



## Transport Stack Commands

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This chapter describes the Cisco IOS XR software commands used to configure and monitor features related to the transport stack (Nonstop Routing [NSR ], TCP, User Datagram Protocol [UDP], and RAW) on the Cisco ASR 9000 Series Aggregation Services Router . 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 *IP Addresses and Services Configuration Guide for Cisco ASR 9000 Series Routers*.

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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.
	<b>all</b>	Clears the counters for all NCD clients.
	<b>location</b> <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 3.7.2	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/RSP0/CPU0:router# clear nsr ncd client all
RP/0/RSP0/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
```

## clear nsr ncd client

```
Errors in enqueueing to client      : 0
Time of last clear                  : Sun Jun 10 14:43:44 20
```

```
RP/0/RSP0/CPU0:router# show nsr ncd client brief
```

```

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

```

## Related Commands

Command	Description
<a href="#">clear nsr ncd queue, on page 5</a>	Clears the counters for the NSR Consumer Demuxer (NCD) queue.
<a href="#">show nsr ncd client, on page 33</a>	Displays information about the clients for NSR Consumer Demuxer (NCD).
<a href="#">show nsr ncd queue, on page 35</a>	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.
	<b>location node-id</b>	(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 3.7.2	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/RSP0/CPU0:router# clear nsr ncd queue all
RP/0/RSP0/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
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
```

## clear nsr ncd queue

```

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/RSP0/CPU0:router# show nsr ncd queue brief
```

Queue	Total Packets	Accepted Packets
NSR_LOW	0	0
NSR_HIGH	0	0

### Related Commands

Command	Description
<a href="#">clear nsr ncd client, on page 3</a>	Clears the counters for the NSR Consumer Demuxer (NCD) client.
<a href="#">nsr process-failures switchover, on page 28</a>	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).
<a href="#">show nsr ncd client, on page 33</a>	Displays information about the clients for NSR Consumer Demuxer (NCD).
<a href="#">show nsr ncd queue, on page 35</a>	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.
	<b>location</b> <i>node-id</i>	(Optional) 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 3.7.2	This command was introduced.

**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/RSP0/CPU0:router# clear raw statistics pcb 0x80553b0
RP/0/RSP0/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/RSP0/CPU0:router# clear raw statistics pcb all
RP/0/RSP0/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
<a href="#">show raw brief, on page 37</a>	Displays information about active RAW IP sockets.
<a href="#">show raw statistics pcb, on page 43</a>	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.
	<b>all</b>	Specifies all the clients.
	<b>location</b> <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 3.7.2	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/RSP0/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         2/2

RP/0/RSP0/CPU0:router# clear tcp nsr client 0x482afacc
RP/0/RSP0/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**

<b>Command</b>	<b>Description</b>
<a href="#">nsr process-failures switchover, on page 28</a>	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).
<a href="#">show tcp nsr client brief, on page 54</a>	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		
pcb-address	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 node-id	(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 RSP in which the command is being executed is taken as the location.

**Command Modes** EXEC mode

Command History	Release	Modification
	Release 3.7.2	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/RSP0/CPU0:router# show tcp nsr brief

PCB          Local Address  Foreign Address      NSR   RcvOnly
0x482d7470 10
.1.1.1:646   10
.1.1.2:14142      Up    No
0x482d2844 10
.1.1.1:646   10
.1.1.2:15539      Up    No
0x482d3bc0 10
.1.1.1:646   10
.1.1.2:25671      Up    No
0x482d4f3c 10
```

## clear tcp nsr pcb

```

.1.1.1:646      10
.1.1.2:32319   Up    No
0x482d87ec 10
.1.1.1:646      10
.1.1.2:39592   Up    No
0x482cd670 10
.1.1.1:646      10
.1.1.2:43447   Up    No
0x482d14c8 10
.1.1.1:646      10
.1.1.2:45803   Up    No
0x482bdee4 10
.1.1.1:646      10
.1.1.2:55844   Up    No
0x482d62b8 10
.1.1.1:646      10
.1.1.2:60695   Up    No
0x482d0310 10
.1.1.1:646      10
.1.1.2:63007   Up    No

```

```
RP/0/RSP0/CPU0:router# clear tcp nsr pcb 0x482d7470
```

```
RP/0/RSP0/CPU0:router# clear tcp nsr pcb 0x482d2844
```

```
RP/0/RSP0/CPU0:router# show tcp nsr brief
```

PCB	Local Address	Foreign Address	NSR	RcvOnly
0x482d7470	10			
.1.1.1:646	10			
.1.1.2:14142		Down	No	
0x482d2844	10			
.1.1.1:646	10			
.1.1.2:15539		Down	No	
0x482d3bc0	10			
.1.1.1:646	10			
.1.1.2:25671		Up	No	
0x482d4f3c	10			
.1.1.1:646	10			
.1.1.2:32319		Up	No	
0x482d87ec	10			
.1.1.1:646	10			
.1.1.2:39592		Up	No	
0x482cd670	10			
.1.1.1:646	10			
.1.1.2:43447		Up	No	
0x482d14c8	10			
.1.1.1:646	10			
.1.1.2:45803		Up	No	
0x482bdee4	10			
.1.1.1:646	10			
.1.1.2:55844		Up	No	
0x482d62b8	10			
.1.1.1:646	10			
.1.1.2:60695		Up	No	
0x482d0310	10			
.1.1.1:646	10			
.1.1.2:63007		Up	No	

## Related Commands

Command	Description
<a href="#">show tcp nsr brief, on page 52</a>	Displays the key nonstop routing (NSR) state of TCP connections on different nodes.

Command	Description
<a href="#">show tcp nsr detail pcb, on page 58</a>	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.
<b>all</b>	Specifies all the session sets.
<b>location</b> <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 3.7.2	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/RSP0/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/RSP0/CPU0:router# clear tcp nsr client 0x482b5ee0
RP/0/RSP0/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
<a href="#">show tcp nsr detail session-set, on page 61</a>	Displays detailed information about the nonstop routing (NSR) state of the session sets on different nodes.

Command	Description
<a href="#">show tcp nsr session-set brief, on page 63</a>	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		
<b>ccb-address</b>	Client Control Block (CCB) of the desired client. For example, the address range can be 0x482a4e20.	
<b>all</b>	Specifies all the clients.	
<b>location node-id</b>	(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 3.7.2	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/RSP0/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/RSP0/CPU0:router# clear tcp nsr statistics client all
```

```
RP/0/RSP0/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
<a href="#">show tcp nsr statistics client, on page 65</a>	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.
<b>all</b>		Specifies all the connections.
<b>location</b> <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 3.7.2	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/RSP0/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/RSP0/CPU0:router# clear tcp nsr statistics pcb 0x482d14c8
RP/0/RSP0/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
<a href="#">show tcp nsr statistics pcb, on page 67</a>	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.
<b>all</b>	Specifies all the session sets.
<b>location</b> <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 3.7.2	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/RSP0/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/RSP0/CPU0:router# clear tcp nsr statistics session-set all
RP/0/RSP0/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
<a href="#">show tcp nsr statistics session-set, on page 69</a>	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]
```

<b>Syntax Description</b>	<b>location</b> <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.
---------------------------	--

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

<b>Command Modes</b>	EXEC mode
----------------------	-----------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.

<b>Usage Guidelines</b>	The <b>location</b> keyword is used so that active and standby TCP instances are independently queried.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	execute

<b>Examples</b>	The following example shows how to clear the summary statistics:
-----------------	--

```
RP/0/RSP0/CPU0:router# clear tcp nsr statistics summary
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">show tcp nsr statistics summary, on page 71</a>	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.
<b>all</b>	Clears all open TCP connections.
<b>location</b> <i>node-id</i>	(Optional) 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 3.7.2	This command was introduced.

## Usage Guidelines

The **clear tcp pcb** command is useful for clearing hung TCP connections. Use the [show tcp brief, on page 45](#) 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/RSP0/CPU0:router# clear tcp pcb 60B75E48
```

## Related Commands

Command	Description
<a href="#">show tcp brief, on page 45</a>	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

<b>pcb all</b>	(Optional) Clears statistics for all TCP connections.
<b>pcb <i>pcb-address</i></b>	(Optional) Clears statistics for a specific TCP connection.
<b>summary</b>	(Optional) Clears summary statistic for a specific node or connection.
<b>location <i>node-id</i></b>	(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 3.7.2	This command was introduced.

### Usage Guidelines

Use the **clear tcp statistics** command to clear TCP statistics. Use the [show tcp statistics, on page 50](#) 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/RSP0/CPU0:router# clear tcp statistics
```

### Related Commands

Command	Description
<a href="#">show tcp statistics, on page 50</a>	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

<b>pcb</b> all	Clears statistics for all UDP connections.
<b>pcb</b> <i>pcb-address</i>	Clears statistics for a specific UDP connection.
<b>summary</b>	Clears UDP summary statistics.
<b>location</b> <i>node-id</i>	(Optional) 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 3.7.2	This command was introduced.

## Usage Guidelines

Use the **clear udp statistics** command to clear UDP statistics. Use the [show udp statistics, on page 78](#) 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/RSP0/CPU0:router# clear udp statistics summary
```

## Related Commands

Command	Description
<a href="#">show udp statistics, on page 78</a>	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	
<b>port-number</b>	Forwards UDP broadcast packets to a specified port number. Range is 1 to 65535.
<b>disable</b>	Disables IP Forward Protocol UDP.
<b>domain</b>	Forwards UDP broadcast packets to Domain Name Service (DNS, 53).
<b>nameserver</b>	Forwards UDP broadcast packets to IEN116 name service (obsolete, 42).
<b>netbios-dgm</b>	Forwards UDP broadcast packets to NetBIOS datagram service (138).
<b>netbios-ns</b>	Forwards UDP broadcast packets to NetBIOS name service (137).
<b>tacacs</b>	Forwards UDP broadcast packets to TACACS (49).
<b>tftp</b>	Forwards UDP broadcast packets to TFTP (69).

**Command Default** Enabled

**Command Modes** Global Configuration mode

Command History	Release	Modification
	Release 3.7.2	This command was introduced.

**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.

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/RSP0/CPU0:router(config)# forward-protocol udp domain disable
RP/0/RSP0/CPU0:router(config)# forward-protocol udp tftp disable
RP/0/RSP0/CPU0:router(config)# interface MgmtEth 0/0/CPU0/0
RP/0/RSP0/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) 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**

<b>Syntax Description</b>	This command has no keywords or arguments.	
<b>Command Default</b>	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.	
<b>Command Modes</b>	Global Configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.	
<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	read, write
<b>Examples</b>	The following example shows how to use the <b>nsr process-failures switchover</b> command:	
	<pre>RP/0/RSP0/CPU0:router(config)# nsr process-failures switchover</pre>	

# 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	Option	Description
	<b>ipv4</b>	Specifies IPv4 small servers.
	<b>ipv6</b>	Specifies IPv6 small servers.
	<b>max-servers</b>	(Optional) Sets the number of allowable TCP small servers.
	<i>number</i>	(Optional) Number value. Range is 1 to 2147483647.
	<b>no-limit</b>	(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 3.7.2	This command was introduced.

**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/RSP0/CPU0:router(config)# service ipv4 tcp-small-servers max-servers 5 acl100
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<a href="#">service udp-small-servers, on page 31</a>	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	Parameter	Description
	<b>ip4</b>	Specifies IPv4 small servers.
	<b>ip6</b>	Specifies IPv6 small servers.
	<b>max-servers</b>	(Optional) Sets the number of allowable UDP small servers.
	<i>number</i>	(Optional) Number value. Range is 1 to 2147483647.
	<b>no-limit</b>	(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 3.7.2	This command was introduced.

**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/RSP0/CPU0:router (config)# service ipv6 udp-small-servers max-servers 10
```

---

**Related Commands**

Command	Description
<a href="#">service tcp-small-servers, on page 29</a>	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.	
<b>all</b>	Displays detailed information about all the clients.	
<b>brief</b>	Displays brief information about all the clients.	
<b>location node-id</b>	(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 3.7.2	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/RSP0/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/RSP0/CPU0:router# show nsr ncd client brief
```

```

          Total   Total   Accepted
Pid  Protocol  Instance  Packets Acks   Packets/Acks
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
<a href="#">clear nsr ncd client, on page 3</a>	Clears the counters for the NSR Consumer Demuxer (NCD) client.
<a href="#">clear nsr ncd queue, on page 5</a>	Clears the counters for the NSR Consumer Demuxer (NCD) queue.
<a href="#">show nsr ncd queue, on page 35</a>	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	
<b>all</b>	Displays detailed information about all the consumer queues.
<b>brief</b>	Displays brief information about all the consumer queues.
<b>high</b>	Displays information about high-priority Queue and Dispatch (QAD) queues.
<b>low</b>	Displays information about low-priority QAD queues.
<b>location node-id</b>	(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 3.7.2	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/RSP0/CPU0:router# show nsr ncd queue brief

      Queue          Total      Accepted
      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.

Field	Description
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
<a href="#">clear nsr ncd client, on page 3</a>	Clears the counters for the NSR consumer demuxer (NCD) client.
<a href="#">clear nsr ncd queue, on page 5</a>	Clears the counters for the NSR consumer demuxer (NCD) queue.
<a href="#">show nsr ncd client, on page 33</a>	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*]

<b>Syntax Description</b>	<b>location</b> <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.
---------------------------	---

<b>Command Default</b>	No default behavior or values
------------------------	-------------------------------

<b>Command Modes</b>	EXEC mode
----------------------	-----------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.

**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.

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	read

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

```
RP/0/RSP0/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.

Field	Description
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.
	<b>all</b>	Displays statistics for all RAW connections.
	<b>location</b> <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 3.7.2	This command was introduced.

**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/RSP0/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	location <i>node-id</i>	paktype-filter
	Displays the protocol control blocks (PCBs) with configured interface filters.	Displays information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.	Displays the PCBs with configured packet type filters.

**Command Default** No default behavior or values

**Command Modes** EXEC mode

Command History	Release	Modification
	Release 3.7.2	This command was introduced.

**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/RSP0/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	(Optional) 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 3.7.2	This command was introduced.

**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/RSP0/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/RSP0/CPU0:router# show raw statistics pcb all
```

## show raw statistics pcb

```

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
<a href="#">clear raw statistics pcb, on page 7</a>	Clears statistics for either a single RAW connection or for all RAW connections.
<a href="#">show raw brief, on page 37</a>	Displays information about active RAW IP sockets.

# 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]
```

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

<b>Command Default</b>	No default behavior or values
------------------------	-------------------------------

<b>Command Modes</b>	EXEC mode
----------------------	-----------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.

<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.
-------------------------	--

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	read

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

```
RP/0/RSP0/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 7: show tcp brief Command Field Descriptions**

Field	Description
TCPCB	Memory address of the TCP control block.
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.

Field	Description
State	State of the TCP connection.

**Related Commands**

Command	Description
<a href="#">clear tcp pcb, on page 23</a>	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	
<b>pcb</b>	Displays TCP connection information.
<i>value</i>	Displays a specific connection information. Range is from 0 to ffffffff.
<b>all</b>	Displays all connections information.

**Command Default** No default behavior or values

**Command Modes** EXEC mode

Command History	Release	Modification
	Release 3.7.2	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 tcp detail pcb all** command:

```
RP/0/RSP0/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  rcvadvs: 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

<b>location</b> <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.
<b>peer-filter</b>	(Optional) Displays connections with peer filter configured.

### Command Default

No default behavior or values

### Command Modes

EXEC mode

### Command History

Release	Modification
Release 3.7.2	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 tcp extended-filters** command for a specific location (0/0/CPU0):

```
RP/0/RSP0/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  
Eport: 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	
<b>pcb</b> <i>pcb-address</i>	(Optional) Displays detailed statistics for a specified connection.
<b>pcb all</b>	(Optional) Displays detailed statistics for all connections.
<b>summary</b>	(Optional) Clears summary statistic for a specific node or connection.
<b>location</b> <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 3.7.2	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 tcp statistics** command:

```
RP/0/RSP0/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 8: show tcp statistics Command Field Descriptions**

Field	Description
vrfid	VPN routing and forwarding (VRF) identification (vrfid) number.

Field	Description
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
<a href="#">clear tcp statistics, on page 24</a>	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*]

<b>Syntax Description</b>	<b>location</b> <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.
---------------------------	--

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

<b>Command Modes</b>	EXEC mode
----------------------	-----------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.

<b>Usage Guidelines</b>	The <b>location</b> keyword is used so that active and standby TCP instances are independently queried.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	read

**Examples**

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

```
RP/0/RSP0/CPU0:router# show tcp nsr brief
```

PCB	Local Address	Foreign Address	NSR	RcvOnly
0x482c6b8c 10	.1.1.1:646	10		
	.1.1.2:23945	Down	No	
0x482db564 10	.1.1.1:646	10		
	.1.1.2:25398	Down	No	
0x482844e0 10	.1.1.1:646	10		
	.1.1.2:25430	Down	No	
0x482c9284 10	.1.1.1:646	10		
	.1.1.2:37434	Down	No	
0x482d98c8 10	.1.1.1:646	10		
	.1.1.2:37895	Down	No	
0x482d6018 10	.1.1.1:646	10		
	.1.1.2:50616	Down	No	
0x482c7f08 10	.1.1.1:646	10		
	.1.1.2:55860	Down	No	

```

0x482dbab0 10
.1.1.1:646          10
.1.1.2:56656       Down No
0x482d7394 10
.1.1.1:646          10
.1.1.2:57365       Down No
0x482d854c 10
.1.1.1:646          10
.1.1.2:59927       Down No

```

This table describes the significant fields shown in the display.

**Table 9: 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
<a href="#">clear tcp nsr pcb, on page 11</a>	Brings the NSR down on a specified connection or all connections.
<a href="#">show tcp nsr client brief, on page 54</a>	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*]

<b>Syntax Description</b>	<b>location</b> <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.
---------------------------	--

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

<b>Command Modes</b>	EXEC mode
----------------------	-----------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.

<b>Usage Guidelines</b>	The <b>location</b> keyword is used so that active and standby TCP instances are independently queried.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	read

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

```
RP/0/RSP0/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 10: 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**

<b>Command</b>	<b>Description</b>
<a href="#">clear tcp nsr client, on page 9</a>	Clears detailed information about the nonstop routing (NSR) clients.
<a href="#">show tcp nsr brief, on page 52</a>	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.
<b>all</b>	Specifies all the clients.
<b>location</b> <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 3.7.2	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/RSP0/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/RSP0/CPU0:router# show tcp nsr detail client all location 1
RP/0/RSP0/CPU0:router# show tcp nsr detail client all location 0/1/CPU0

=====
CCB 0x482bf378, Proc Name mpls_ldap
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_ldap
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
<a href="#">show tcp nsr detail pcb, on page 58</a>	Displays detailed information about the nonstop routing (NSR) state of TCP connections.
<a href="#">show tcp nsr detail session-set, on page 61</a>	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.
<b>all</b>	Specifies all the connections.
<b>location</b> <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 3.7.2	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/RSP0/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
    
```

NSR State: Up, Rcv Path Replication only: No

show tcp nsr detail pcb

```

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
<a href="#">clear tcp nsr pcb, on page 11</a>	Brings the NSR down on a specified connection or all connection.
<a href="#">show tcp nsr detail client, on page 56</a>	Displays detailed information about the nonstop routing (NSR) clients.
<a href="#">show tcp nsr detail session-set, on page 61</a>	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.
<b>all</b>	Specifies all the session sets.
<b>location</b> <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 3.7.2	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/RSP0/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
    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
```

## show tcp nsr detail session-set

```
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
<a href="#">clear tcp nsr session-set, on page 14</a>	Clears information about session sets.
<a href="#">show tcp nsr detail client, on page 56</a>	Displays detailed information about the nonstop routing (NSR) clients.
<a href="#">show tcp nsr detail pcb, on page 58</a>	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]
```

<b>Syntax Description</b>	<b>location node-id</b> (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.				
<b>Command Default</b>	If a value is not specified, the current RP in which the command is being executed is taken as the location.				
<b>Command Modes</b>	EXEC mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.2	This command was introduced.
Release	Modification				
Release 3.7.2	This command was introduced.				
<b>Usage Guidelines</b>	<p>The <b>location</b> keyword is used so that active and standby TCP instances are independently queried.</p> <p>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.</p>				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>transport</td> <td>read</td> </tr> </tbody> </table>	Task ID	Operations	transport	read
Task ID	Operations				
transport	read				

## Examples

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

```
RP/0/RSP0/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/RSP0/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 11: 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
<a href="#">clear tcp nsr session-set, on page 14</a>	Clears information about session sets.
<a href="#">show tcp nsr detail session-set, on page 61</a>	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.
<b>all</b>	Specifies all the statistics for the clients.
<b>location</b> <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 3.7.2	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/RSP0/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
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
```

## show tcp nsr statistics client

```

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
<a href="#">clear tcp nsr statistics client, on page 16</a>	Clears the nonstop routing (NSR) statistics of the client.
<a href="#">show tcp nsr statistics pcb, on page 67</a>	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).
<a href="#">show tcp nsr statistics session-set, on page 69</a>	Displays the nonstop routing (NSR) statistics for a session set.
<a href="#">show tcp nsr statistics summary, on page 71</a>	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.
<b>all</b>	Specifies all the connection statistics.
<b>location</b> <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 3.7.2	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/RSP0/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

=====
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
```

show tcp nsr statistics pcb

```

=====
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
<a href="#">clear tcp nsr statistics pcb, on page 18</a>	Clears the nonstop routing (NSR) statistics for TCP connections.
<a href="#">show tcp nsr statistics client, on page 65</a>	Displays the nonstop routing (NSR) statistics for the clients.
<a href="#">show tcp nsr statistics session-set, on page 69</a>	Displays the nonstop routing (NSR) statistics for a session set.
<a href="#">show tcp nsr statistics summary, on page 71</a>	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.
<b>all</b>	Specifies all the session sets for the statistics.
<b>location</b> <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 3.7.2	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/RSP0/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
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 =====
```

## show tcp nsr statistics session-set

```

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
<a href="#">clear tcp nsr statistics session-set, on page 20</a>	Clears the nonstop routing (NSR) statistics for session sets.
<a href="#">show tcp nsr statistics client, on page 65</a>	Displays the nonstop routing (NSR) statistics for the clients.
<a href="#">show tcp nsr statistics pcb, on page 67</a>	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).
<a href="#">show tcp nsr statistics summary, on page 71</a>	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*]

<b>Syntax Description</b>	<b>location node-id</b> (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.				
<b>Command Default</b>	If a value is not specified, the current RP in which the command is being executed is taken as the location.				
<b>Command Modes</b>	EXEC mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.2	This command was introduced.
Release	Modification				
Release 3.7.2	This command was introduced.				
<b>Usage Guidelines</b>	The <b>location</b> keyword is used so that active and standby TCP instances are independently queried.				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>transport</td> <td>read</td> </tr> </tbody> </table>	Task ID	Operations	transport	read
Task ID	Operations				
transport	read				

## Examples

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

```
RP/0/RSP0/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**

<b>Command</b>	<b>Description</b>
<a href="#">clear tcp nsr statistics summary, on page 22</a>	Clears the statistics summary.
<a href="#">show tcp nsr statistics client, on page 65</a>	Displays the nonstop routing (NSR) statistics for the clients.
<a href="#">show tcp nsr statistics pcb, on page 67</a>	Displays the nonstop routing (NSR) statistics for a given Protocol Control Block (PCB).
<a href="#">show tcp nsr statistics session-set, on page 69</a>	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]
```

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

<b>Command Default</b>	No default behavior or values
------------------------	-------------------------------

<b>Command Modes</b>	EXEC mode
----------------------	-----------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 3.7.2	This command was introduced.

<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.
-------------------------	--

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	transport	read

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

```
RP/0/RSP0/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 12: 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.

Field	Description
Foreign Address	Foreign address and foreign port.

**Related Commands**

Command	Description
<a href="#">show tcp brief, on page 45</a>	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.
	<b>all</b>	Provides statistics for all UDP connections.
	<b>location</b> <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 3.7.2	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 detail pcb all** command:

```
RP/0/RSP0/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 13: show raw pcb Command Field Descriptions**

<b>Field</b>	<b>Description</b>
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}}
```

<b>Syntax Description</b>	<b>location</b> <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.				
	<b>peer-filter</b> Displays connections with peer filter configured.				
<b>Command Default</b>	No default behavior or values				
<b>Command Modes</b>	EXEC mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.2	This command was introduced.
Release	Modification				
Release 3.7.2	This command was introduced.				
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>transport</td> <td>read</td> </tr> </tbody> </table>	Task ID	Operations	transport	read
Task ID	Operations				
transport	read				
<b>Examples</b>	<p>The following is sample output from the <b>show udp extended-filters</b> command for a specific location (0/0/CPU0):</p> <pre>RP/0/RSP0/CPU0:router# <b>show udp extended-filters</b> 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 -----</pre>				

# 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-addressall}} [location node-id]
```

## Syntax Description

**summary** Displays summary statistics.

**pcb** *pcb-address* Displays detailed statistics for each connection.

**pcb** *all* Displays detailed statistics for all connections.

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

## Command Default

No default behavior or values

## Command Modes

EXEC mode

## Command History

Release	Modification
Release 3.7.2	This command was introduced.

## 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/RSP0/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 cloningication
```

This table describes the significant fields shown in the display.

**Table 14: show udp Command Field Descriptions**

Field	Description
Rcvd: Total	Total number of packets received.

Field	Description
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
<a href="#">clear udp statistics, on page 25</a>	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*

<b>Syntax Description</b>	<i>segment-size</i> Size, in bytes, of the packet that TCP uses to send data. Range is 68 to 10000 bytes.				
<b>Command Default</b>	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.				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.2	This command was introduced.
Release	Modification				
Release 3.7.2	This command was introduced.				
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>transport</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	transport	read, write
Task ID	Operations				
transport	read, write				

### Examples

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

```
RP/0/RSP0/CPU0:router(config)# tcp mss 1460
RP/0/RSP0/CPU0:router(config)# exit

Uncommitted changes found, commit them? [yes]:
RP/0/RSP0/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/RSP0/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	
<b>age-timer</b> <i>minutes</i>	(Optional) Specifies a value in minutes. Range is 10 to 30.
<b>infinite</b>	(Optional) Turns off the age timer.

Command Default	
	Disabled
<b>age-timer</b>	default is 10 minutes

Command Modes	
	Global Configuration mode

Command History	Release	Modification
	Release 3.7.2	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/RSP0/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 3.7.2	This command was introduced.

**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/RSP0/CPU0:router(config)# tcp selective-ack
```

Related Commands	Command	Description
	<a href="#">tcp timestamp, on page 84</a>	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
```

<b>Syntax Description</b>	<i>seconds</i> Time (in seconds) the software waits while attempting to establish a TCP connection. Range is 5 to 30 seconds.				
<b>Command Default</b>	The default value for the synwait-time is 30 seconds.				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.2	This command was introduced.
Release	Modification				
Release 3.7.2	This command was introduced.				
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>transport</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	transport	read, write
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/RSP0/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 3.7.2	This command was introduced.

**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/RSP0/CPU0:router(config)# tcp timestamp
```

Related Commands	Command	Description
	<a href="#">tcp selective-ack, on page 82</a>	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.

---



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**Command Default**      The default value for the window size is 16k.

---



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**Command Modes**      Global Configuration mode

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Command History	Release	Modification
	Release 3.7.2	This command was introduced.

---



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## Usage Guidelines




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**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

---



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## Examples

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

```
RP/0/RSP0/CPU0:router(config)# tcp window-size 3000
```

