EXEC mode.

show tcp extended-filters [*location node-id*]**peer-filter** [*location node-id*]

Syntax Description

location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
peer-filter	Displays connections with peer filter configured.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show tcp extended-filters** command for a specific location (0/0/CPU0):

```
RP/0/0/CPU0:router# show tcp extended-filters location 0/0/CPU0
Total Number of matching PCB's in database: 3
-----
JID: 135
Family: 2
PCB: 0x4826c5dc
L4-proto: 6
Lport: 23
Fport: 0
Laddr: 0.0.0.0
Faddr: 0.0.0.0
ICMP error filter mask: 0x12
```

```
LPTS options: 0x00000000
```

```
-----  
JID: 135  
Family: 2
```

```
PCB: 0x4826dd8c  
L4-proto: 6  
Lport: 23  
Fport: 59162  
Laddr: 12.31.22.10  
Faddr: 223.255.254.254  
ICMP error filter mask: 0x12  
LPTS options: 0x00000000  
-----
```

```
-----  
JID: 135  
Family: 2  
PCB: 0x4826cac0  
L4-proto: 6  
Lport: 23  
Fport: 59307  
Laddr: 12.31.22.10  
Faddr: 223.255.254.254  
ICMP error filter mask: 0x12  
LPTS options: 0x00000000  
-----
```

show tcp statistics

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

show tcp statistics {**pcb** {**all** | *pcb-address*} | **summary** } [**location** *node-id*]

Syntax Description

pcb <i>pcb-address</i>	(Optional) Displays detailed statistics for a specified connection.
pcb all	(Optional) Displays detailed statistics for all connections.
summary	(Optional) Clears summary statistic for a specific node or connection.
location <i>node-id</i>	(Optional) Displays statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/0/CPU0:router# show tcp statistics pcb 0x08091bc8
Statistics for PCB 0x8091bc8 VRF Id 0x60000000
Send:  0 bytes received from application
       0 xipc pulse received from application
       0 bytes sent to network
       0 packets failed getting queued to network
Rcvd:  0 packets received from network
       0 packets queued to application
```



```
0 packets failed queued to application
```

This table describes the significant fields shown in the display.

Table 14: show tcp statistics Command Field Descriptions

Field	Description
vrfid	VPN routing and forwarding (VRF) identification (vrfid) number.
Send	Statistics in this section refer to packets sent by the router.
Rcvd:	Statistics in this section refer to packets received by the router.

Related Commands

Command	Description
clear tcp statistics, on page 25	Clears TCP statistics.

show tcp nsr brief

To display the key nonstop routing (NSR) state of TCP connections on different nodes, use the **show tcp nsr brief** command in EXEC mode.

show tcp nsr brief [*location node-id*]

Syntax Description

location <i>node-id</i>	(Optional) Displays information for all TCP sessions for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows the administrative and operational NSR state of each TCP session in the NSR column:

```
RP/0/0/CPU0:router# show tcp nsr brief
```

```
PCB          Local Address          Foreign Address      NSR   RcvOnly
0x482c6b8c
5.1.1.1:646
5.1.1.2:23945          Down No
0x482db564
5.1.1.1:646
5.1.1.2:25398          Down No
0x482844e0
5.1.1.1:646
5.1.1.2:25430          Down No
0x482c9284
5.1.1.1:646
```

```

5.1.1.2:37434      Down No
0x482d98c8
5.1.1.1:646
5.1.1.2:37895      Down No
0x482d6018
5.1.1.1:646
5.1.1.2:50616      Down No
0x482c7f08
5.1.1.1:646
5.1.1.2:55860      Down No
0x482dbab0
5.1.1.1:646
5.1.1.2:56656      Down No
0x482d7394
5.1.1.1:646
5.1.1.2:57365      Down No
0x482d854c
5.1.1.1:646
5.1.1.2:59927      Down No

```

This table describes the significant fields shown in the display.

Table 15: show tcp nsr brief Command Field Descriptions

Field	Description
PCB	Protocol Control Block (PCB).
Local Address	Local address and port of the TCP connection.
Foreign Address	Foreign address and port of the TCP connection.
NSR	Current operational NSR state of this TCP connection.
RevOnly	If yes, the TCP connection is replicated only in the receive direction. Some applications may need to replicate a TCP connection that is only in the receive direction.

Related Commands

Command	Description
clear tcp nsr pcb, on page 11	Brings the NSR down on a specified connection or all connections.
show tcp nsr client brief, on page 76	Displays brief information about the state of nonstop routing (NSR) for the TCP clients on different nodes.

show tcp nsr client brief

To display brief information about the state of nonstop routing (NSR) for TCP clients on different nodes, use the **show tcp nsr client brief** command in EXEC mode.

show tcp nsr client brief [*location node-id*]

Syntax Description

location <i>node-id</i>	(Optional) Displays brief client information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/0/CPU0:router# show tcp nsr client brief location 0/1/CPU0
```

```
CCB          Proc Name      Instance Sets Sessions/NSR Up Sessions
0x482bf378   mpls_ldp  1          1          1/1
0x482bd32c   mpls_ldp  2          1          0/0
```

This table describes the significant fields shown in the display.

Table 16: show tcp nsr client brief Command Field Descriptions

Field	Description
CCB	Client Control Block (CCB). Unique ID to identify the client.
Proc Name	Name of the client process.
Instance	Instance is identified as the instance number of the client process because there can be more than one instance for a routing application.
Sets	Set number is identified as the ID of the session-set.
Sessions/NSR Up Sessions	Total sessions in the set versus the number of the sessions in which NSR is up.

Related Commands

Command	Description
clear tcp nsr client, on page 9	Clears detailed information about the nonstop routing (NSR) clients.
show tcp nsr brief, on page 74	Displays the key nonstop routing (NSR) state of TCP connections on different nodes.

show tcp nsr detail client

To display detailed information about the nonstop routing (NSR) clients, use the **show tcp nsr detail client** command in EXEC mode.

show tcp nsr detail client [*ccb-address*] **all** [**location** *node-id*]

Syntax Description

<i>ccb-address</i>	Client Control Block (CCB) address range for the specific client information. 0 to ffffffff. For example, the address range can be 0x482a4e20.
all	Specifies all the clients.
location <i>node-id</i>	(Optional) Displays client information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows detailed information for all clients:

```
RP/0/0/CPU0:router# show tcp nsr detail client all
```

```
=====
CCB 0x482b25d8, Proc Name mpls_ldp
Instance ID 1, Job ID 360
Number of session-sets 2
Number of sessions 3
Number of NSR Synced sessions 1
Connected at: Sun Jun 10 07:05:31 2007
```

```

Registered for notifications: Yes

=====
CCB 0x4827fd30, Proc Name mpls_ldp
Instance ID 2, Job ID 361
Number of session-sets 1
Number of sessions 2
Number of NSR Synced sessions 2
Connected at: Sun Jun 10 07:05:54 2007
Registered for notifications: Yes
=====

RP/0/0/CPU0:router# show tcp nsr detail client all location 1
RP/0/0/CPU0:router# show tcp nsr detail client all location 0/1/CPU0

=====
CCB 0x482bf378, Proc Name mpls_ldp
Instance ID 1, Job ID 360
Number of session-sets 1
Number of sessions 1
Number of NSR Synced sessions 1
Connected at: Sun Jun 10 07:05:41 2007
Registered for notifications: Yes

=====
CCB 0x482bd32c, Proc Name mpls_ldp
Instance ID 2, Job ID 361
Number of session-sets 1
Number of sessions 2
Number of NSR Synced sessions 2
Connected at: Sun Jun 10 07:06:01 2007
Registered for notifications: Yes
    
```

Related Commands

Command	Description
show tcp nsr detail pcb, on page 80	Displays detailed information about the nonstop routing (NSR) state of TCP connections.
show tcp nsr detail session-set, on page 83	Displays the detailed information about the nonstop routing (NSR) state of the session sets on different nodes.

show tcp nsr detail pcb

To display detailed information about the nonstop routing (NSR) state of TCP connections, use the **show tcp nsr detail pcb** command in EXEC mode.

show tcp nsr detail pcb [*pcb-address*] **all** [**location** *node-id*]

Syntax Description

<i>pcb-address</i>	PCB address range for the specific connection information. 0 to ffffffff. For example, the address range can be 0x482c6b8c.
all	Specifies all the connections.
location <i>node-id</i>	(Optional) Displays connection information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows the complete details for NSR for all locations:

```
RP/0/0/CPU0:router# show tcp nsr detail pcb all location 0/0/cpu0
```

```
=====
PCB 0x482b6b0c, VRF Id 0x60000000, Client PID: 2810078
Local host: 5.1.1.1, Local port: 646
Foreign host: 5.1.1.2, Foreign port: 31466
SSCB 0x482bc80c, Client PID 2810078
Node Role: Active, Protected by: 0/1/CPU0, Cookie: 0x00001000
```


NSR State: Up, Rcv Path Replication only: No
 Replicated to standby: Yes
 Synchronized with standby: Yes
 FSSN: 3005097735, FSSN Offset: 0

Sequence number of last or current initial sync: 1181461961
 Initial sync started at: Sun Jun 10 07:52:41 2007
 Initial sync ended at: Sun Jun 10 07:52:41 2007

Number of incoming packets currently held: 1

Pak#	SeqNum	Len	AckNum
1	3005097735	0	1172387202

Number of iACKS currently held: 0

```
=====
PCB 0x482c2920, VRF Id 0x60000000, Client PID: 2810078
Local host: 5.1.1.1, Local port: 646
Foreign host: 5.1.1.2, Foreign port: 11229
SSCB 0x482bb3bc, Client PID 2810078
Node Role: Active, Protected by: 0/1/CPU0, Cookie: 0x00001000
```

NSR State: Down, Rcv Path Replication only: No
 Replicated to standby: No
 Synchronized with standby: No
 NSR-Down Reason: Initial sync was aborted
 NSR went down at: Sun Jun 10 11:55:38 2007

Initial sync in progress: No
 Sequence number of last or current initial sync: 1181476338
 Initial sync error, if any: 'ip-tcp' detected the 'warning' condition 'Initial sync operation timed out'
 Source of initial sync error: Local TCP
 Initial sync started at: Sun Jun 10 11:52:18 2007
 Initial sync ended at: Sun Jun 10 11:55:38 2007

Number of incoming packets currently held: 0

Number of iACKS currently held: 0

```
=====
PCB 0x482baea0, VRF Id 0x60000000, Client PID: 2810078
Local host: 5.1.1.1, Local port: 646
Foreign host: 5.1.1.2, Foreign port: 41149
SSCB 0x482bb3bc, Client PID 2810078
Node Role: Active, Protected by: 0/1/CPU0, Cookie: 0x00001000
```

NSR State: Down, Rcv Path Replication only: No
 Replicated to standby: No
 Synchronized with standby: No
 NSR-Down Reason: Initial sync was aborted
 NSR went down at: Sun Jun 10 11:55:38 2007

Initial sync in progress: No
 Sequence number of last or current initial sync: 1181476338
 Initial sync error, if any: 'ip-tcp' detected the 'warning' condition 'Initial sync operation timed out'
 Source of initial sync error: Local TCP
 Initial sync started at: Sun Jun 10 11:52:18 2007
 Initial sync ended at: Sun Jun 10 11:55:38 2007

Number of incoming packets currently held: 0

Number of iACKS currently held: 0

```
=====
PCB 0x482c35ac, VRF Id 0x60000000, Client PID: 2859233
Local host: 5:1::1, Local port: 8889
Foreign host: 5:1::2, Foreign port: 14008
SSCB 0x4827fea8, Client PID 2859233
Node Role: Active, Protected by: 0/1/CPU0, Cookie: 0x0000001c
```

show tcp nsr detail pcb

```

NSR State: Up, Rcv Path Replication only: No
Replicated to standby: Yes
Synchronized with standby: Yes
FSSN: 2962722865, FSSN Offset: 0

Sequence number of last or current initial sync: 1181474373
Initial sync started at: Sun Jun 10 11:19:33 2007
Initial sync ended   at: Sun Jun 10 11:19:33 2007

Number of incoming packets currently held: 0

Number of iACKS currently held: 0

=====
PCB 0x482c2f10, VRF Id 0x60000000, Client PID: 2859233
Local host: 5:1::1, Local port: 8889
Foreign host: 5:1::2, Foreign port: 40522
SSCB 0x4827fea8, Client PID 2859233
Node Role: Active, Protected by: 0/1/CPU0, Cookie: 0x0000001b

NSR State: Up, Rcv Path Replication only: No
Replicated to standby: Yes
Synchronized with standby: Yes
FSSN: 3477316401, FSSN Offset: 0

Sequence number of last or current initial sync: 1181474373
Initial sync started at: Sun Jun 10 11:19:33 2007
Initial sync ended   at: Sun Jun 10 11:19:33 2007

Number of incoming packets currently held: 0

Number of iACKS currently held: 0

```

Related Commands

Command	Description
clear tcp nsr pcb, on page 11	Brings the NSR down on a specified connection or all connection.
show tcp nsr detail client, on page 78	Displays detailed information about the nonstop routing (NSR) clients.
show tcp nsr detail session-set, on page 83	Displays the detailed information about the nonstop routing (NSR) state of the session sets on different nodes.

show tcp nsr detail session-set

To display the detailed information about the nonstop routing (NSR) state of the session sets on different nodes, use the **show tcp nsr detail session-set** command in EXEC mode.

show tcp nsr detail session-set [*sscb-address*] **all** [**location** *node-id*]

Syntax Description

<i>sscb-address</i>	Session-Set Control Block (SSCB) address range for the specific session set information. 0 to ffffffff. For example, the address range can be 0x482c6b8c.
all	Specifies all the session sets.
location <i>node-id</i>	(Optional) Displays information for session sets for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows all the session sets:

```
RP/0/0/CPU0:router# show tcp nsr detail session-set all

=====
SSCB 0x482bc80c, Client PID: 2810078
Set Id: 1, Addr Family: IPv4
Role: Active, Protected by: 0/1/CPU0, Well known port: 646
Sessions: total 1, synchronized 1
Initial sync in progress: No
      Sequence number of last or current initial sync: 1181461961
```

show tcp nsr detail session-set

```

Number of sessions in the initial sync: 1
Number of sessions already synced: 1
Number of sessions that failed to sync: 0
Initial sync started at: Sun Jun 10 07:52:41 2007
Initial sync ended   at: Sun Jun 10 07:52:41 2007

```

```

=====
SSCB 0x482bb3bc, Client PID: 2810078
Set Id: 2, Addr Family: IPv4
Role: Active, Protected by: 0/1/CPU0, Well known port: 646
Sessions: total 2, synchronized 0
Initial sync in progress: Yes
  Sequence number of last or current initial sync: 1181476338
  Initial sync timer expires in 438517602 msec
  Number of sessions in the initial sync: 2
  Number of sessions already synced: 0
  Number of sessions that failed to sync: 0
  Initial sync started at: Sun Jun 10 11:52:18 2007

```

```

=====
SSCB 0x4827fea8, Client PID: 2859233
Set Id: 1, Addr Family: IPv6
Role: Active, Protected by: 0/1/CPU0, Well known port: 8889
Sessions: total 2, synchronized 2
Initial sync in progress: No
  Sequence number of last or current initial sync: 1181474373
  Number of sessions in the initial sync: 2
  Number of sessions already synced: 2
  Number of sessions that failed to sync: 0
  Initial sync started at: Sun Jun 10 11:19:33 2007
  Initial sync ended   at: Sun Jun 10 11:19:33 2007

```

Related Commands

Command	Description
clear tcp nsr session-set, on page 14	Clears information about session sets.
show tcp nsr detail client, on page 78	Displays detailed information about the nonstop routing (NSR) clients.
show tcp nsr detail pcb, on page 80	Displays detailed information about the nonstop routing (NSR) state of TCP connections.

show tcp nsr session-set brief

To display brief information about the session sets for the nonstop routing (NSR) state on different nodes, use the **show tcp nsr session-set brief** command in EXEC mode.

show tcp nsr session-set brief [*location node-id*]

Syntax Description	location <i>node-id</i>	(Optional) Displays information for session sets for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
---------------------------	--------------------------------	---

Command Default If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines The **location** keyword is used so that active and standby TCP instances are independently queried. A session set consists of a subset of the application's session in which the subset is protected by only one standby node. The TCP NSR state machine operates with respect to these session sets.

Task ID	Task ID	Operations
	transport	read

Examples The following sample output shows all the session sets that are known to the TCP instance:

```
RP/0/0/CPU0:router# show tcp nsr session-set brief
```

```
SSCB      Client   LocalAPP Set-Id   Family   Role      Protect-Node Total/Synced
0x482bc80c 2810078 mpls_ldp#1 1    IPv4    Active    0/1/CPU0    1/1
0x482bb3bc 2810078 mpls_ldp#1 2    IPv4    Active    0/1/CPU0    2/0
0x4827fea8 2859233 mpls_ldp#2 1    IPv6    Active    0/1/CPU0    2/2
```

The following sample output shows brief information about the session sets for location 0/1/CPU0:

```
RP/0/0/CPU0:router# show tcp nsr session-set brief location 0/1/CPU0
```

```

SSCB          Client  LocalAPP  Set-Id      Family  Role  Protect-Node  Total/Synced
0x4827ff74    602319  mpls_ldp#1  1          IPv4    Stdby  0/0/CPU0      1/1
0x482b8f54    602320  mpls_ldp#2  1          IPv6    Stdby  0/0/CPU0      2/2

```

This table describes the significant fields shown in the display.

Table 17: show tcp nsr session-set brief Command Field Descriptions

Field	Description
SSCB	Unique ID for Session-Set Control Block (SSCB) to identify a session-set of a client.
Client	PID of the client process.
LocalAPP	Name and instance number of the client process.
Set-Id	ID of the session-set.
Family	Address family of the sessions added to the session set for IPv4 or IPv6.
Role	Role of the TCP stack for active or standby.
Protect-Node	Node that is offering the protection, for example, partner node.
Total/Synced	Total number of sessions in the set versus the sessions that have been synchronized.

Related Commands

Command	Description
clear tcp nsr session-set, on page 14	Clears information about session sets.
show tcp nsr detail session-set, on page 83	Displays the detailed information about the nonstop routing (NSR) state of the session sets on different nodes.

show tcp nsr statistics client

To display the nonstop routing (NSR) statistics for the clients, use the **show tcp nsr statistics client** command in EXEC mode.

```
show tcp nsr statistics client {ccb-address| all} [location node-id]
```

Syntax Description

<i>ccb-address</i>	Client Control Block (CCB) address range for the specific statistics information for the client. 0 to ffffffff. For example, the address range can be 0x482c6b8c.
all	Specifies all the statistics for the clients.
location <i>node-id</i>	(Optional) Displays statistics for the client for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows all the statistics for the client:

```
RP/0/0/CPU0:router# show tcp nsr statistics client all
```

```
=====
CCB: 0x482b25d8
Name: mpls_ldp, Job ID: 360
Connected at: Thu Jan  1 00:00:00 1970

Notification Stats      : Queued  Failed  Delivered  Dropped
Init-Sync Done          :      0      0           0         0
```

show tcp nsr statistics client

```

Replicated Session Ready:      0      0      0      0
Operational Down              :      0      0      0      0
Last clear at: Sun Jun 10 12:19:12 2007

```

```

=====
CCB: 0x4827fd30
Name: mpls_ldp, Job ID: 361
Connected at: Sun Jun 10 07:05:54 2007

```

```

Notification Stats      : Queued  Failed  Delivered  Dropped
Init-Sync Done          :      1      0          1          0
Replicated Session Ready:      0      0          0          0
Operational Down        :      0      0          0          0
Last clear at: Never Cleared

```

Related Commands

Command	Description
clear tcp nsr statistics client, on page 16	Clears the nonstop routing (NSR) statistics of the client.
show tcp nsr statistics pcb, on page 89	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).
show tcp nsr statistics session-set, on page 91	Displays the nonstop routing (NSR) statistics for a session set.
show tcp nsr statistics summary, on page 93	Displays the nonstop routing (NSR) summary statistics across all TCP sessions.

show tcp nsr statistics pcb

To display the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB), use the **show tcp nsr statistics pcb** command in EXEC mode.

show tcp nsr statistics pcb {*pcb-address*} **all**; [**location** *node-id*]

Syntax Description

<i>pcb-address</i>	PCB address range for the specific connection information. 0 to ffffffff. For example, the address range can be 0x482c6b8c.
all	Specifies all the connection statistics.
location <i>node-id</i>	(Optional) Displays connection statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows all NSR statistics:

```
RP/0/0/CPU0:router# show tcp nsr statistics pcb all
```

```
=====
PCB 0x482b6b0c
Number of times NSR went up: 0
Number of times NSR went down: 0
Number of times NSR was disabled: 0
Number of times fail-over occurred : 0
Last clear at: Sun Jun 10 13:55:35 2007
```

show tcp nsr statistics pcb

```

=====
PCB 0x482c2920
Number of times NSR went up: 2
Number of times NSR went down: 2
Number of times NSR was disabled: 0
Number of times fail-over occurred : 0
Last clear at: Never Cleared

=====
PCB 0x482baea0
Number of times NSR went up: 2
Number of times NSR went down: 2
Number of times NSR was disabled: 0
Number of times fail-over occurred : 0
Last clear at: Never Cleared

=====
PCB 0x482c35ac
Number of times NSR went up: 4
Number of times NSR went down: 2
Number of times NSR was disabled: 1
Number of times fail-over occurred : 0
Last clear at: Never Cleared

=====
PCB 0x482c2f10
Number of times NSR went up: 4
Number of times NSR went down: 2
Number of times NSR was disabled: 1
Number of times fail-over occurred : 0
Last clear at: Never Cleared

```

Related Commands

Command	Description
clear tcp nsr statistics pcb, on page 18	Clears the nonstop routing (NSR) statistics for TCP connections.
show tcp nsr statistics client, on page 87	Displays the nonstop routing (NSR) statistics for the clients.
show tcp nsr statistics session-set, on page 91	Displays the nonstop routing (NSR) statistics for a session set.
show tcp nsr statistics summary, on page 93	Displays the nonstop routing (NSR) summary statistics across all TCP sessions.

show tcp nsr statistics session-set

To display the nonstop routing (NSR) statistics for a session set, use the **show tcp nsr statistics session-set** command in EXEC mode.

show tcp nsr statistics session-set *{sscb-address| all}* [**location** *node-id*]

Syntax Description

<i>sscb-address</i>	Session-Set Control Block (SSCB) address range for the specific session set information for the statistics. 0 to ffffffff. For example, the address range can be 0x482b3444.
all	Specifies all the session sets for the statistics.
location <i>node-id</i>	(Optional) Displays session set information for the statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows all session set information for the statistics:

```
RP/0/0/CPU0:router# show tcp nsr statistics session-set all

=====Session Set Stats =====
SSCB 0x482bc80c, Set ID: 1
Number of times init-sync was attempted :1
Number of times init-sync was successful :1
Number of times init-sync failed       :0
```

show tcp nsr statistics session-set

```

Number of times switch-over occurred      :0
Last clear at: Never Cleared

=====Session Set Stats =====
SSCB 0x482bb3bc, Set ID: 2
Number of times init-sync was attempted  :1
Number of times init-sync was successful :0
Number of times init-sync failed         :1
Number of times switch-over occurred     :0
Last clear at: Never Cleared

=====Session Set Stats =====
SSCB 0x4827fea8, Set ID: 1
Number of times init-sync was attempted  :0
Number of times init-sync was successful :0
Number of times init-sync failed         :0
Number of times switch-over occurred     :0
Last clear at: Sun Jun 10 13:36:51 2007

```

Related Commands

Command	Description
clear tcp nsr statistics session-set, on page 20	Clears the nonstop routing (NSR) statistics for session sets.
show tcp nsr statistics client, on page 87	Displays the nonstop routing (NSR) statistics for the clients.
show tcp nsr statistics pcb, on page 89	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).
show tcp nsr statistics summary, on page 93	Displays the nonstop routing (NSR) summary statistics across all TCP sessions.

show tcp nsr statistics summary

To display the nonstop routing (NSR) summary statistics across all TCP sessions, use the **show tcp nsr statistics summary** command in EXEC mode.

show tcp nsr statistics summary [*location node-id*]

Syntax Description

location <i>node-id</i>	(Optional) Displays information for the summary statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

If a value is not specified, the current RP in which the command is being executed is taken as the location.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **location** keyword is used so that active and standby TCP instances are independently queried.

Task ID

Task ID	Operations
transport	read

Examples

The following sample output shows the summary statistics for all TCP sessions:

```
RP/0/0/CPU0:router# show tcp nsr statistics summary
```

```
=====Summary Stats=====
The last clear at Thu Jan  1 00:00:00 1970

Notif Statistic:
      Queued  Failed  Delivered  Dropped
Init-sync Done      :    3      0          3         0
Replicated Session Ready:    0      0          0         0
Operational Down    :    8      0          8         0
QAD Msg Statistic:
Number of dropped messages from partner TCP stack(s)      : 0
Number of unknown messages from partner TCP stack(s)      : 0
Number of messages accepted from partner TCP stack(s)     : 31
Number of messages sent to partner TCP stack(s)           : 0
Number of messages failed to be sent to partner TCP stack(s): 0
```

```

IACK RX Msg Statistic:
Number of iACKs dropped because there is no PCB           : 0
Number of iACKs dropped because there is no datapath SCB  : 0
Number of iACKs dropped because SSO is not up            : 0
Number of stale iACKs dropped                            : 6
Number of iACKs not held because of an immediate match    : 0
Number of held packets dropped because of errors          : 0

```

Related Commands

Command	Description
clear tcp nsr statistics summary, on page 22	Clears the statistics summary.
show tcp nsr statistics client, on page 87	Displays the nonstop routing (NSR) statistics for the clients.
show tcp nsr statistics pcb, on page 89	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).
show tcp nsr statistics session-set, on page 91	Displays the nonstop routing (NSR) statistics for a session set.

show udp brief

To display a summary of the User Datagram Protocol (UDP) connection table, use the **show udp brief** command in EXEC mode.

```
show udp brief [location node-id]
```

Syntax Description

location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show udp brief** command:

```
RP/0/0/CPU0:router# show udp brief
PCB          Recv-Q  Send-Q  Local Address          Foreign Address
0x8040c4c    0        0    0.0.0.0:7             0.0.0.0:0
0x805a120    0        0    0.0.0.0:9             0.0.0.0:0
0x805a430    0        0    0.0.0.0:19            0.0.0.0:0
0x805a740    0        0    0.0.0.0:67            0.0.0.0:0
0x804fcb0    0        0    0.0.0.0:123           0.0.0.0:0
```

This table describes the significant fields shown in the display.

Table 18: show udp brief Command Field Descriptions

Field	Description
PCB	Protocol control block address. This is the address to a structure that contains connection information such as local address, foreign address, local port, foreign port, and so on.
Recv-Q	Number of bytes in the receive queue.
Send-Q	Number of bytes in the send queue.
Local Address	Local address and local port.
Foreign Address	Foreign address and foreign port.

Related Commands

Command	Description
show tcp brief , on page 66	Displays details of TCP connections.

show udp detail pcb

To display detailed information of the User Datagram Protocol (UDP) connection table, use the **show udp detail pcb** command in EXEC mode.

```
show udp detail pcb {pcb-address| all} [location node-id]
```

Syntax Description		
	<i>pcb-address</i>	Address of a specified UDP connection.
	all	Provides statistics for all UDP connections.
	location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default No default behavior or values

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.2	This command was supported.
	Release 3.3.0	The command name was changed from show udp pcb to show udp detail pcb .

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	transport	read

Examples The following is sample output from the **show udp detail pcb all** command:

```
RP/0/0/CPU0:router# show udp detail pcb all location 0/3/CPU0
=====
PCB is 0x4822fea0, Family: 2, VRF: 0x60000000
Local host: 0.0.0.0:3784
Foreign host: 0.0.0.0:0
```

```

Current send queue size: 0
Current receive queue size: 0
=====
PCB is 0x4822d0e0, Family: 2, VRF: 0x60000000
  Local host: 0.0.0.0:3785
  Foreign host: 0.0.0.0:0

Current send queue size: 0
Current receive queue size: 0

```

This table describes the significant fields shown in the display.

Table 19: show raw pcb Command Field Descriptions

Field	Description
PCB	Protocol control block address.
Family	Network protocol. IPv4 is 2; IPv6 is 26.
VRF	VPN routing and forwarding (VRF) instance name.
Local host	Local host address.
Foreign host	Foreign host address.
Current send queue size	Size of the send queue (in bytes).
Current receive queue size	Size of the receive queue (in bytes).

show udp extended-filters

To display the details of the UDP extended-filters, use the **show udp extended-filters** command in EXEC mode.

```
show udp extended-filters {location node-id| peer-filter {location node-id}}
```

Syntax Description

location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
peer-filter	Displays connections with peer filter configured.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show udp extended-filters** command for a specific location (0/0/CPU0):

```
RP/0/0/CPU0:router# show udp extended-filters location 0/0/CPU0
Total Number of matching PCB's in database: 1
-----
JID: 248
Family: 2
PCB: 0x48247e94
L4-proto: 17
Lport: 646
Fport: 0
Laddr: 0.0.0.0
Faddr: 0.0.0.0
ICMP error filter mask: 0x0
```

```
LPTS options: 0x00000000
```

```
-----
```

show udp statistics

To display User Datagram Protocol (UDP) statistics, use the **show udp statistics** command in EXEC mode.

```
show udp statistics {summary|pcb {pcb-address|all}} [location node-id]
```

Syntax Description

summary	Displays summary statistics.
pcb <i>pcb-address</i>	Displays detailed statistics for each connection.
pcb <i>all</i>	Displays detailed statistics for all connections.
location <i>node-id</i>	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

UDP clones the received packets if there are multiple multicast applications that are interested in receiving those packets.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/0/CPU0:router# show udp statistics summary
UDP statistics:
Rcvd: 0 Total, 0 drop, 0 no port
      0 checksum error, 0 too short
Sent: 0 Total, 0 error
      0 Total forwarding broadcast packets
```

0 Cloned packets, 0 failed cloning

This table describes the significant fields shown in the display.

Table 20: show udp Command Field Descriptions

Field	Description
Rcvd: Total	Total number of packets received.
Rcvd: drop	Total number of packets received that were dropped.
Rcvd: no port	Total number of packets received that have no port.
Rcvd: checksum error	Total number of packets received that have a checksum error.
Rcvd: too short	Total number of packets received that are too short for UDP packets.
Sent: Total	Total number of packets sent successfully.
Sent: error	Total number of packets that cannot be sent due to errors.
Total forwarding broadcast packets	Total number of packets forwarded to the helper address.
Cloned packets	Total number of packets cloned successfully.
failed cloning	Total number of packets that failed cloning.

Related Commands

Command	Description
clear udp statistics , on page 27	Clears UDP statistics.

tcp mss

To configure the TCP maximum segment size that determines the size of the packet that TCP uses for sending data, use the **tcp mss** command in Global Configuration mode.

tcp mss *segment-size*

Syntax Description

segment-size	Size, in bytes, of the packet that TCP uses to send data. Range is 68 to 10000 bytes.
--------------	---

Command Default

If this configuration does not exist, TCP determines the maximum segment size based on the settings specified by the application process, interface maximum transfer unit (MTU), or MTU received from Path MTU Discovery.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read, write

Examples

This example shows how to configure the TCP maximum segment size:

```
RP/0/0/CPU0:router(config)# tcp mss 1460
RP/0/0/CPU0:router(config)# exit

Uncommitted changes found, commit them? [yes]:
RP/0/0/CPU0:router:Sep  8 18:29:51.084 : config[65700]: %LIBTARCFG-6-COMMIT :

Configuration committed by user 'lab'.  Use 'show commit changes 1000000596' to view the
changes.
RP/0/0/CPU0:routerSep  8 18:29:51.209 : config[65700]: %SYS-5-CONFIG_I : Configured from
console by lab
```

tcp path-mtu-discovery

To allow TCP to automatically detect the highest common maximum transfer unit (MTU) for a connection, use the **tcp path-mtu-discovery** in Global Configuration mode. To reset the default, use the **no** form of this command.

tcp path-mtu-discovery [*age-timer minutes*] **infinite**]

no tcp path-mtu-discovery

Syntax Description

age-timer <i>minutes</i>	(Optional) Specifies a value in minutes. Range is 10 to 30.
infinite	(Optional) Turns off the age timer.

Command Default

Disabled

age-timer default is 10 minutes

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

Use the **tcp path-mtu-discovery** command to allow TCP to automatically detect the highest common MTU for a connection, such that when a packet traverses between the originating host and the destination host the packet is not fragmented and then reassembled.

The age timer value is in minutes, with a default value of 10 minutes. The age timer is used by TCP to automatically detect if there is an increase in MTU for a particular connection. If the **infinite** keyword is specified, the age timer is turned off.

Task ID

Task ID	Operations
transport	read, write

Examples

The following example shows how to set the age timer to 20 minutes:

```
RP/0/0/CPU0:router(config)# tcp path-mtu-discovery age-timer 20
```


tcp selective-ack

To enable TCP selective acknowledgment (ACK) and identify which segments in a TCP packet have been received by the remote TCP, use the **tcp selective-ack** command in Global Configuration mode. To reset the default, use the **no** form of this command.

tcp selective-ack

no tcp selective-ack

Syntax Description This command has no keywords or arguments.

Command Default TCP selective ACK is disabled.

Command Modes Global Configuration mode

Command History	Release	Modification
	Release 3.2	This command was supported.

Usage Guidelines If TCP Selective ACK is enabled, each packet contains information about which segments have been received by the remote TCP. The sender can then resend only those segments that are lost. If selective ACK is disabled, the sender receives no information about missing segments and automatically sends the first packet that is not acknowledged and then waits for the other TCP to respond with what is missing from the data stream. This method is inefficient in Long Fat Networks (LFN), such as high-speed satellite links in which the bandwidth * delay product is large and valuable bandwidth is wasted waiting for retransmission.

Task ID	Task ID	Operations
	transport	read, write

Examples In the following example, the selective ACK is enabled:

```
RP/0/0/CPU0:router(config)# tcp selective-ack
```

Related Commands	Command	Description
	tcp timestamp , on page 108	Measures the round-trip time of a packet.

tcp synwait-time

To set a period of time the software waits while attempting to establish a TCP connection before it times out, use the **tcp synwait-time** command in Global Configuration mode. To restore the default time, use the **no** form of this command.

tcp synwait-time *seconds*

no tcp synwait-time *seconds*

Syntax Description

<i>seconds</i>	Time (in seconds) the software waits while attempting to establish a TCP connection. Range is 5 to 30 seconds.
----------------	--

Command Default

The default value for the synwait-time is 30 seconds.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read, write

Examples

The following example shows how to configure the software to continue attempting to establish a TCP connection for 18 seconds:

```
RP/0/0/CPU0:router(config)# tcp synwait-time 18
```

tcp timestamp

To more accurately measure the round-trip time of a packet, use the **tcp timestamp** command in Global Configuration mode. To reset the default, use the **no** form of this command.

tcp timestamp

no tcp timestamp

Syntax Description This command has no keywords or arguments.

Command Default A TCP time stamp is not used.

Command Modes Global Configuration mode

Command History	Release	Modification
	Release 3.2	This command was supported.

Usage Guidelines Use the **tcp timestamp** command to more accurately measure the round-trip time of a packet. If a time stamp is not used, a TCP sender deduces the round-trip time when an acknowledgment of its packet is received, which is not a very accurate method because the acknowledgment can be delayed, duplicated, or lost. If a time stamp is used, each packet contains a time stamp to identify packets when acknowledgments are received and the round-trip time of that packet.

This feature is most useful in Long Fat Network (LFN) where the bandwidth * delay product is long.

Task ID	Task ID	Operations
	transport	read, write

Examples The following example shows how to enable the timestamp option:

```
RP/0/0/CPU0:router(config)# tcp timestamp
```

Related Commands	Command	Description
	tcp selective-ack , on page 105	Enables the TCP selective acknowledgment feature.

tcp window-size

To alter the TCP window size, use the **tcp window-size** command in Global Configuration mode. To restore the default value, use the **no** form of this command.

tcp window-size *bytes*

no tcp window-size

Syntax Description

bytes	Window size in bytes. Range is 2048 to 65535 bytes.
-------	---

Command Default

The default value for the window size is 16k.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was supported.

Usage Guidelines

Note

Do not use this command unless you clearly understand why you want to change the default value.

Task ID

Task ID	Operations
transport	read, write

Examples

The following example shows how to set the TCP window size to 3000 bytes:

```
RP/0/0/CPU0:router(config)# tcp window-size 3000
```

