

Transport Stack Commands

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

For detailed information about transport stack concepts, configuration tasks, and examples, refer to the *IP Addresses and Services Configuration Guide for Cisco NCS 5000 Series Routers*.

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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 XR EXEC mode.

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

Syntax Description

all	Clears statistics for all RAW connections.
pcb-address	Clears statistics for a specific RAW connection.
location *node-id*	(Optional) Clears statistics 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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router# clear raw statistics pcb 0x80553b0
RP/0/RP0/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/RP0/CPU0:router# clear raw statistics pcb all
RP/0/RP0/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
```

clear tcp pcb

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

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

Syntax Description

pcb-address	Clears the TCP connection at the specified PCB address.
all	Clears all open TCP connections.
location *node-id*	(Optional) Clears the TCP connection 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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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 19 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/RP0/CPU0:router# clear tcp pcb 60B75E48
```

clear tcp statistics

To clear TCP statistics, use the **clear tcp statistics** command in

XR EXEC mode.

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

Syntax Description

pcb all	(Optional) Clears statistics for all TCP connections.
pcb *pcb-address*	(Optional) Clears statistics for a specific TCP connection.
summary	(Optional) Clears summary statistic for a specific node or connection.
location *node-id*	(Optional) Clears TCP statistics 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

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **clear tcp statistics** command to clear TCP statistics. Use the show tcp statistics, on page 24 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/RP0/CPU0:router

```
# clear tcp statistics
```

clear udp statistics

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

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

Syntax Description

pcb all	Clears statistics for all UDP connections.
pcb *pcb-address*	Clears statistics for a specific UDP connection.
summary	Clears UDP summary statistics.
location *node-id*	(Optional) Clears UDP statistics 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

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **clear udp statistics** command to clear UDP statistics. Use the show udp statistics, on page 31 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/RP0/CPU0:router
# clear udp statistics summary
```

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

XR Config 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

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

Command Default

forward-protocol udp is enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	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 tenGigE interface 0/RP0/CPU0 are forwarded to 172.16.0.1. tenGigE interface 0/RP0/CPU0 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/RP0/CPU0:router(config)# forward-protocol udp domain disable
RP/0/RP0/CPU0:router(config)# forward-protocol udp tftp disable
RP/0/RP0/CPU0:router(config)# interface tenGigE 0/RP0/CPU0
RP/0/RP0/CPU0:router(config-if)# ipv4 helper-address 172.16.0.1
```

service tcp-small-servers

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

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

Syntax Description

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

Command Default

TCP small servers are disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router(config)# service ipv4 tcp-small-servers max-servers 5 acl100
```

service udp-small-servers

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

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

Syntax Description

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

Command Default

UDP small servers are disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router(config)# service ipv6 udp-small-servers max-servers 10
```

show raw brief

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

show raw brief [**location** *node-id*]

Syntax Description

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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/RP0/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 1: 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 XR EXEC mode.

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

Syntax Description

pcb-address	Displays statistics for a specified RAW connection.
all	Displays statistics for all RAW connections.
location *node-id*	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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router# show raw detail pcb 0x807e89c

============================================================
PCB is 0x807e89c, Family: 2, PROTO: 89
 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 2: 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 XR EXEC mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router# show raw extended-filters 0/RP0/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 3: 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 XR 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 *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/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/RP0/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
```

This table describes the significant fields shown in the display.

Table 4: 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.

show tcp brief

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

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

Syntax Description

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

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Release 6.0

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/RP0/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 5: 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.

Field	Description
Foreign Address	Destination address and port number of the packet.
State	State of the TCP connection.

show tcp detail

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router# show tcp detail pcb all

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

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

Timer          Starts    Wakeups         Next(msec)
Retrans             0          0                 0
SendWnd             0          0                 0
TimeWait            0          0                 0
AckHold             0          0                 0
KeepAlive           0          0                 0
PmtuAger            0          0                 0
GiveUp              0          0                 0
Throttle            0          0                 0
iss: 0           snduna: 0           sndnxt: 0
sndmax: 0           sndwnd: 0           sndcwnd: 1073725440
   irs: 0           rcvnxt: 0           rcvwnd: 16384   rcvadv: 0
```

show tcp extended-filters

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0):

```
RP/0/RP0/CPU0:router# show tcp extended-filters location 0/RP0/CPU0

Total Number of matching PCB's in database: 3
-----------------------------------
JID: 135
Family: 2
PCB: 0x4826c5dc
L4-proto: 6
Lport: 23
Fport: 0
Laddr: 0.0.0.0
Faddr: 0.0.0.0
ICMP error filter mask: 0x12
LPTS options: 0x00000000

-----------------------------------

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

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

-----------------------------------

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

-----------------------------------
```

show tcp statistics

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

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

Syntax Description

pcb *pcb-address*	(Optional) Displays detailed statistics for a specified connection.
pcb all	(Optional) Displays detailed statistics for all connections.
summary	(Optional) Clears summary statistic for a specific node or connection.
location *node-id*	(Optional) Displays statistics 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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/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 6: show tcp statistics Command Field Descriptions

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

show udp brief

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

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

Syntax Description

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

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read

Examples

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

```
RP/0/RP0/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 7: 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.

Field	Description
Local Address	Local address and local port.
Foreign Address	Foreign address and foreign port.

show udp detail pcb

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

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

Syntax Description

pcb-address	Address of a specified UDP connection.
all	Provides statistics for all UDP 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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/CPU0:router# show udp detail pcb all location 0/RP0/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 8: show raw pcb Command Field Descriptions

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

show udp extended-filters

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	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 extended-filters** command for a specific location (0/RP0/CPU0):

```
RP/0/RP0/CPU0:router# show udp extended-filters location 0/RP0/CPU0

Total Number of matching PCB's in database: 1
----------------------------------
JID: 248
Family: 2
PCB: 0x48247e94
L4-proto: 17
Lport: 646
Fport: 0
Laddr: 0.0.0.0
Faddr: 0.0.0.0
ICMP error filter mask: 0x0
LPTS options: 0x00000000
----------------------------------
```

show udp statistics

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

XR EXEC mode

Command History

Release	Modification
Release 6.0	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/RP0/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 9: 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.

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 XR Config mode.

tcp mss *segment-size*

Syntax Description

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

Command Default

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

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read, write

Examples

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.
Sep  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 XR Config mode. To reset the default, use the **no** form of this command.

tcp path-mtu-discovery [**age-timer** *minutes* | **infinite**]
no tcp path-mtu-discovery

Syntax Description

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

Command Default

tcp path-mtu-discovery is disabled

age-timer default is 10 minutes

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	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/RP0/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 XR Config mode. To reset the default, use the **no** form of this command.

tcp selective-ack
no tcp selective-ack

Syntax Description

XR Config mode

This command has no keywords or arguments.

Command Default

TCP selective ACK is disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was supported.

Usage Guidelines

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

Task ID

Task ID	Operations
transport	read, write

Examples

In the following example, the selective ACK is enabled:

```
RP/0/RP0/CPU0:router(config)# tcp selective-ack
```

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 XR Config mode. To restore the default time, use the **no** form of this command.

tcp synwait-time *seconds*
no tcp synwait-time *seconds*

Syntax Description

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

Command Default

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

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was supported.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
transport	read, write

Examples

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

```
RP/0/RP0/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 XR Config 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

XR Config mode

Command History

Release	Modification
Release 6.0	This command was supported.

Usage Guidelines

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

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

Task ID

Task ID	Operations
transport	read, write

Examples

The following example shows how to enable the timestamp option:

```
RP/0/RP0/CPU0:router(config)# tcp timestamp
```

tcp window-size

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

tcp window-size *bytes*
no tcp window-size

Syntax Description

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

Command Default

The default value for the window size is 16k.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was supported.

Usage Guidelines

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

Task ID

Task ID	Operations
transport	read, write

Examples

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

```
RP/0/RP0/CPU0:router(config)# tcp window-size 3000
```