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show cem circuit

To display information about the circuit state, administrative state, the CEM ID of the circuit, and the interface on which it is configured, use the **show cem circuit** command. If cross connect is configured under the circuit, the command output also includes information about the attachment circuit status.

Syntax Description

Syntax Description

Command Default

There is no default.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
XE 3.18 SP	Support for this command was introduced on Cisco NCS 4200 Series.
XE Everest 16.5.1	This command was integrated into the Cisco NCS 4200 Series and Cisco ASR 900 Series Routers.

Usage Guidelines

The **show cem circuit** command allows you to display information about the circuit state, administrative state, the CEM ID of the circuit, and the interface on which it is configured.

Examples

The following example shows the detailed information about a particular circuit.:

```
Router# show cem circuit 0
CEM0/1/2, ID: 0, Line: UP, Admin: UP, Ckt: ACTIVE
Controller state: up, T1/E1 state: up
Idle Pattern: 0xFF, Idle CAS: 0x8
Dejitter: 5 (In use: 0)
Payload Size: 192
Framing: Unframed
CEM Defects Set
None
Signalling: No CAS
RTP: No RTP
Ingress Pkts: 11060 Dropped: 0
Egress Pkts: 11061 Dropped: 0
CEM Counter Details
Input Errors: 0 Output Errors: 0
Pkts Missing: 0 Pkts Reordered: 0
Misorder Drops: 0 JitterBuf Underrun: 0
Error Sec: 0 Severly Errored Sec: 0
Unavailable Sec: 0 Failure Counts: 0
Pkts Malformed: 0 JitterBuf Overrun: 0
```

show controllers serial

To display serial controller statistics, use the **showcontrollersserial**command in privileged EXEC mode.

Standard Syntax
show controllers serial [*slot*/*port*]

Cisco 7000 Series Routers with the RSP7000 and RSP7000CI and Cisco 7500 Series Routers
show controllers serial [*slot*/*port-adapter*/*port*]

T3/E3 Shared Port Adapters and 2-Port and 4-Port Channelized T3 SPA in Unchannelized Mode
show controllers serial [*slot*/*subslot*/*port*]

Channelized T3 Shared Port Adapters
show controllers serial [*slot*/*subslot*/*port*/*t1-number*]

Syntax Description

slot	(Optional) Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
port-adapter	(Optional) On Cisco 7500 series routers and Cisco 7000 series routers with the RSP7000 and RSP7000CI, the location of the port adapter on a Versatile Interface Processor (VIP). The value can be 0 or 1.
/ *subslot*	(Optional) Secondary slot number on a SIP where a SPA is installed. Refer to the platform-specific SPA hardware installation guide and the corresponding "Specifying the Interface Address on a SPA" topic in the platform-specific SPA software configuration guide for subslot information.
/ *port*	(Optional) Port or interface number. Refer to the appropriate hardware manual for port information. For SPAs, refer to the corresponding "Specifying the Interface Address on a SPA" topics in the platform-specific SPA software configuration guide.
t1-number	(Optional) Logical T1 number in channelized mode. For SPAs, refer to the corresponding "Specifying the Interface Address on a SPA" topics in the platform-specific SPA software configuration guide.

Command Default

No default behavior or values

Command Modes

Privileged EXEC

Command History

Release	Modification
10.0	This command was introduced.

Release	Modification
11.1CA	This command was modified to include support for the PA-E3 and PA-T3 port adapters.
12.2S	This command was integrated into Cisco IOS Release 12.2S.
12.2(25)S3	This command was integrated into Cisco IOS Release 12.2(25)S3.
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE and introduced a new output for interfaces on the serial SPAs on the Cisco 7600 series routers and Catalyst 6500 series switches.
12.0(31)S	This command was integrated into Cisco IOS Release 12.0(31)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The output from the **showcontrollersserial**command provides error and alarm information that is useful in troubleshooting line problems.

The information displayed is generally useful for diagnostic tasks performed by Cisco Systems technical support personnel only. For the PA-E3 or PA-T3 port adapters, the **showcontrollersserial** command also displays configuration information such as the framing, clock source, bandwidth limit, whether scrambling is enabled, the national bit, the international bits, and DSU mode configured on the interface. Also displayed are the performance statistics for the current interval and last 15-minute interval and whether any alarms exist.

Examples

Example of the show controllers serial Command on the Cisco 4000 Series Router

The following is sample output from the **showcontrollersserial** command on the Cisco 4000:

```
Router# show controllers serial
MK5 unit 0, NIM slot 1, NIM type code 7, NIM version 1
idb = 0x6150, driver structure at 0x34A878, regaddr = 0x8100300
IB at 0x6045500: mode=0x0108, local_addr=0, remote_addr=0
N1=1524, N2=1, scaler=100, T1=1000, T3=2000, TP=1
buffer size 1524
DTE V.35 serial cable attached
RX ring with 32 entries at 0x45560 : RLEN=5, Rxhead 0
00 pak=0x6044D78  ds=0x6044ED4 status=80 max_size=1524 pak_size=0
01 pak=0x60445F0  ds=0x604474C status=80 max_size=1524 pak_size=0
02 pak=0x6043E68  ds=0x6043FC4 status=80 max_size=1524 pak_size=0
03 pak=0x60436E0  ds=0x604383C status=80 max_size=1524 pak_size=0
04 pak=0x6042F58  ds=0x60430B4 status=80 max_size=1524 pak_size=0
05 pak=0x60427D0  ds=0x604292C status=80 max_size=1524 pak_size=0
06 pak=0x6042048  ds=0x60421A4 status=80 max_size=1524 pak_size=0
07 pak=0x60418C0  ds=0x6041A1C status=80 max_size=1524 pak_size=0
08 pak=0x6041138  ds=0x6041294 status=80 max_size=1524 pak_size=0
09 pak=0x60409B0  ds=0x6040B0C status=80 max_size=1524 pak_size=0
10 pak=0x6040228  ds=0x6040384 status=80 max_size=1524 pak_size=0
11 pak=0x603FAA0  ds=0x603FBFC status=80 max_size=1524 pak_size=0
12 pak=0x603F318  ds=0x603F474 status=80 max_size=1524 pak_size=0
13 pak=0x603EB90  ds=0x603ECEC status=80 max_size=1524 pak_size=0
14 pak=0x603E408  ds=0x603E564 status=80 max_size=1524 pak_size=0
15 pak=0x603DC80  ds=0x603DDDC status=80 max_size=1524 pak_size=0
16 pak=0x603D4F8  ds=0x603D654 status=80 max_size=1524 pak_size=0
17 pak=0x603CD70  ds=0x603CECC status=80 max_size=1524 pak_size=0
18 pak=0x603C5E8  ds=0x603C744 status=80 max_size=1524 pak_size=0
```

```
19 pak=0x603BE60  ds=0x603BFBC status=80 max_size=1524 pak_size=0
20 pak=0x603B6D8  ds=0x603B834 status=80 max_size=1524 pak_size=0
21 pak=0x603AF50  ds=0x603B0AC status=80 max_size=1524 pak_size=0
22 pak=0x603A7C8  ds=0x603A924 status=80 max_size=1524 pak_size=0
23 pak=0x603A040  ds=0x603A19C status=80 max_size=1524 pak_size=0
24 pak=0x60398B8  ds=0x6039A14 status=80 max_size=1524 pak_size=0
25 pak=0x6039130  ds=0x603928C status=80 max_size=1524 pak_size=0
26 pak=0x60389A8  ds=0x6038B04 status=80 max_size=1524 pak_size=0
27 pak=0x6038220  ds=0x603837C status=80 max_size=1524 pak_size=0
28 pak=0x6037A98  ds=0x6037BF4 status=80 max_size=1524 pak_size=0
29 pak=0x6037310  ds=0x603746C status=80 max_size=1524 pak_size=0
30 pak=0x6036B88  ds=0x6036CE4 status=80 max_size=1524 pak_size=0
31 pak=0x6036400  ds=0x603655C status=80 max_size=1524 pak_size=0
TX ring with 8 entries at 0x45790 : TLEN=3, TWD=7
tx_count = 0, tx_head = 7, tx_tail = 7
00 pak=0x000000 ds=0x600D70C status=0x38 max_size=1524 pak_size=22
01 pak=0x000000 ds=0x600D70E status=0x38 max_size=1524 pak_size=2
02 pak=0x000000 ds=0x600D70E status=0x38 max_size=1524 pak_size=2
03 pak=0x000000 ds=0x600D70E status=0x38 max_size=1524 pak_size=2
04 pak=0x000000 ds=0x600D70E status=0x38 max_size=1524 pak_size=2
05 pak=0x000000 ds=0x600D70E status=0x38 max_size=1524 pak_size=2
06 pak=0x000000 ds=0x600D70E status=0x38 max_size=1524 pak_size=2
07 pak=0x000000 ds=0x6000000 status=0x38 max_size=1524 pak_size=0
XID/Test TX desc at 0xFFFFFF, status=0x30, max_buffer_size=0, packet_size=0
XID/Test RX desc at 0xFFFFFF, status=0x0, max_buffer_size=0, packet_size=0
Status Buffer at 0x60459C8: rcv=0, tcv=0, local_state=0, remote_state=0
phase=0, tac=0, currd=0x00000, curxd=0x00000
bad_frames=0, frmrs=0, T1_timeouts=0, rej_rxs=0, runts=0
0 missed datagrams, 0 overruns, 0 bad frame addresses
0 bad datagram encapsulations, 0 user primitive errors
0 provider primitives lost, 0 unexpected provider primitives
0 spurious primitive interrupts, 0 memory errors, 0 tr
%LINEPROTO-5-UPDOWN: Linansmitter underruns
mk5025 registers: csr0 = 0x0E00, csr1 = 0x0302, csr2 = 0x0704
                  csr3 = 0x5500, csr4 = 0x0214, csr5 = 0x0008
```

Example of the show controllers serial Command for a PA-E3 Serial Port Adapter

The following is sample output from the **showcontrollersserial** command for a PA-E3 serial port adapter installed in slot 2:

```
Router# show controllers serial 2/0
M1T-E3 pa: show controller:
PAS unit 0, subunit 0, f/w version 2-55, rev ID 0x2800001, version 2
idb = 0x6080D54C, ds = 0x6080F304, ssb=0x6080F4F4
Clock mux=0x30, ucmd_ctrl=0x0, port_status=0x1
Serial config=0x8, line config=0x1B0202
maxdgram=4474, bufpool=128Kb, 256 particles
   rxLOS inactive, rxLOF inactive, rxAIS inactive
   txAIS inactive, rxRAI inactive, txRAI inactive
line state: up
E3 DTE cable, received clockrate 50071882
base0 registers=0x3D000000, base1 registers=0x3D002000
mxt_ds=0x608BA654, rx ring entries=128, tx ring entries=256
rxring=0x4B01F480, rxr shadow=0x6081081C, rx_head=26
txring=0x4B01F960, txr shadow=0x60810E48, tx_head=192, tx_tail=192, tx_count=0
throttled=0, enabled=0, disabled=0
rx_no_eop_err=0, rx_no_stp_err=0, rx_no_eop_stp_err=0
rx_no_buf=0, rx_soft_overrun_err=0, dump_err= 1
tx_underrun_err=0, tx_soft_underrun_err=0, tx_limited=0
tx_fullring=0, tx_started=11504
```

```
   Framing is g751, Clock Source is Line, Bandwidth limit is 34010.
   Scrambling is enabled
   National Bit is 0, International Bits are: 0 0
   DSU mode 1
   Data in current interval (213 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation
     0 P-bit Err Secs, 0 P-bit Severely Err Secs
     0 Severely Err Framing Secs, 0 Unavailable Secs
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
   Total Data (last 24 hours)
     0 Line Code Violations, 0 P-bit Coding Violation,
     0 C-bit Coding Violation,
     0 P-bit Err Secs, 0 P-bit Severely Err Secs,
     0 Severely Err Framing Secs, 0 Unavailable Secs,
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
   No alarms detected.
```

Example of the show controllers serial Command for a PA-T3 Serial Port Adapter

The following is sample output from the **showcontrollersserial** command that shows serial port 1/0/0 on a 1-port PA-T3 serial port adapter installed on a VIP2 in chassis slot 1:

```
Router# show controllers serial 2/0/1
Serial1/0/0 -
   Mx T3(1) HW Revision 0x3, FW Revision 2.55
   Framing is c-bit, Clock Source is Line
   Bandwidth limit is 35000, DSU mode 1, Cable length is 50
   Data in current interval (325 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation
     0 P-bit Err Secs, 0 P-bit Sev Err Secs
     0 Sev Err Framing Secs, 0 Unavailable Secs
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Sev Err Secs
   Total Data (last 24 hours)
     0 Line Code Violations, 0 P-bit Coding Violation,
     0 C-bit Coding Violation,
     0 P-bit Err Secs, 0 P-bit Sev Err Secs,
     0 Sev Err Framing Secs, 0 Unavailable Secs,
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Sev Err Secs
No alarms detected.
```

Example of the show controllers serial Command for a Channelized T3 SPA

The following is sample output from the **showcontrollersserial**command for a 2-port or 4-Port CT3 SPA located in slot 3 of a Cisco 7304 router:

```
Router# show controllers serial
Serial3/1/0 -
   Framing is c-bit, Clock Source is Internal
   Bandwidth limit is 44210, DSU mode 0, Cable length is 10
   rx FEBE since last clear counter 0, since reset 0
   Data in current interval (0 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation
     0 P-bit Err Secs, 0 P-bit Sev Err Secs
     0 Sev Err Framing Secs, 0 Unavailable Secs
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Sev Err Secs
```

```
     0 Severely Errored Line Secs
     0 Far-End Errored Secs, 0 Far-End Severely Errored Secs
     0 CP-bit Far-end Unavailable Secs
     0 Near-end path failures, 0 Far-end path failures
     0 Far-end code violations, 0 FERF Defect Secs
     0 AIS Defect Secs, 0 LOS Defect Secs
   Transmitter is sending AIS.
   Receiver has loss of signal.
Serial3/1/3 -
   Framing is c-bit, Clock Source is Line
   Bandwidth limit is 44210, DSU mode 0, Cable length is 10
   rx FEBE since last clear counter 0, since reset 0
   Data in current interval (757 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation
     0 P-bit Err Secs, 0 P-bit Sev Err Secs
     0 Sev Err Framing Secs, 0 Unavailable Secs
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Sev Err Secs
     0 Severely Errored Line Secs
     0 Far-End Errored Secs, 0 Far-End Severely Errored Secs
     0 CP-bit Far-end Unavailable Secs
     0 Near-end path failures, 0 Far-end path failures
     0 Far-end code violations, 0 FERF Defect Secs
     0 AIS Defect Secs, 0 LOS Defect Secs
   No alarms detected.
```

The table below describes the fields shown in the **showcontrollersserial** output.

Note The fields appearing in the output will vary depending on card type, controller configuration, and the status of the controller line.

Table 1: show controllers serial Field Descriptions

Field	Description
Serial	Name of the serial controller.
Framing	Framing type.
Clock source	Source of the synchronization signal (clock).
Bandwidth limit	The allowable bandwidth for the controller.
DSU mode	The Data Service Unit (DSU) interoperability mode.
Cable length	The distance to the first repeater.
rx FEBE since last clear counter	Number of received far-end block errors. **Note** Line far-end block error (accumulated from the M0 or M1 byte) is reported when the downstream LTE detects BIP(B2) errors. Path far-end block error (accumulated from the G1 byte) is reported when the downstream PTE detects BIP(B3) errors.
rx FEBE since last reset	Number of received far-end block errors.

Field	Description
Line Code Violations	Number of Bipolar Violation (BPV) errors or Excessive Zeros (EXZ) errors.
P-bit Coding Violations	Number of P-bit errors encountered between source and destination.
C-bit coding violations	Number of C-bit errors encountered between source and destination.
P-bit Err Secs (PES)	Number of seconds with P-bit errors. **Note** A PES is a second with one or more PCVs or one or more Out of Frame defects or a detected incoming AIS. This gauge is not incremented when UASs are counted.
P-bit Sev Err Secs (PSES)	Number of seconds with P-bit severe errors. **Note** A PSES is a second with 44 or more PCVs or one or more Out of Frame defects or a detected incoming AIS. This gauge is not incremented when UASs are counted.
Sev Err Framing Secs	The number of 1-second intervals in which either a Remote Alarm Indication was received or a Loss Of Frame condition occurred.
Unavailable Secs	The number of 1-second intervals in which the controller was down.
Line Errored Secs	The number of 1-second intervals in which a Line Code Violation occurred.
C-bit Errored Secs (CES)	Number of seconds with C-bit errors. **Note** A CES is a second with one or more CCVs or one or more Out of Frame defects or a detected incoming AIS. This count is only for the SYNTRAN and C-bit Parity DS3 applications. This gauge is not incremented when UASs are counted.
C-bit Sev Err Secs (CSES)	Number of seconds with severe C-bit errors. **Note** A CSES is a second with 44 or more CCVs or one or more Out of Frame defects or a detected incoming AIS. This count is only for the SYNTRAN and C-bit Parity DS3 applications. This gauge is not incremented when UASs are counted.

Field	Description
Severely Errored Line Secs	For ESF signals, this is a second in which one of the following defects is detected: • 320 or more Path Code Violation errors. • One or more Out of Frame defects. • An AIS defect. For E1-CRC signals, this is a second with one of the following errors: • 832 or more Path Code Violation errors. • One or more Out of Frame defects. For E1-nonCRC signals, this is a second with 2048 or more Line Code Violations.
Far-End Errored Secs	Number of seconds of far-end failures.
Far-End Severely Errored Secs	The number of 1-second intervals in which either a Remote Alarm Indication was received or a Loss Of Frame condition occurred.
P-bit Unavailable Secs	Number of seconds the interface is unavailable because of P-bit errors.
CP-bit Unavailable Secs	Number of seconds the interface is unavailable because of CP-bit errors.
CP-bit Far-end Unavailable Secs	Number of seconds the interface is unavailable because of CP-bit errors from the far-end device.
Near-end path failures	Indicates the number of failures at the near end of the path, or device, during the specified trace period.
Far-end path failures	Indicates the number of failures at the remote (or far) end of the path, or device, during the specified trace period.
Far-end code violations	Indicates a frame synchronization bit error in the D4 and E1-no CRC formats, or a CRC error in the Extended Superframe (ESF) and E1-CRC formats has occurred on the remote, or far-end device.
FERF Defect Secs	Number of far-end receive failures detected per second.
AIS Defect Secs	Number of alarm indication signals per second.
LOS Defect Secs	Number of loss of signal alarms per second.
Path Code Violations	Indicates a frame synchronization bit error in the D4 and E1-no CRC formats, or a CRC error in the Extended Superframe (ESF) and E1-CRC formats.
Slip Secs	Indicates the replication or deletion of the payload bits of a domestic trunk interface (DS1) frame. A slip might happen when there is a difference between the timing of a synchronous receiving terminal and the received signal.

Field	Description
Fr Loss Secs	Indicates the number of seconds an Out of Frame (OOF) error is detected.
Line Err Secs	Line Errored Seconds (LES) is a second in which one or more Line Code Violation errors are detected.
Degraded Mins	A degraded minute is one in which the estimated error rate exceeds 1E-6 but does not exceed 1E-3.
Errored Secs	In ESF and E1-CRC links, an errored second is a second in which one of the following defects is detected: • One or more Path Code Violations. • One or more Controlled Slip events. **Note** For SF and E1 no-CRC links, the presence of Bipolar Violations also triggers an errored second.
Bursty Err Secs	A second with more than one but fewer than 320 Path Coding Violation errors, no Severely Errored Frame defects, and no detected incoming AIS defects. Controlled slips are not included in this parameter.

show controllers serial bert

To view the BERT statistics for a completed or in-progress BERT test, enter the **showcontrollersserialbert** in user EXEC or EXEC privileged mode.

show controllers serial *slot/interface-number* **bert**

Syntax Description

slot	Specifies the slot where the serial interface is located.
interface-number	Specifies the number of the serial interface.

Command Default

None

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.1(12c)EX1	This command was introduced for Cisco 7304 routers.
12.2(18)S	This command was introduced on Cisco 7304 routers running Cisco IOS Release 12.2S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is used to view the results of a user-initiated BERT test.

Examples

In the following example, the **showcontrollersserialbert**command is used to view a BERT test that is still in progress:

```
Router#
show controllers serial 6/0 bert
Interface Serial6/0 (DS3 port 1)
 BERT information:
  State            :enabled (sync'd)
  Pattern          :2^23
  Interval         :10 minutes
  Time remaining   :00:01:44
  Total errors     :0
  Time this sync   :00:08:10
  Errors this sync :0
  Sync count       :1
```

In the following example, the **showcontrollersserialbert**command is used to view a BERT test that is complete:

```
Router# show controllers serial 6/0 bert
Interface Serial6/0 (DS3 port 1)
 BERT information:
  State            :enabled (sync'd)
  Pattern          :2^23
```

```
Interval         :10 minutes
Time remaining   :00:09:44
Total errors     :0
Time this sync   :00:00:10
Errors this sync :0
Sync count       :1
```

Related Commands

Command	Description
bert errors	Inserts intention errors into a BERT test.
bert pattern	Begins a BERT test.

show controllers sm

To display controller information for the service module interface, use the **showcontrollerssm** command in user EXEC or privileged EXEC mode.

show controllers sm *slot*/*port*

Syntax Description

slot	Router slot in which the service module is installed. Range: 1 to 4.
/ *port*	Port number of the module interface. Always use 0. The slash mark (/) is required.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced.

Usage Guidelines

The output from this command is generally useful for diagnostic tasks performed by technical support only. You can, however, use the displayed hardware statistics to obtain the receive and transmit packet statistics that are collected by the hardware controller during packet processing.

Examples

The following example shows how to display information for the SM-SRE installed in the router:

```
Router# show controllers sm 1/0
Interface SM1/0
Hardware is PSE2
HWIDB: 0x11E3C8C8 INSTANCE: 0x01323100, FASTSEND: 0x040D6C44
Init flags: 0x23

FPGA registers
---------------
  Base address:   0xE4000000    Revision:       0x09030416
  FPGA type:      0x316B6278    FPGA_error_val: 0x00000000
  Cfg MSI mask:   0x00000008    Rx_buffer_size: 0x00000600

Frame statistics: (polling enabled)
-----------------------------------
  tx_frame_cnt: 177                     rx_frame_cnt: 28
  tx_byte_cnt: 45154                    rx_byte_cnt: 2113
  tx_pause_frame_cnt: 0                 rx_pause_frame_cnt: 0
  rx_unicast_filtered_cnt: 0            rx_multicast_filtered_cnt: 8
  rx_undersize_pkts: 0                  rx_oversize_pkts: 0
  tx_64_byte_pkts: 38                   rx_64_byte_pkts: 17
  tx_65_to_127_byte_pkts: 17            rx_65_to_127_byte_pkts: 8
  tx_128_to_255_byte_pkts: 6            rx_128_to_255_byte_pkts: 3
  tx_256_to_511_byte_pkts: 116          rx_256_to_511_byte_pkts: 0
  tx_512_to_1023_byte_pkts: 0           rx_512_to_1023_byte_pkts: 0
  tx_1024_to_1518_byte_pkts: 0          rx_1024_to_1518_byte_pkts: 0
  rx_congestion_drop_cnt: 0             rx_mtusize_drop_cnt: 0
  rx_bad_cnt: 0

Interrupt statistics
--------------------
  ge_tx_interrupt: 171                  ge_rx_interrupt: 20
```

```
  txbd_seq_err: 0                       txbd_done_err: 0
  rxbd_done_err: 0                      isl_inner_crc_err: 0
  pcie_busmstr_dsbld_err: 0             pcie_tgt_abort_err: 0
  pcie_mst_abort_err: 0                 spi_done_event: 0
  rx_empty_pak: 0                       rx_sw_usage_err: 0
  ing_buf_adrs_err: 0                   pcie_null_ptr_err: 0
  uart_tx_intr: 13                      uart_rx_intr: 27169
  uart_break_detected: 1                uart_framing_err: 0
  uart_bad_egr_adrs: 0                  uart_egr_overflow: 0
  i2c_errs: misc/nack/tmo: 0/0/0

TX ring
-------
  Tx Ring txr_head/txr_tail:  178/178
  Tx Shadow txs_head/txs_tail/txs_free: 178/178/256
  Tx Ring(txr): 0x3C631800 Tx Shadow (malloc): 0x01323380
  Tx Limited: 0 Tx Count: 0 hold_pak 0x00000000

RX rings
--------
  size: 256      max_spin_size 32       head: 20
  Rx Ring(rxr):   0x3C631000  rxr_malloc: 0x3C631000
  Rx Shadow(rxs): 0x11E3D6CC   rxs_malloc: 0x11E3D6CC

Software MAC Address Filter (hash:length/addr/mask/hits)
------------------------------------------------------------
   000:  0  ffff.ffff.ffff  0000.0000.0000         3
   007:  0  001e.4a97.644d  0000.0000.0000         0
   192:  0  0180.c200.0002  0000.0000.0000         0
   192:  1  0100.0ccc.cccc  0000.0000.0000         0
   197:  0  0180.c200.0007  0000.0000.0000         0

   Software filtered frames: 0
   Unicast overflow mode:   0
   Multicast overflow mode: 1
   Promiscuous mode:        0

  HW MAC Address Filter
  ---------------------
   Unicast Addr0: 001E.4A97.644D
   Unicast Addr1: 0000.0000.0100
   Unicast Addr2: 0000.0000.0100
   Unicast Addr3: 0000.0000.0100
   Unicast Addr4: 0000.0000.0100
   Unicast HW Filter Count   : 1

   Multicast Hash b63_32: 0x2000001
   Multicast Hash b32_00: 0x00
   HW unicast filter enabled: Yes
   HW multicast filter enabled: Yes

FPGA upgrade info
-----------------
  Golden area fpga version:  00000000
  Upgrade area fpga version: 09030416
  IOS bundled fpga version:  09030416
```

The table below describes the significant fields shown in the display.

Table 2: show controllers analysis-module Field Descriptions

Field	Description
Hardware	Description of the chip being used.
IDB, FASTSEND	Address in router memory of the Interface Descriptor Block (IDB) and the fastsend routine.
INSTANCE	Device-specific data stored in router memory that lists the memory locations and current indexes of receive (Rx) and transmit (Tx) rings in router I/O memory.
CONTROL AND STATUS REGISTERS (CSR)	Control and status registers that are physically located on the chip itself and that are accessed by the CPU over the Peripheral Component Interconnect (PCI) bus.
PHY REGISTERS	Contents of the PHY registers. PHY is a device that interfaces the physical Ethernet line and that is located between the chip and the physical line.
HARDWARE STATISTICS	Receive (Rx) and transmit (Tx) traffic statistics collected by the chip.
INTERRUPT STATISTICS	Transmit (Tx), Receive (Rx), control, software, and flow control interrupt statistics collected by the chip.

Related Commands

Command	Description
service-module sm status	Displays hardware and software status information about the SM-SRE.
show interfaces sm	Displays status, traffic data, and configuration information about the SM-SRE interface.

show controllers sonet

To display information about Synchronous Optical Network (SONET) controllers, use the **showcontrollerssonet** command in user EXEC or privileged EXEC mode with the appropriate parameters for the operating mode of the channelized line.

show controllers sonet[*slot/bay/port*
slot/bay/port.sts1-number/t1-number|*slot/bay/port.vtg1-number/sts1-number/t1-number*|*slot/bay/port.au-3-number/tug-2-number/t1-number*|*slot/bay/port.au-4-number/tug-3-number/tug-2-number/e1-line-number*|*slot/bay/port.au-4-number/vc3-number*|*slot/bay/port:interface-number*|*t3 slot/bay/port:t1-line-number*][**bert** | **brief** | **tabular**]

Cisco Series
show controllers sonet [*slot*/*bay*/*port*]

Syntax Description

slot / *bay* / *port*	(Optional) Slot, bay, and port number. The slash mark is required between the *slot* argument, the *bay* argument, and the *port* argument. **Note** This form of the syntax is used only for the synchronous transport module-1 (STM-1) trunk card on a Cisco AS5850 universal gateway.
slot / *bay* / *port* . *sts1* - *number* / *t1* - number	(Optional) Slot and port number of a T1 line under SONET framing in CT3 mode.
slot / *bay* / *port* . *vtg1* - *number* / *sts1* - *number* / *t1* - *number*	(Optional) Slot and port number of a T1 line under SONET framing in VT-15 mode.
slot / *bay* / *port* . *au-3-number* / *tug-2-number* / *t1-number*	(Optional) Slot and port number of a T1 line under synchronous digital hierarchy (SDH) framing with administrative unit type 3 (AU-3) administrative unit group (AUG) mapping.
slot / *bay* / *port* . *au* - *4* - *number* / *tug* - *3* - *number* / *tug* - *2* - *number* / *e1* - *line* - *number*	(Optional) Slot and port number of an E1 line under SDH framing with AU-4 AUG mapping.
slot / *bay* / *port* . *au* - *4* - *number* / *vc3* - *number*	(Optional) Slot and port number of a DS3/E3 interface under SDH framing with AU-4 mapping.
slot / *bay* / *port* : *interface* - *number*	(Optional) Slot and port number of a DS3/E3 interface under SONET framing or SDH framing with AU-3 mapping.
t3 slot / *bay* / *port* : *t1* - *line* - *number*	(Optional) Displays information for a T1 line under SF or ESF format framing.
bert	(Optional) Displays bit error rate test (BERT) information.
brief	(Optional) Displays summary information about SONET controllers.

tabular	(Optional) Displays SONET controller information in a tabular format.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.0(21)S	This command was introduced on Cisco 12000 series Internet routers.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T, and support was added for the STM-1 trunk card on the Cisco AS5850 platform.
12.3(11)T	This command was modified to support SONET APS on the Cisco AS5850 platform.
Cisco IOS XE Release 3.1	This command was modified to display the Detected Alarms and Asserted/Active Alarms fields.
Cisco IOS XE Everest 16.5.1	This command was implemented on the Cisco ASR 900 Series Rotuters and Cisco NCS 4200 Series.
XE Fuji 16.8.x	This command output was modified on the Cisco Series Routers to display far-end counters for performance monitoring.

Usage Guidelines

You can enter the **showcontrollerssonet** command at any time during a BERT.

Examples

The following is sample output from the **showcontrollerssonet**command on a T1 line under SONET framing in VT-15 mode. (The table below describes the lines in the BERT portion of the output.)

```
Router# show controllers sonet
 4/0.1/1/1 brief
OC3.STS1 4/0.1 is up. Hardware is GSR 2 port STM1/OC3 (channelized)
  Applique type is VT1.5 in STS-1

 STS-1 1, VTG 1, T1 1 (VT1.5 1/1/1) is up
  timeslots: 1-24
  FDL per AT&T 54016 spec.
  No alarms detected.
  Framing is ESF, Clock Source is Internal
  BERT test result (running)
     Test Pattern : 2^20-QRSS, Status : Sync, Sync Detected : 1
     Interval : 5 minute(s), Time Remain : 4 minute(s)
     Bit Errors (since BERT started): 0 bits,
     Bits Received (since BERT started): 112 Mbits
     Bit Errors (since last sync): 0 bits
     Bits Received (since last sync): 112 Mbits
```

Table 3: show controllers sonet Line Descriptions

Field	Description
BERT test result (running)	Indicates the current state of the test. In this case, “running” indicates that the test is still active. If the test is complete, “done” is displayed.

Field	Description
Test Pattern : 2^20-QRSS, Status : Sync, Sync Detected : 1	Indicates the test pattern that you selected for the test (2^20-QRSS), the current synchronization state (Sync), and the number of times that synchronization was detected during this test (1).
Interval : 5 minute(s), Time Remain : 4 minute(s)	Indicates the time allocated for the test to run and the time remaining for the test to run. For a BERT that you terminate before the time expires, this line indicates the time the test would have taken to run and the time remaining for the test to run had you not terminated it. “unable to complete” is displayed to indicate that you interrupted the test.
Bit Errors (since BERT started): 0 bits Bits Received (since BERT started): 112 Mbits Bit Errors (since last sync): 0 bits Bits Received (since last sync): 112 Mbits	Shows the bit errors that were detected versus the total number of test bits that were received since the test started and since the last synchronization was detected.

The following is sample output from the **showcontrollerssonet**command for an E1 line under SDH framing with AU-4 AUG mapping.

```
Router# show controllers sonet 3/0.1/1/3/5
SONET 3/0 is up. (Configured for Locally Looped)  Hardware is GSR 2 port
STM1/OC3 (channelized)
  Applique type is Channelized OCx interface
  Clock Source is Line, AUG mapping is AU4.
Medium info:
  Type: SDH, Line Coding: NRZ, Line Type: Short SM
Regenerator Section:
LOF = 0          LOS = 0                           BIP(B1) = 0
Multiplex Section:
  AIS = 0          RDI = 0          REI = 0          BIP(B2) = 0
Active Defects: None
Active Alarms: None
Alarm reporting enabled for: SF SLOS SLOF B1-TCA B2-TCA B3-TCA
BER thresholds:  SF = 10e-3  SD = 10e-6
TCA thresholds:  B1 = 10e-6  B2 = 10e-6  B3 = 10e-6
High Order Path:

PATH 1:
  AIS = 0          RDI = 0          REI = 15         BIP(B3) = 11
  LOP = 0          PSE = 4          NSE = 0          NEWPTR = 1
  LOM = 0          PLM = 0          UNEQ = 0
Active Defects: None

S1S0 = 02, C2 = 02

PATH TRACE BUFFER : STABLE
CRC-7: 0xF2 OK
  52 6F 75 74 65 72 33 2F  30 2F 31 00 00 00 00       Router3/0/1....

 STM1.AU4 3/0.1 is up.  Hardware is GSR 2 port STM1/OC3 (channelized)
  Applique type is C12 in TUG-3 in AU-4

 AU-4 1, TUG-3 1, TUG-2 1, E1 1 (C-12 1/1/1/1) is up
```

```
  timeslots: 1-31
  No alarms detected.
  Framing is crc4, Clock Source is Internal
  BERT test result (running)
     Test Pattern : 2^15, Status : Sync, Sync Detected : 1
     Interval : 5 minute(s), Time Remain : 5 minute(s)
     Bit Errors (since BERT started): 0 bits,
     Bits Received (since BERT started): 95 Mbits
     Bit Errors (since last sync): 0 bits
     Bits Received (since last sync): 95 Mbits
  Data in current interval (708 seconds elapsed):
     0 Line Code Violations, 1 Path Code Violations
     0 Slip Secs, 1 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     1 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
  Data in Interval 1:
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
  Data in Interval 2:
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
  Data in Interval 3:
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 1 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     1 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
  Total Data (last 3 15 minute intervals):
     0 Line Code Violations,0 Path Code Violations,
     0 Slip Secs, 1 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
     1 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
```

The following is sample output from the **showcontrollerssonet**command when AUG mapping is AU-3 and the **tabular** keyword is specified.

```
Router# show controllers sonet
 2/0.1/1/1 tabular
SONET 2/0/0 is up.
Channelized OC-3/STM-1 SMI PA
  H/W Version : 0.2.3, ROM Version : 1.2
  FREEDM version : 2, F/W Version : 0.14.0
SONET 2/0/0   E1   1/1/1 is down
  Transmitter is sending LOF Indication (RAI).
  Receiver has loss of frame.
  Framing is crc4, Clock Source is internal, National bits are 0x1F.
  INTERVAL      LCV   PCV   CSS  SEFS   LES    DM    ES   BES   SES   UAS    SS
  17:26-17:29     0     0     0     0     0     0     0     0     0   173     0
  17:11-17:26     0     0     0     0     0     0     0     0     0   471     0
  16:56-17:11     0     0     0     0     0     0     0     0     0     0     0
  16:41-16:56     0     0     0     0     0     0     0     0     0     0     0
  16:26-16:41     0     0     0     0     0     0     0     0     0   216     0
  16:11-16:26     0     0     0     0     0     0     0     0     0   225     0
  Total           0     0     0     0     0     0     0     0     0   912     0
```

The following is partial sample output from the **showcontrollerssonet** command using an STM-1 card in the Cisco AS5850.

```
Router# show controllers sonet 3/0
SONET 3/0 is down.
```

```
  Applique type is Channelized Sonet/SDH
  Clock Source is Internal, AUG mapping is AU4.
Medium info:
  Type: SDH, Line Coding: NRZ, Line Type: Short SM
Regenerator Section Status:
  LOS
Multiplex Section Status:
Higher Order Path Status:
  Path# 1 has no defects
Lower Order Path Status:
  VC-12 1/1/1/1 has no defects
  VC-12 1/1/1/2 has no defects
  VC-12 1/1/1/3 has no defects
  VC-12 1/1/2/1 has no defects
  VC-12 1/1/2/2 has no defects
  VC-12 1/1/2/3 has no defects
  VC-12 1/1/3/1 has no defects
  VC-12 1/1/3/2 has no defects
  VC-12 1/1/3/3 has no defects
  VC-12 1/1/4/1 has no defects
  VC-12 1/1/4/2 has no defects
  VC-12 1/1/4/3 has no defects
  VC-12 1/1/5/1 has no defects
  VC-12 1/1/5/2 has no defects
  VC-12 1/1/5/3 has no defects
  VC-12 1/1/6/1 has no defects
  VC-12 1/1/6/2 has no defects
  .
  .
  .
  VC-12 1/3/5/3 has no defects
  VC-12 1/3/6/1 has no defects
  VC-12 1/3/6/2 has no defects
  VC-12 1/3/6/3 has no defects
  VC-12 1/3/7/1 has no defects
  VC-12 1/3/7/2 has no defects
  VC-12 1/3/7/3 has no defects
  Data in current interval (20 seconds elapsed):
   Regenerator Section:
     0 CVs, 20 ESs, 20 SESs, 0 SEFSs
   Multiplex Section:
     0 CVs, 0 ESs, 0 SESs, 0 UASs
   Higher Order Path:
     Path# 1:  0 CVs, 0 ESs, 0 SESs, 20 UASs
   Lower Order Path:
     VC-12 1/1/1/1:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/1/1/2:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/1/1/3:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/1/2/1:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/1/2/2:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/1/2/3:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     .
     .
     .
     VC-12 1/3/5/3:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/3/6/1:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/3/6/2:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/3/6/3:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/3/7/1:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/3/7/2:  0 CVs, 0 ESs, 0 SESs, 20 UASs
     VC-12 1/3/7/3:  0 CVs, 0 ESs, 0 SESs, 20 UASs
```

The table below describes the significant fields shown in the display.

Table 4: show controllers sonet STM-1 Field Descriptions

Field	Description
SONET 3/0	The SONET controller in slot 3 shows the state in which it is operating. The controller's state can be up, down, or administratively down. Loopback conditions are shown by (Locally Looped) or (Remotely Looped).
Applique type	Controller type.
Clock Source	User-specified clock source (Line or Internal).
AUG mapping	Indicates type of administrative unit group (AUG) mapping.
Line Coding	Shows the current line encoding type, either return to zero (RZ) or non return to zero (NRZ).
Line Type	Line type for this interface. Optical line types can be either long range (LONG) or short range (SHORT), and either single mode (SM) or multimode (MM).
VC-12	Indicates the number of the virtual circuit (VC) and whether the VC has reported any defects.
CVs	Number of coding violation (CV) error events.
ESs	An errored second (ES) is a second in which one of the following is detected: • One or more path code violations. • One or more out of frame defects. • One or more controlled slip events. • A detected alarm indication signal (AIS) defect.
SESs	Severely errored seconds (SESs) are seconds with one or more out-of-frame defects or a detected incoming AIS. This gauge is not incremented when UASs are counted.
SEFSs	Severely errored framing seconds (SEFSs) are seconds with one or more out-of-frame defects or a detected incoming AIS.
UASs	Unavailable seconds (UASs) are calculated by counting the number of seconds for which the interface is unavailable.

The following is partial output from the **showcontrollerssonet**command using an STM-1 card in the Cisco AS5850 with SONET APS configured.

```
Router# show controllers sonet 1/0
SONET 1/0 is up.
  Applique type is Channelized Sonet/SDH
  Clock Source is Line, AUG mapping is AU4.
  MSP 1+1 bi-directional enabled
  Protection fiber (Port 0), No Alarm, traffic in-use
  Working fiber (Port 1), No Alarm, traffic not in-use
  Local request: No Request
  Remote request: No Request
Medium info:
  Type: SDH, Line Coding: NRZ, Line Type: Short SM
Regenerator Section Status:
```

```
  No alarms detected.
Multiplex Section Status:
  No alarms detected.
  No BER failure/degrade detected
  B2 BER_SF threshold power : 3
  B2 BER_SD threshold power : 6
Higher Order Path Status:
  Path# 1 has no defects
Lower Order Path Status:
  VC-12 1/1/1/1 has no defects
  VC-12 1/1/1/2 has no defects
  VC-12 1/1/1/3 has no defects
  .
  .
  .
```

The table below describes the significant fields shown in the display that are different from the fields described in the table above.

Table 5: show controllers sonet STM-1 APS Field Descriptions

Field	Description
MSP 1+1	Indicates whether the SDH multiplex section protection (MSP) is bidirectional or unidirectional.
Protection fiber	Indicates the port location of the protect fiber, whether an alarm has been detected, and whether traffic is flowing through the port.
Working fiber	Indicates the port location of the working fiber, whether an alarm has been detected, and whether traffic is flowing through the port.
Local request	Indicates whether a local request to switch fibers has been received. If a request has been received, the type of request (forced, lockout, or manual) is indicated.
Remote request	Indicates whether a remote request to switch fibers has been received. If a request has been received, the type of request (forced, lockout, or manual) is indicated.
No alarms detected	Alarms detected by the controller are displayed here. The possible alarms are as follows: • Transmitter is sending remote alarm. • Transmitter is sending alarm indication signal (AIS). • Receiver has loss of signal. • Receiver is getting AIS. • Receiver has loss of frame. • Receiver has remote alarm. • Receiver has no alarms.
No BERT failure/degrade detected	No bit error rate (BER) failures or degrades detected.

Field	Description
B2 BER_SF threshold power	BER signal failure (SF) threshold configured with the **b2sf-ber** controller command.
B2 BER_SD threshold power	BER signal degrade (SD) threshold configured with the **b2sd-ber** controller command.

The following is a sample output from the **showcontrollerssonet**command using the CHOCX card.

```
Router# show controllers sonet 0/0/0

SONET 0/0/0 is down.
  Hardware is SPA-1XCHOC12/DS0
 Applique type is Channelized Sonet/SDH
 Clock Source is Line
Medium info:
  Type: Sonet, Line Coding: NRZ,
 SECTION:
  LOS = 1          LOF = 0                           BIP(B1) = 0
 SONET/SDH Section Tables
  INTERVAL       CV    ES   SES  SEFS
  18:51-18:54     0   182   182   182   LINE:
  AIS = 0          RDI = 0          REI = 0          BIP(B2) = 0
Active Defects: None
Detected Alarms: PRDI B3-TCA
Asserted/Active Alarms: PRDI B3-TCA
 Alarm reporting enabled for: PLOP LOM B3-TCA
BER thresholds:  SF = 10e-3  SD = 10e-6
TCA thresholds:  B1 = 10e-6  B2 = 10e-6
```

The table below describes the significant fields shown in the display.

Table 6: show controllers sonet CHOCX Card Field Descriptions

Field	Description
Applique type	The controller type.
Clock Source	The user-specified clock source (line or internal).
Active Defects	List of active SONET defects.
Detected Alarms	List of alarms detected by the controllers.
Asserted/Active Alarms	List of resultant active alarms after SONET alarm hierarchy is enforced on detected alarms.
BER thresholds	BER threshold values of the specified alarms.
TCA thresholds	Threshold crossing alarm (TCA) values of the specified alarms.

The following is sample output from the **showcontrollerssonet**command using a shared port adapter (SPA), SPA-1XCHOC12/DS0 on a Cisco 7600 series router. SPAs such as the SPA-1XCHSTM1/OC3, SPA-1xCE-OC3/STM1, and SPA-1xCHOC12/OC3 are also used on a Cisco 7600 series router to get output on the SONET controller.

```
Router# show controllers sonet 3/0/0.2/1
SONET 3/0/0 is up.
   Hardware is SPA-1XCHOC12/DS0
  Applique type is Channelized Sonet/SDH
  Clock Source is Line, AUG mapping is AU4.
 Medium info:
   Type: SDH, Line Coding: NRZ,
  Regenerator Section:
   LOS = 0          LOF = 0                            BIP(B1) = 0

SONET/SDH Section Tables
   INTERVAL       CV    ES   SES  SEFS
   16:07-16:12     0     0     0     0

 Multiplex Section:
   AIS = 0          RDI = 0          REI = 358160     BIP(B2) = 0
 Active Defects: None
 Detected Alarms: None
 Asserted/Active Alarms: None
 Alarm reporting enabled for: SLOS SLOF SF B1-TCA B2-TCA
 BER thresholds:  SF = 10e-3  SD = 10e-6
 TCA thresholds:  B1 = 10e-6  B2 = 10e-6
 Rx: S1S0 = 00
     K1 = 00,   K2 = 00
     J0 = 19

 Tx: S1S0 = 02
     K1 = 00,   K2 = 00
     J0 = 01
 SONET/SDH Line Tables
   INTERVAL       CV    ES   SES   UAS
   16:08-16:14     0     0     0     0
PATH 4:
  AIS = 0          RDI = 0          REI = 0          BIP(B3) = 0
  LOP = 0          PSE = 0          NSE = 0          NEWPTR = 0
  LOM = 0          PLM = 0          UNEQ = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: PLOP LOM B3-TCA
TCA threshold:  B3 = 10e-6
Rx: C2 = 02
Tx: C2 = 02
```

The table below describes the significant fields shown in the display.

Table 7: show controllers sonet SPA Field Descriptions

Field	Description
Applique type	The controller type.
Clock Source	The user-specified clock source (line or internal).
Active Defects	List of active SONET defects.
Detected Alarms	List of alarms detected by the controllers.
Asserted/Active Alarms	List of resultant active alarms after SONET alarm hierarchy is enforced on detected alarms.

Field	Description
BER thresholds	BER threshold values of the specified alarms.
TCA thresholds	TCA values of the specified alarms.

Related Commands

Command	Description
xconnect	Configures a pseudowire for transporting data over the network.

Series Router

The following is sample output from the **show controllers sonet** command on the Cisco series routers:

```
Router# show controllers sonet 0/3/3
SONET 0/3/3 is up. ======> this is the controller/port
status.
Hardware is asr900
Port configured rate: OC3 =======> this is the rate the port is configured
on it.
Applique type is Channelized Sonet / SDH
Clock Source is Line ===> the clocking config
Medium info:
Type: Sonet, Line Coding: NRZ,
SECTION:
LOS = 0 LOF = 0 =======> the section level alarm
counter (from last clear counters)
SONET/SDH Section Tables
INTERVAL CV ES SES SEFS
05:50-05:58 0 0 0 0 ===> PMON for the
port
LINE:
AIS = 0 RDI = 0 REI = 0 BIP(B2) = 0 =======> the line level
alarm counter (from last clear counters)
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None =========> present active
alarms on the port.
Alarm reporting enabled for: SLOS SLOF SF B2-TCA
BER thresholds: SF = 10e-3 SD = 10e-6 ====> ber thresholds
TCA thresholds: B2 = 10e-6
Rx: S1S0 = 00
K1 = 00, K2 = 00 ===> k1k2 values
J0 = 00
RX S1 = 00
Tx: S1S0 = 00
K1 = 00, K2 = 00
J0 = 00
High Order Path:
PATH 1:
Clock Source is internal ====> path level clock
AIS = 0 RDI = 0 REI = 0 BIP(B3) = 0 ======> path layer alarms counter
LOP = 0 PSE = 0 NSE = 0 NEWPTR = 0
LOM = 0 PLM = 0 UNEQ = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None ======> present alarms on the path.
```

```
Alarm reporting enabled for: PLOP LOM B3-TCA
TCA threshold: B3 = 10e-6
Rx: C2 = 00 =====> rx and tx C2 byte..
Tx: C2 = 02
PATH TRACE BUFFER : UNSTABLE
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ====> path trace of the path
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
SONET Path Tables
INTERVAL CV ES SES UAS
05:58-05:58 0 0 0 0
PATH 2:
Clock Source is internal
AIS = 0 RDI = 0 REI = 0 BIP(B3) = 0
LOP = 0 PSE = 0 NSE = 0 NEWPTR = 0
LOM = 0 PLM = 0 UNEQ = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: PLOP LOM B3-TCA
TCA threshold: B3 = 10e-6
Rx: C2 = 00
Tx: C2 = 00
PATH TRACE BUFFER : UNSTABLE
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
SONET/SDH Path Tables
INTERVAL CV ES SES UAS
05:58-05:58 0 0 0 0
OC3.STS1 0/3/3.1 is up. ======> present status of the path
Hardware is
Applique type is VT1.5 =====> mode of the path
STS-1 1, VTG 1, T1 1 (VT1.5 1/1/1) is down ====> status of the SPE (t1)
VT Receiver has no alarm.
Receiver is getting AIS. ===> alarm of the SPE (t1)
Framing is unframed, Clock Source is Internal =====> framing of the T1, clock of the t1
Data in current interval (0 seconds elapsed):
0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
0 Unavail Secs, 0 Stuffed Secs
STS-1 1, VTG 1, T1 2 (VT1.5 1/1/2) is down
VT Receiver has no alarm.
Receiver is getting AIS.
```

Series Router

The following is sample output from the **show controllers sonet tabular** command on the Cisco series routers:

```
Router# show controllers sonet 0/2/0
SONET 0/2/0 is up.
Hardware is -1T8S-10CS
Port configured rate: OC3
Applique type is Channelized Sonet
Clock Source is Internal
Medium info:
Type: Sonet, Line Coding: NRZ,
```

```
Alarm Throttling: OFF
SECTION:
LOS = 0 LOF = 0 BIP(B1) = 0
SONET Section Tables
INTERVAL CV ES SES SEFS
12:00-12:07 0 0 0 0
11:45-12:00 15 1 0 0
Total of Data in Current and Previous Intervals
11:45-12:07 15 1 0 0
LINE:
AIS = 0 RDI = 0 REI = 0 BIP(B2) = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: SLOS SLOF LAIS SF SD LRDI B1-TCA B2-TCA
BER thresholds: SF = 10e-3 SD = 10e-6
TCA thresholds: B1 = 10e-6 B2 = 10e-6
Rx: S1S0 = 00
K1 = 00, K2 = 00
J0 = 00
RX S1 = 00
Tx: S1S0 = 00
K1 = 00, K2 = 00
J0 = 04
Tx J0 Length : 64
Tx J0 Trace :
52 6F 75 74 65 72 20 20 20 20 20 20 20 20 20 20 Router
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00 ..
Expected J0 Length : 64
Expected J0 Trace :
52 6F 75 74 65 72 20 20 20 20 20 20 20 20 20 20 Router
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 00 00 ..
Rx J0 Length : 64
Rx J0 Trace :
01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 ................
01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 ................
01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 ................
01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 00 ................
SONET Line Tables
INTERVAL CV ES SES UAS CVFE ESFE SESFE UASFE
12:00-12:07 0 0 0 0 0 0 0 0
11:45-12:00 48 1 0 0 53 1 0 0
Total of Data in Current and Previous Intervals
11:45-12:07 48 1 0 0 53 1 0 0
High Order Path:
PATH 2:
Clock Source is internal
AIS = 0 RDI = 0 REI = 0 BIP(B3) = 0
LOP = 1 PSE = 0 NSE = 0 NEWPTR = 0
LOM = 0 PLM = 0 UNEQ = 1
Active Defects: None
Detected Alarms: PLOP
Asserted/Active Alarms: PLOP
Alarm reporting enabled for: PAIS PRDI PUNEQ PLOP PPLM LOM B3-TCA
TCA threshold: B3 = 10e-6
Rx: C2 = 00
Tx: C2 = 04
Tx J1 Length : 64
Tx J1 Trace
52 6F 75 74 65 72 20 30 2F 32 2F 30 2E 32 00 00 Router 0/2/0.2..
```

```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
Expected J1 Length : 64
Expected J1 Trace
52 6F 75 74 65 72 20 30 2F 32 2F 30 2E 32 00 00 Router 0/2/0.2..
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
PATH TRACE BUFFER : UNSTABLE
Rx J1 Length : 0
Rx J1 Trace
SONET Path Tables
INTERVAL CV ES SES UAS CVFE ESFE SESFE UASFE
12:00-12:07 0 0 0 409 0 0 0 0
11:45-12:00 0 0 0 900 0 0 0 0
Total of Data in Current and Previous Intervals
11:45-12:07 0 0 0 1309 0 0 0 0
```

Related Commands

show controllers t1

To display information about the T1 links and to display the hardware and software driver information for the T1 controller, use the **showcontrollerst1** command in privileged EXEC mode.

Standard Syntax
show controllers t1 *number* [**bert**]

Cisco 7500 Series
show controllers t1 [*slot*/*port*] [**bert**]

Cisco AS5800 Access Servers
show controllers t1 *dial-shelf*/*slot*/*t3-port*:*t1-num* [**bert**]

Cisco Series
show controllers t1 [*slot*/*bay*/*port*]

Syntax Description

number	Network processor number (NPM)) number, in the range 0 through 2.
slot / *port*	(Optional) Backplane slot number and port number on the interface. Refer to your hardware installation manual for the specific slot and port numbers.
slot / *bay* / *port*	Slot number, interface module number in which the slot is inserted, and port number (Cisco series routers).
dial-shelf	Dial shelf chassis in the Cisco AS5800 access server that contains the CT3 interface card.
/ *slot*	Location of the CT3 interface card in the dial shelf chassis.
/ *t3-port*	T3 port number. The only valid value is 0.
: *t1-num*	T1 time slot in the T3 line. The value can be from 1 to 28.
bert	(Optional) Type **bert** to get a specific display for the bit-error rate testing (BERT) results. Otherwise, the display will include all other non-BERT information.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.0	This command was introduced.
12.0(2)XD	The keyword **bert** was added.
12.0(3)T	This command was implemented on the Cisco AS5800 access server.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Release	Modification
XE Everest 16.5.1	This command was implemented on the Cisco ASR 900 Series and Cisco NCS 4200 Series Routers.
XE Fuji 16.8.x	This command output was modified on the Cisco Series Routers to display far-end counters for performance monitoring.

Usage Guidelines

This command displays controller status that is specific to the controller hardware. The information displayed is generally useful for diagnostic tasks performed by technical support personnel. Use the **showcontrollerst1bert** command to display the results of the BERT feature.

The NPM or MultiChannel Interface Processor (MIP) can query the port adapters to determine their current status. Issue a **showcontrollerst1** command to display statistics about the T1 link.

If you specify a slot and port number, each 15-minute period will be displayed.

Cisco 7500 Series Routers

The following is sample output from the **showcontrollerst1** command on the Cisco 7500 series routers:

```
Router# show controllers t1
T1 4/1 is up.
  No alarms detected.
  Framing is ESF, Line Code is AMI, Clock Source is line
  Data in current interval (10 seconds elapsed):
     0 Line Code Violations, 0 Path Code Violations 0 Slip Secs, 0 Fr Loss Secs,
     0 Line Err Secs, 0 Degraded Mins 0 Errored Secs, 0 Bursty Err Secs,
     0 Severely Err Secs, 0 Unavail Secs
  Total Data (last 79 15 minute intervals):
     0 Line Code Violations, 0 Path Code Violations, 0 Slip Secs, 0 Fr Loss Secs,
     0 Line Err Secs, 0 Degraded Mins, 0 Errored Secs, 0 Bursty Err Secs,
     0 Severely Err Secs, 0 Unavail Secs
```

The table below describes the fields shown in the display.

*Table 8: **show controllers t1** Field Descriptions--Cisco 7500 Series*

Field	Description
T1 4/1 is up	The T1 controller 1 in slot 4 is operating. The controller's state can be up, down, or administratively down. Loopback conditions are shown by (Locally Looped) or (Remotely Looped).

Field	Description
No alarms detected	Any alarms detected by the controller are displayed here. Possible alarms are as follows: • Transmitter is sending remote alarm. • Transmitter is sending AIS. • Receiver has loss of signal. • Receiver is getting AIS. • Receiver has loss of frame. • Receiver has remote alarm. • Receiver has no alarms.
Data in current interval (10 seconds elapsed)	Shows the current accumulation period, which rolls into the 24-hour accumulation every 15 minutes. Accumulation period is from 1 to 900 seconds. The oldest 15-minute period falls off the back of the 24-hour accumulation buffer.
Line Code Violations	Indicates the occurrence of either a Bipolar Violation (BPV) or Excessive Zeros (EXZ) error event.
Path Code Violations	Indicates a frame synchronization bit error in the D4 and E1-no-CRC formats, or a CRC error in the ESF and E1-CRC formats.
Slip Secs	Indicates the replication or deletion of the payload bits of a DS1 frame. A slip may be performed when there is a difference between the timing of a synchronous receiving terminal and the received signal.
Fr Loss Secs	Indicates the number of seconds an out-of-frame error is detected.
Line Err Secs	Line Errored Seconds (LES) is a second in which one or more Line Code Violation errors are detected.
Degraded Mins	Degraded Minute is one in which the estimated error rate exceeds 1E-6 but does not exceed 1E-3.
Errored Secs	In ESF and E1-CRC links, an Errored Second is a second in which one of the following are detected: one or more Path Code Violations; one or more out-of-frame defects; one or more Controlled Slip events; a detected AIS defect. For D4 and E1-no-CRC links, the presence of Bipolar Violations also triggers an Errored Second.
Bursty Err Secs	Second with fewer than 320 and more than 1 Path Coding Violation error, no Severely Errored Frame defects and no detected incoming AIS defects. Controlled slips are not included in this parameter.

Field	Description
Severely Err Secs	For ESF signals, a second with one of the following errors: 320 or more Path Code Violation errors; one or more out-of-frame defects; a detected AIS defect. For E1-CRC signals, a second with one of the following errors: 832 or more Path Code Violation errors; one or more out-of-frame defects. For E1-no-CRC signals, a second with 2048 Line Code Violations or more. For D4 signals, a count of 1-second intervals with Framing Errors, or an Out-of-Frame defect, or 1544 Line Code Violations.
Unavail Secs	Count of the total number of seconds on the interface.

Cisco AS5800 Access Server

The following example shows the status of the T1 controllers connected to the Cisco AS5800 access servers:

```
Router# show controllers t1 1/0/0:1
T1 1/0/0:1 is up.
 No alarms detected.
 Framing is ESF, Line Code is AMI, Clock Source is Line.
 Data in current interval (770 seconds elapsed):
     5 Line Code Violations, 8 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 7 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 7 Unavail Secs
 Total Data (last 81 15 minute intervals):
     7 Line Code Violations, 4 Path Code Violations,
     6 Slip Secs, 20 Fr Loss Secs, 2 Line Err Secs, 0 Degraded Mins,
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 2 Unavail Secs
T1 1/0/1:5 is down.
 Transmitter is sending remote alarm.
 Receiver has loss of frame.
 Framing is SF, Line Code is AMI, Clock Source is Line.
 Data in current interval (770 seconds elapsed):
     50 Line Code Violations, 5 Path Code Violations
     0 Slip Secs, 7 Fr Loss Secs, 7 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 7 Unavail Secs
 Total Data (last 81 15 minute intervals):
     27 Line Code Violations, 22 Path Code Violations,
     0 Slip Secs, 13 Fr Loss Secs, 13 Line Err Secs, 0 Degraded Mins,
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 13 Unavail Secs
```

The table below describes the fields shown in the display.

Table 9: show controllers t1 Field Descriptions--Cisco AS5800 Access Server

Field	Description
T1 ... is up	Status of T1 line.
No alarms detected	Access server received no alarms.
Framing is ...	Standard T1 framing type. In this example, the framing is Extended Super Frame (ESF).

Field	Description
Line Code is ...	Standard T1 line-coding format. In this example, the line-coding format is Alternate Mark Inversion (AMI).
Clock Source is ...	Source of the synchronization signal (clock). In this example, the line is providing the clock signal.
Data in current interval ...	Summary statistics for T1 signal quality for the current time interval of 900 seconds. In this example, the statistics are for current partial interval (770 seconds of 900 seconds).
Line Code Violations	Number of T1 line code violations for the current interval.
Path Code Violations	Number of T1 path code violations for the current interval.
Slip Secs	Number of seconds in this interval during which a frame misalignment occurred.
Fr Loss Secs	Number of seconds in this interval during which frame loss occurred.
Line Err Secs	Number of seconds in this interval during which line errors occurred.
Degraded Mins	Number of minutes in this interval during which the signal quality was degraded.
Errored Secs	Number of seconds in this interval during which an error was reported.
Bursty Err Secs	Number of bursty error seconds in this interval.
Severely Err Secs	Number of severely errored seconds in this interval.
Unavail Secs	Number of unavailable seconds in this interval.
Total Data (last ... 15 minute intervals)	Summary statistics for T1 signal quality for 15-minute intervals. Every 24 hours (96 intervals) the counters in this data block clear.

Using the bert Keyword

The following is sample output from the **showcontrollerst1bert** command displaying the BERT status for all ports:

```
Router#
show controllers t1 bert
 Controller T1 0 Profile default : The Test was aborted by User
 Controller T1 0 Profile 2 : Test Never Ran
 Controller T1 1 Profile 3 : Test Never Ran
 Controller T1 1 Profile 3 : Test Failed with a BER of 10^-2
 Controller T1 2 Profile 3 : Current running, BER 0
 Controller T1 2 Profile 2 : Passed with a BER of 0
 Controller T1 3 Profile default : Test Never Ran
 Controller T1 3 Profile 2 : Test Never Ran
 Controller T1 4 Profile default : Test Never Ran
 Controller T1 4 Profile 2 : Test Never Ran
 Controller T1 5 Profile default : Test Never Ran
```

```
 Controller T1 5 Profile 2 : Test Never Ran
 Controller T1 6 Profile default : Test Never Ran
 Controller T1 6 Profile 2 : Test Never Ran
 Controller T1 7 Profile default : Test Never Ran

Controller T1 7 Profile 2 : Test Never Ran
```

The following is sample output from the **showcontrollerst1bert** command with only one T1 port, port 0.

```
Router#
show controllers t1 0 bert
Controller T1 0 Profile default : The Test was aborted by User
Controller T1 0 Profile 2 : Test Never Ran
```

Series Router

The following is sample output from the **show controllers t1** command on the Cisco series routers:

```
Router# show controllers t1 0/2/1
T1 0/2/1 is down.
Applique type is -48T1E1-CE
Cablelength is short 110
No alarms detected.
alarm-trigger is not set
Soaking time: 3, Clearance time: 10
AIS State:Clear LOS State:Clear LOF State:Clear
Framing is ESF, FDL is ansi, Line Code is B8ZS, Clock Source is Line.
BER thresholds: SF = 10e-3 SD = 10e-6
Data in current interval (230 seconds elapsed):
Near End
0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavailable Secs
0 Path Failures, 0 SEF/AIS Secs
Far End
0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavailable Secs
0 Path Failures
Data in Interval 1:
Near End
0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 0 Fr Loss Secs, 14 Line Err Secs, 0 Degraded Mins
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 15 Unavailable Secs
1 Path Failures, 0 SEF/AIS Secs
Far End Data
0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 4 Fr Loss Secs, 2 Line Err Secs, 0 Degraded Mins
4 Errored Secs, 0 Bursty Err Secs, 4 Severely Err Secs, 0 Unavailable Secs
0 Path Failures
Total Data (last 1 15 minute intervals):
Near End
0 Line Code Violations, 0 Path Code Violations,
0 Slip Secs, 0 Fr Loss Secs, 14 Line Err Secs, 0 Degraded Mins,
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 15 Unavailable Secs
1 Path Failures, 0 SEF/AIS Secs
Far End
0 Line Code Violations, 0 Path Code Violations,
0 Slip Secs, 4 Fr Loss Secs, 2 Line Err Secs, 0 Degraded Mins,
```

```
4 Errored Secs, 0 Bursty Err Secs, 4 Severely Err Secs, 0 Unavailable Secs
0 Path Failures
```

show controllers t1 bert

To get the results of the bit-error rate testing (BERT) run for all ports, use the **showcontrollerst1bert**command in privileged EXEC mode.

show controllers *type* [*controller-number*] [**bert**]

Syntax Description

type	Specify either T1 or E1 facility.
controller-number	(Optional) Select a specific controller/port numbers. The range is 0 to 7. If not selected, the display will show all ports.
bert	(Optional) Type **bert** to get a specific display for the BERT results. Otherwise, the display will include all other non-BERT information.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(2)XD	This command was introduced.
12.0(3)T	This command was modified.
12.2(15)T	This command is no longer supported in Cisco IOS Mainline or Technology-based releases. It may conintue to appear in Cisco IOS 12.2S-family releases.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the **showcontrollers** command to display the results of the BERT feature.

Examples

The following example shows how the **showcontrollers** command is used to display the BERT status for all ports:

```
Router#
show controllers t1 bert
 Controller T1 0 Profile default : The Test was aborted by User
 Controller T1 0 Profile 2 : Test Never Ran
 Controller T1 1 Profile 3 : Test Never Ran
 Controller T1 1 Profile 3 : Test Failed with a BER of 10^-2
 Controller T1 2 Profile 3 : Current running, BER 0
 Controller T1 2 Profile 2 : Passed with a BER of 0
 Controller T1 3 Profile default : Test Never Ran
 Controller T1 3 Profile 2 : Test Never Ran
 Controller T1 4 Profile default : Test Never Ran
 Controller T1 4 Profile 2 : Test Never Ran
 Controller T1 5 Profile default : Test Never Ran
```

```
 Controller T1 5 Profile 2 : Test Never Ran
 Controller T1 6 Profile default : Test Never Ran
 Controller T1 6 Profile 2 : Test Never Ran
 Controller T1 7 Profile default : Test Never Ran

Controller T1 7 Profile 2 : Test Never Ran
```

The following example shows how the output display was limited to that of only one T1 port, port 0.

```
Router#
show controllers t1 0 bert
Controller T1 0 Profile default : The Test was aborted by User
Controller T1 0 Profile 2 : Test Never Ran
```

show controllers T1-E1 errors

To show the last nineteen alarms on a controller, use the **showcontrollers**command in privileged EXEC mode.

show controllers {**t1** | **e1**} *slot subslot port* **errors**

Syntax Description

slot	Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
subslot	Secondary slot number on a SPA interface processor (SIP) where a SPA is installed. Refer to the platform-specific SPA hardware installation guide and the corresponding "Specifying the Interface Address on a SPA" topic in the platform-specific SPA software configuration guide for subslot information.
port	Interface number on a SPA.
t1	Clear-channel T1 with integrated data service units (DSUs).
e1	Clear-channel E1 with integrated data service units (DSUs).

Command Modes

Privileged EXEC mode

Command History

Release	Modification
12.2(18)SXE	This command was introduced in Cisco IOS Release 12.2(18)SXE to support SPAs on the Cisco 7600 series router and Catalyst 6500 series switch.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use the **showcontrollers**command to show the last nineteen alarms on a controller on a 8-Port T1/E1 SPA.

Examples

The following example displays the alarms on an E1 interface.

```
Router# #show controllers e1 10/2/4 errors
  E1 10/2/4:Alarm Log Information
  present alarm:NONE
  Alarm:OOF 03:54:17 - 03:54:22
  Alarm:OOF 03:53:34 - 03:54:07
```

Related Commands

Command	Description
controller	Configures a T1, E1, or T3 controller and enters controller configuration mode.
show controller	Displays controller configuration.

show controllers t3

To display information about T3 links and to display hardware and software driver information for the T3 controller, use the **showcontrollerst3**command in privileged EXEC mode.

Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3660 Series, Cisco 3725, and Cisco 3745 Routers
show controllers t3 *slot/port* [**brief** | **tabular**]

Cisco 7200 Series Routers
show controllers t3 [*bay/port* [*/t1-channel*]] [**brief** | **errors** | **tabular** | **remote performance** [**brief** | **tabular**]]

Cisco 7500 Series Routers
show controllers t3 [*slot/bay/port* [*/t1-channel*]] [**brief** | **errors** | **tabular** | **remote performance** [**brief** | **tabular**]]

Cisco AS5800 Access Servers and Cisco 10000 Series Routers
show controllers t3 *dial-shelf/slot/t3-port*

Cisco Series
show controllers t3 [*slot/bay/port*]

Cisco Series
show controllers t3 [*slot/bay/port path*]

Note This is applicable to 48-Port T3/E3 CEM Interface Module and 1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module.

Syntax Description

slot	Slot number. Refer to the appropriate hardware manual for slot information.
/ *port*	Port number. Refer to the appropriate hardware manual for port information.
slot / *bay* / *port*	Slot number, interface module number in which the slot is inserted, and port number (Cisco series routers).
/ *bay*	(Optional) The port adaptor bay number. Refer to the appropriate hardware manual for bay information
/ *t1-channel*	(Optional) Number from 1 to 28 that represents the T1 channel for the Channelized T3 Interface Processor (CT3IP) on Cisco 7200 series and Cisco 5200 series routers.
dial-shelf	Dial shelf chassis in the Cisco AS5800 access server that contains the CT3 interface card.
/ *slot*	Location of the CT3 interface card in the dial shelf chassis.
/ *t3-port*	T3 port number.

brief	(Optional) Displays a subset of information.
errors	(Optional) Displays a history of alarm events that causes a T3 controller or a T1 controller of a T3 to transition from an Up state to a Down state. The history size is 18 events.
tabular	(Optional) Displays information in a tabular format.
remote performance	(Optional) Displays the far-end ANSI performance monitor information when enabled on the T1 channel with the **t1fdlansi** controller configuration command.
path	Defines the path (sts-1/vc3) information to which the DS3 (T3 or E3) is mapped.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.3	This command was introduced.
12.0(3)T	This command was implemented on the Cisco AS5800 access server.
12.2(11)YT	This command was integrated into Cisco IOS Release 12.2(11)YT and implemented on the following platforms: Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3660 series, Cisco 3725, and Cisco 3745 routers.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(19c)	This command was modified to display error throttling and alarm conditions that cause the T3 controller to enter a failure state.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(31)SB	This command was integrated in Cisco IOS Release 12.2(31)SB.
12.2(33)SB	This command's behavior was modified on the Cisco 10000 series router for the PRE3 and PRE4.
XE Everest 16.5.1	This command was implemented on the Cisco ASR 900 Series Routers and Cisco NCS 4200 Series.
XE Fuji 16.8.x	This command output was modified on the Cisco Series Routers to display far-end counters for performance monitoring.
XE Fuji 16.8.x	The path keyword is introduced in Cisco IOS XE Fuji 16.8.x release for Cisco ASR 900 Series Routers and Cisco NCS 4200 Series Routers for 48-Port T3/E3 CEM Interface Module and 1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module.

Usage Guidelines

Cisco 7500 Series Routers

This command displays controller status that is specific to the controller hardware. The information displayed is generally useful for diagnostic tasks performed by technical support personnel only.

When you use the errors keyword, this command displays history that identifies which alarm events caused a T3 or T1 controller of a T3 to go down for the Cisco 7500 and Cisco 7200 series routers.



Note T1 channels on the CT3IP are numbered 1 to 28 rather than the more traditional zero-based numbering scheme (0 to 27) used with other Cisco products. This is to ensure consistency with telco numbering schemes for T1 channels within channelized T3 equipment.

The **showcontrollerst3**command also displays Maintenance Data Link (MDL) information (received strings) if MDL is configured and framing is set to C-bit.

Cisco 10000 Series Router Usage Guidelines

In releases prior to Cisco IOS Release 12.2(33)SB, when you configure the t1 loopback remote command on the local router, the command also displays in the running configuration file of the far-end router. This is due to the Route Processor (RP) updating an incorrect parameter when it receives the loopback event message from the line card for loopback requests from the far end.

In Cisco IOS Release 12.2(33)SB, the RP updates the correct parameter and the show controllers command correctly displays the loopback CLI commands applied on the local end and displays the loopback events and status received from the line card in response to loopback requests from the far end.

This change in behavior affects the following line cards and is documented in the CSCsm84447 caveat:

- 4-port channelized STM1
- 1-port channelized OC-12
- 6-port channelized T3
- 4-port half-height channelized T3

In Cisco IOS Release 12.2(33)SB, the output from the show controller command includes line code information for the 6-port channelized T3 line card and the 8-port E3/DS3 line card. However, because SONET line cards do not have a direct physical link at the T3 or E3 level, the output from the show controller t3 command does not include line code information.

In Cisco IOS Release 12.2(31)SB, the output from the show controller command displays line code information. The output of the show controller t3 command for SONET-based T3 also includes line code information.

Examples

Cisco 7200 Series Routers

The following is partial output from the **showcontrollerst3** errors command for Cisco IOS Release 12.2(19c) for a specific T1 controller of a T3 on a Cisco 7200 series router with a bay/port of 4/1, displaying the T1 1 alarm event of OOF:

```
Router# show controllers t3 4/1/1 errors
  T3 4/1: Error Log Information
  present alarm: NONE
  Error: AIS
  17:28:08-17:29:18
```

```
  T1 1 Error Log Information
  present alarm: OOF
  Since 17:30:55
  Error: OOF
  17:30:09-17:30:46
```

The following is partial output from the **showcontrollerst3** errors command from Cisco IOS Release 12.2(19c) for a T3 controller on a Cisco 7200 series router with a bay/port of 4/1, displaying a history of all alarm events on all 28 T1 channels:

```
Router# show controllers t3 4/1 errors
  T3 4/1: Error Log Information
  present alarm: NONE
  Error: AIS
  17:28:08-17:29:18
  T1 1 Error Log Information
  present alarm: OOF
  Since 17:30:55
  Error: OOF
  17:30:09-17:30:46
  T1 2 Error Log Information
  present alarm: NONE
  T1 3 Error Log Information
  present alarm: NONE
  T1 4 Error Log Information
  present alarm: NONE
  T1 5 Error Log Information
  present alarm: NONE
  T1 6 Error Log Information
  present alarm: NONE
  T1 7 Error Log Information
  present alarm: NONE
  T1 8 Error Log Information
  present alarm: NONE
  T1 9 Error Log Information
  present alarm: NONE
  T1 10 Error Log Information
  present alarm: NONE
  T1 11 Error Log Information
  present alarm: NONE
 .
 .
 .
```

.Cisco 7500 Series Routers

The following is partial output from the **showcontrollerst3** errors command from Cisco IOS Release 12.2(19c) for a T3 controller with a slot/bay/port of 1/4/1, displaying a history of all alarm events on all 28 T1 channels:

```
Router# show controllers t3 1/4/1 errors
  T3 1/4/1: Error Log Information
  present alarm: NONE
  Error: AIS
  17:28:08-17:29:18
  T1 1 Error Log Information
  present alarm: OOF
  Since 17:30:55
  Error: OOF
  17:30:09-17:30:46
```

```
  T1 2 Error Log Information
  present alarm: NONE
  T1 3 Error Log Information
  present alarm: NONE
  T1 4 Error Log Information
  present alarm: NONE
  T1 5 Error Log Information
  present alarm: NONE
  T1 6 Error Log Information
  present alarm: NONE
  T1 7 Error Log Information
  present alarm: NONE
.
.
.
```

The following is partial output from the **showcontrollerst3** errors command from Cisco IOS Release 12.2(19c) for a specific T1 controller of a T3 on a Cisco 7200 series router with a bay/port of 4/1, displaying the T1 1 alarm event of OOF:

```
Router# show controllers t3 4/1/1 errors
  T3 4/1: Error Log Information
  present alarm: NONE
  Error: AIS
  17:28:08-17:29:18
  T1 1 Error Log Information
  present alarm: OOF
  Since 17:30:55
  Error: OOF
  17:30:09-17:30:46
.
.
.
```

The table below describes the error field shown in the display.

*Table 10: **show controllers t3** Error Field Description*

Field	Description
AIS	alarm indication signal. In a T1 transmission, an all-ones signal transmitted in lieu of the normal signal to maintain transmission continuity and to indicate to the receiving terminal that there is a transmission fault that is located either at, or upstream from, the transmitting terminal.
RAI	remote alarm indication. Indicates a yellow alarm from the remote end of the T1 transmission.
OOF	out of frame. An OOF defect is detected when any three or more errors in sixteen or fewer consecutive F-bits occur.
LOS	loss of signal. A loss of signal occurs when n consecutive zeros is detected on an incoming signal.
NONE	No error is detected.

The following is partial output from the **showcontrollerst3** command from Cisco IOS Release 12.2(19c):

```
Router# show controllers t3 2/1/0
T3 2/1/0 is down.  Hardware is 2CT3 single wide port adapter
  CT3 H/W Version:0.2.2, CT3 ROM Version:1.0, CT3 F/W Version:2.5.1
```

```
  FREEDM version:1, reset 0 resurrect 0
  Applique type is Channelized T3
  Transmitter is sending remote alarm.
  Receiver has loss of signal.
  FEAC code received:No code is being received
  Framing is M23, Line Code is B3ZS, Clock Source is Internal
  Rx-error throttling on T1's ENABLED
  Rx throttle total 0, equipment customer loopback
  Data in current interval (545 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     545 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
  Data in Interval 1:
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     900 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
  Data in Interval 2:
<snip>
```

The following is partial output from the **showcontrollerst3** command from Cisco IOS Release 12.2(19c) for the T1 channel of the T3 controller:

```
Router# show controllers t3 2/1/0
T3 2/1/0 is down.  Hardware is 2CT3 single wide port adapter
  CT3 H/W Version:0.2.2, CT3 ROM Version:1.0, CT3 F/W Version:2.5.1
  FREEDM version:1, reset 0 resurrect 0

  T1 1 is down
  timeslots:1-24
  FDL per AT&T 54016 spec.
  Receiver has loss of signal.
  Framing is ESF, Clock Source is Internal
  Data in current interval (0 seconds elapsed):
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs, 0 Stuffed Secs
```

The following is partial output from the **showcontrollerst3** command:

```
Router# show controllers t3 3/0/0
T3 3/0/0 is up.
  CT3 H/W Version: 4, CT3 ROM Version: 0.116, CT3 F/W Version: 0.10.0
  Mx H/W version: 2, Mx ucode ver: 1.24
  Applique type is Channelized T3
  No alarms detected.
  FEAC code received: No code is being received
  Framing is M23, Line Code is B3ZS, Clock Source is Internal.
  Ext1: LOS, Ext2: LOS, Ext3: LOS, Test: OK
  Data in current interval (39 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation
     0 P-bit Err Secs, 0 P-bit Severely Err Secs
     0 Severely Err Framing Secs, 0 Unavailable Secs
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
  Total Data (last 1 15 minute intervals):
     0 Line Code Violations, 0 P-bit Coding Violation,
     0 C-bit Coding Violation,
```

```
     0 P-bit Err Secs, 0 P-bit Severely Err Secs,
     0 Severely Err Framing Secs, 0 Unavailable Secs,
     0 Line Errored Secs, 0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
.
.
.
T1 1 is down, speed: 1536 kbs, non-inverted data
  timeslots: 1-24
  FDL per ANSI T1.403 and AT&T 54016 spec.
  Configured for FDL Remotely Line Looped
  No alarms detected.
  Framing is ESF, LineCode is B8ZS, Clock Source is Internal.
  BERT test result (running)
      Test Pattern: All 0's, Status: Sync, Sync Detected: 1
      Interval: 4 minute(s), Tim Remain: 4 minute(s)
      Bit Errors (Sync BERT Started): 0 bits
      Bit Errors (Sync last Sync): 0 bits, Bits Received: 7 Mbits
```

The following is partial output from the **showcontrollerst3brief** command:

```
Router# show controllers t3 3/0/0 brief
T3 3/0/0 is up.
  CT3 H/W Version: 4, CT3 ROM Version: 0.116, CT3 F/W Version: 0.10.0
  Mxt H/W version: 2, Mxt ucode ver: 1.24
  Applique type is Channelized T3
  No alarms detected.
  FEAC code received: No code is being received
  Framing is M23, Line Code is B3ZS, Clock Source is Internal.
  Ext1: LOS, Ext2: LOS, Ext3: LOS, Test: OK
  T1 1 is up, speed: 1536 kbs, non-inverted data
  timeslots: 1-24
  FDL per ANSI T1.403 and AT&T 54016 spec.
  Configured for FDL Remotely Line Looped
  No alarms detected.
  Framing is ESF, LineCode is B8ZS, Clock Source is Internal.
  BERT test result (done)
      Test Pattern: All 0's, Status: Not Sync, Sync Detected: 1
      Interval: 4 minute(s), Tim Remain: 0 minute(s)
      Bit Errors(Sync BERT Started): 0 bits
      Bit Errors(Sync last Sync): 0 bits, Bits Received: 368 Mbits
.
.
.
```

The following is partial output from the **showcontrollerst3tabular** command:

```
Router# show controllers t3 3/0/0 tabular

T3 3/0/0 is up.
  CT3 H/W Version: 4, CT3 ROM Version: 1.2, CT3 F/W Version: 2.1.0
  Mx H/W version: 2, Mx ucode ver: 1.25
  Applique type is Channelized T3
  No alarms detected.
  MDL transmission is disabled

  FEAC code received: No code is being received
  Framing is C-BIT Parity, Line Code is B3ZS, Clock Source is Internal.
  Ext1: AIS, Ext2: LOS, Ext3: LOS, Test: LOS
  INTERVAL      LCV   PCV   CCV   PES  PSES  SEFS   UAS   LES   CES  CSES
  08:56-09:11     0     0     0     0     0     0     0     0     0     0
  08:41-08:56     0     0     0     0     0     0     0     0     0     0
  08:26-08:41     0     0     0     0     0     0     0     0     0     0
  Total           0     0     0     0     0     0     0     0     0     0
```

```
.
.
.
T1 2 is up, speed: 1536 kbs, non-inverted data
  timeslots: 1-24
  FDL per AT&T 54016 spec.
  No alarms detected.
  Framing is ESF, Line Code is B8ZS, Clock Source is Internal.
  INTERVAL      LCV   PCV   CSS  SELS   LES    DM    ES   BES   SES   UAS    SS
  08:56-09:11     0     0     0     0     0     0     0     0     0     0     0
  08:41-08:56     0     0     0     0     0     0     0     0     0     0     0
  08:26-08:41     0     0     0     0     0     0     0     0     0     0     0
  Total           0     0     0     0     0     0     0     0     0     0     0
```

The following output shows a controller with a high number of errors on the line, thus showing a throttle count (RX throttles).

```
Router# show controllers t3 6/0/0 tabular
  T1 2 is up
  timeslots: 1-24
  FDL per AT&T 54016 spec.
  No alarms detected.
  Framing is ESF, Clock Source is Line, Rx throttles 47
  INTERVAL      LCV   PCV   CSS  SELS   LES    DM    ES   BES   SES   UAS SS
  07:48-07:53     0     0     0     0     0     0     0     0     0     0
```

The following is partial output from the **showcontrollerst3remoteperformance** command. This information is available if the**t1fdlansi** controller configuration command is enabled for a T1 channel on a CT3IP.

```
Router# show controllers t3 3/0/0 remote performance
T3 3/0/0 is up.
  CT3 H/W Version: 4, CT3 ROM Version: 0.116, CT3 F/W Version: 20.2.0
  Mx H/W version: 2, Mx ucode ver: 1.25
  T1 1 - Remote Performance Data
  Data in current interval (356 seconds elapsed):
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Data in Interval 1:
     1 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     2 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Data in Interval 2:
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
  Total Data (last 2 15 minute intervals):
     1 Path Code Violations
     1 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
     2 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavail Secs
.
.
.
```

The table below describes the fields shown in the display.

*Table 11: **show controllers t3** Field Descriptions--Cisco 7500 Series*

Field	Description
T3 3/0/0 is up	T3 controller in slot 3 is operating. The controller's state can be up, down, or administratively down. Loopback conditions are shown by (Locally Looped) or (Remotely Looped).
CT3 H/W Version	Version number of the hardware.
CT3 ROM Version	Version number of the ROM.
CT3 F/W Version	Version number of the firmware.
Mx H/W version	Hardware version number of the HDLC controller chip.
Mx ucode ver	Microcode version of the HDLC controller chip.
Applique type	Controller type.
No alarms detected	Any alarms detected by the controller are displayed here. Possible alarms are as follows: • Transmitter is sending remote alarm. • Transmitter is sending AIS. • Receiver has loss of signal. • Receiver is getting AIS. • Receiver has loss of frame. • Receiver has remote alarm. • Receiver has no alarms.
MDL transmission	Status of the Maintenance Data Link (either enabled or disabled).

Field	Description
FEAC code received	Whether or not a far-end alarm code request is being received. Possible values are as follows: • DS3 Eqpt. Failure (SA) • DS3 LOS/HBER • DS3 Out-of-Frame • DS3 AIS Received • DS3 IDLE Received • DS3 Eqpt. Failure (NSA) • Common Eqpt. Failure (NSA) • Multiple DS1 LOS/HBER • DS1 Eqpt. Failure • Single DS1 LOS/HBER • DS1 Eqpt. Failure (NSA) • No code is being received
Framing	Framing type on the CT3IP. Values are M23, C-Bit, and Auto-detect.
Line Code	Line coding format on the CT3IP.
Clock Source	Clock source on the CT3IP. Values are internal or line.
RX-error throttling	Indicates that error throttling is enabled. The error throttling command disables the T1 level clock in order to stop receiving error data packets on a T1 controller. If any single interface receives a burst of errors over a short duration, such as 400 errors in 100 milliseconds, the T1 clock will be turned off for a period of 100 milliseconds.
RX throttles	The presence of the throttle count indicates that there are many input errors on lines. On the CT3 PA, the T1 is throttled when there are a number of input errors on an interface (400 errors in 100 milliseconds). The T1 is throttled even if one of the interfaces on it sees continuous errors. The 1-second periodic process checks for throttled interfaces and unthrottles them back.

Field	Description
BERT test result	BERT test information is available if the **t1bert** controller configuration command is enabled for the T1 channel on the CT3IP. The BERT results include the following information: • Test Pattern--Type of test pattern selected. • Status--Status of the test. • Sync Detected--Number of times the pattern synch is detected (that is, the number of times the pattern goes from No Sync to Sync). • Interval--Duration selected. • Tim Remain--Time remaining on the BERT test. • Bit Errors (Sync BERT Started)--Number of bit errors during the BERT test. • Bit Errors (Sync last Sync)--Number of bit errors since the last pattern sync was detected. • Bits Received--Total bits received. When the T1 channel has a BERT test running, the line state is DOWN. Also, when the BERT test is running and the Status field is Not Sync, the information in the total bit errors field is not valid. When the BERT test is done, the Status field is not relevant.
Data in current interval (39 seconds elapsed)	Shows the current accumulation period, which rolls into the 24-hour accumulation every 15 minutes. Accumulation period is from 1 to 900 seconds. The oldest 15-minute period falls off the back of the 24-hour accumulation buffer.
Line Code Violations	Line Code Violations (LCVs) is a count of both Bipolar Violations (BPVs) and Excessive Zeros (EXZs) that occur over the accumulation period. An EXZ increments the LCV by one regardless of the length of the zero string.
P-bit Coding Violation	For all DS3 applications, a P-bit coding violation (PCV) error event is a P-bit parity error event. A P-bit parity error event is the occurrence of a received P-bit code on the DS3 M-frame that is not identical to the corresponding locally calculated code.
C-bit Coding Violation	For C-bit parity and SYNTRAN DS3 applications, the C-bit coding violation (CCV) is the count of coding violations reported via the C-bits. For C-bit parity, it is the count of CP-bit parity errors that occur during the accumulation interval. For SYNTRAN, it is a count of CRC-9 errors that occur during the accumulation interval.
P-bit Err Secs	P-bit errored seconds (PES) is a second with one or more PCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when unavailable seconds are counted.

Field	Description
P-bit Severely Err Secs	P-bit severely errored seconds (PSES) is a second with 44 or more PCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when unavailable seconds are counted.
Severely Err Framing Secs	Severely errored framing seconds (SEFS) is a second with one or more out-of-frame defects or a detected incoming AIS.
Unavailable Secs	The number of unavailable seconds (UAS) is calculated by counting the number of seconds for which the interface is unavailable. For more information, refer to RFC 1407, *DS3 MIB Variables* .
Line Errored Secs	Line errored seconds (LES) is a second in which one or more code violations or one or more LOS defects occurred.
C-bit Errored Secs	C-bit errored seconds (CES) is a second with one or more C-bit code violations (CCV), one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when UASs are counted.
C-bit Severely Errored Secs	C-bit severely errored seconds (CSES) is a second with 44 or more CCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when UASs are counted.
Total Data (last 1 15 minute intervals)	Shows the last 15-minute accumulation period.
T1 1 is up	T1 channel is operating. The channel's state can be up, down, or administratively down. Loopback conditions are shown by (Locally Looped) or (Remotely Looped).
speed	Speed of the T1 channel, in kbps.
non-inverted data	Indicates if the T1 channel is configured for inverted data.
timeslots	Time slots assigned to the T1 channel.
FDL per ANSI T1.403 and AT&T 54016 spec.	Performance monitoring is via Facility Data Link per ANSI T1.403 and AT&T standard specification number 54016.
No alarms detected	Any alarms detected by the T1 controller are displayed here. Possible alarms are as follows: • Transmitter is sending remote alarm. • Transmitter is sending AIS. • Receiver has loss of signal. • Receiver is getting AIS. • Receiver has loss of frame. • Receiver has remote alarm. • Receiver has no alarms.

Field	Description
Framing	Type of framing used on the T1 channel. Values are ESF or SF.
Line Code	Type of line coding used on the T1 channel. Values are B8ZS or AMI.
Clock Source	Clock source on the T1 channel. Values are internal or line.
Path Code Violations	Path coding violation (PCV) error event is a frame synchronization bit error in the D4 and E1-no-CRC formats or a CRC error in the ESF and E1-CRC formats.
Slip Secs	Controlled slip second (CSS) is a 1-second interval that contains one or more controlled slips.
Fr Loss Secs	Frame loss seconds (SELS) is the number of seconds for which an out-of-frame error is detected.
Line Err Secs	Line errored seconds (LES) is a second in which one or more line code violation errors are detected.
Degraded Mins	Degraded minute (DM) is a minute in which the estimated error rate exceeds 1E-6 but does not exceed 1E-3. For more information, refer to RFC 1406, *Definitions of Managed Objects for DS1 and E1 Interface Types* .
Errored Secs	Errored seconds (ES) is a second with one or more path coding violations, one or more out-of-frame defects, or one or more controlled slip events or a detected AIS defect.
Bursty Err Secs	Bursty errored seconds (BES) is a second with fewer than 320 and more than one path coding violation error events, no severely errored frame defects, and no detected incoming AIS defects. Controlled slips are not included in this parameter.
Severely Err Secs	Severely errored seconds (SES) is a second with 320 or more path code violation errors events, one or more out-of-frame defects, or a detected AIS defect.
Unavailable Secs	Number of seconds during which the interface was not available in this interval. Referred to as UAS.
Stuffed Secs	Stuffed seconds (SS) is a second in which one more bit stuffings take place. This happens when the Pulse Density Enforcer detects a potential violation in the output stream and inserts a 1 to prevent it. Such bit stuffings corrupt user data and indicate that the network is configured incorrectly. This counter can be used to help diagnose this situation.

Cisco AS5800 Access Servers

The following example shows the summary status of the T3 controller located in shelf 1, slot 4, port 0:

```
Router# show controllers t3 1/4/0 brief
T3 1/4/0 is up.
 Applique type is Channelized T3
```

```
 No alarms detected.
 MDL transmission is disabled

 FEAC code received: Multiple DS1 LOS/HBER
 Framing is C-BIT Parity, Line Code is B3ZS, Clock Source is Line.
 Data in current interval (491 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
 Total Data (last 80 15 minute intervals):
     3 Line Code Violations, 4 P-bit Coding Violation,
     2 C-bit Coding Violation, 0 P-bit Err Secs,
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs,
     2 Unavailable Secs, 0 Line Errored Secs,
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
```

The following example shows the detailed status of the T3 controller connected to the Cisco AS5800 in shelf 1, slot 4, port 0. Notice that the detailed information shows the last eighty-six 15-minute time periods.

```
Router# show controllers t3 1/4/0
T3 1/4/0 is up.
 Applique type is Channelized T3
 No alarms detected.
 MDL transmission is disabled

 FEAC code received: Multiple DS1 LOS/HBER
 Framing is C-BIT Parity, Line Code is B3ZS, Clock Source is Line.
 Data in current interval (91 seconds elapsed):
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
 Data in Interval 1:
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
 Data in Interval 2:
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
 Data in Interval 3:
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
 Data in Interval 4:
     0 Line Code Violations, 0 P-bit Coding Violation
     0 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
.
.
.
```

```
Data in Interval 86:
     3 Line Code Violations, 4 P-bit Coding Violation
     2 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     2 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
 Total Data (last 86 15 minute intervals):
     3 Line Code Violations, 4 P-bit Coding Violation,
     2 C-bit Coding Violation, 0 P-bit Err Secs,
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs,
     2 Unavailable Secs, 0 Line Errored Secs,
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
```

The table below describes the fields shown in the display.

Table 12: show controllers t3 Field Descriptions--Cisco AS5800

Field	Description
T3 1/4/0 is up	T3 controller connected to this Cisco AS5800 access server in shelf 1, slot 4, port 0 is up. The controller's state can be up, down, or administratively down. Loopback conditions are shown by Locally Looped or Remotely Looped.
Applique type	Describes the type of controller.
No alarms detected	Any alarms detected by the controller are displayed here. Possible alarms are as follows: • Transmitter is sending remote alarm. • Transmitter is sending alarm indication signal (AIS). • Receiver has loss of signal (LOS). • Receiver is getting AIS. • Receiver has loss of frame (LOF). • Receiver has remote alarm. • Receiver has no alarms.
MDL transmission	Maintenance Data Link status (either enabled or disabled). Used for carrying performance information and control signals across the network toward the far-end T3 unit. It is the counterpart of Facility Data Link (FDL) in a T1 link.

Field	Description
FEAC code received	Whether or not a far-end alarm code request is being received. Possible values are as follows: • DS3 Eqpt. Failure (SA) • DS3 LOS/HBER • DS3 Out-of-Frame • DS3 AIS Received • DS3 IDLE Received • DS3 Eqpt. Failure (NSA) • Common Eqpt. Failure (NSA) • Multiple DS1 LOS/HBER • DS1 Eqpt. Failure • Single DS1 LOS/HBER • DS1 Eqpt. Failure (NSA) • No code is being received
Framing	Standard T3 framing type: M23, C-Bit, or Auto-detect.
Line Code	Standard T3 line-coding format. In this example, the line-coding format is bipolar 3-zero substitution (B3ZS).
Clock Source	The source of the synchronization signal (clock): line or internal. In this example, the line is providing the clock signal.
Data in current interval (... seconds elapsed)	Summary statistics for T3 signal quality for the current time interval of 900 seconds (15 minutes). In this example, the statistics are for current partial interval. Statistics roll into the 24-hour accumulation buffer every 15 minutes. The oldest 15-minute period falls off the back of the 24-hour accumulation buffer.
Line Code Violations	Count of both Bipolar Violations (BPVs) and Excessive Zeros (EXZs) that occur over the accumulation period. An EXZ increments the Line Code Violations (LCVs) by one regardless of the length of the zero string.
P-bit Coding Violation	P-bit parity error event. A P-bit parity error event is the occurrence of a received P-bit code on the DS3 M-frame that is not identical to the corresponding locally calculated code. Referred to as PCV.
C-bit Coding Violation	Count of coding violations reported via the C-bits. For C-bit parity, it is the count of CP-bit parity errors that occur during the accumulation interval. Referred to as CCV.

Field	Description
P-bit Err Secs	Number of seconds with one or more PCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when unavailable seconds are counted.
P-bit Severely Err Secs	Number of seconds with 44 or more PCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when unavailable seconds are counted.
Severely Err Framing Secs	Number of a seconds with one or more out-of-frame defects or a detected incoming AIS.
Unavailable Secs	Number of seconds during which the interface was not available in this interval. Referred to as UAS.
Line Errored Secs	Number of seconds in this interval during which one or more code violations or one or more LOS defects occurred. Referred to as LES.
C-bit Errored Secs	Number of seconds with one or more C-bit code violations (CCV), one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when UASs are counted. Referred to as CES.
C-bit Severely Errored Secs	Number of seconds with 44 or more CCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when UASs are counted.
Total Data (last ... 15 minute intervals)	Summary statistics for T3 signal quality for 15-minute intervals. Every 24 hours (96 intervals) the counters in this data block clear.

Cisco 10000 Series Router Examples

The following examples from the show controller t3 command show the information that displays when the router is running Cisco IOS Release 12.2(33)SB and Cisco IOS Release 12.2(31)SB:

Cisco IOS Release 12.2(33)SB --No Line Code Information (CHSTM1 and 1CHOC12 Cards)

```
Router# show controllers t3 2/0/0.1
T3 2/0/0.1 is up. Hardware is C10K CHSTM1 line card
Applique type is Channelized T3
Controller is in channelized mode
No alarms detected.
MDL transmission is disabled
FEAC code received: No code is being received
Framing is C-BIT Parity (Detected), Clock Source is Internal
equipment customer loopback
Data in current interval (155 seconds elapsed):
290738 P-bit Coding Violation
290736 C-bit Coding Violation, 0 P-bit Err Secs
0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
34 Unavailable Secs, 0 Line Errored Secs
0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
31 AIS Defect Secs, 0 FERF Defect Secs
```

```
1 Near-end path failures, 0 Far-end path failures
0 CP-bit Far-End Unavailable Secs, 107 Far-End Coding Violations
2 Far-End Errored Secs, 1 Far-End Severely Errored Secs
```

Cisco IOS Release 12.2(31)SB --Line Code Information (CHSTM1 and 1CHOC12 Cards)

```
Router# show controllers t3 2/0/0.1
T3 2/0/0.1 is up. Hardware is C10K CHSTM1 line card
Applique type is Channelized T3
Controller is in channelized mode
No alarms detected.
MDL transmission is disabled
FEAC code received: No code is being received
Framing is C-BIT Parity (Detected), Clock Source is Internal
equipment customer loopback
Data in current interval (155 seconds elapsed):
290738 P-bit Coding Violation
290736 C-bit Coding Violation, 0 P-bit Err Secs
0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
34 Unavailable Secs, 0 Line Errored Secs
0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
```

Cisco IOS Release 12.2(33)SB3-- CHSTM1 and 1CHOC12 Cards

```
Router# show controllers t3 2/0/0.1
T3 2/0/0.1 is up.  Hardware is C10K CHSTM1 line card
  Applique type is Channelized T3
  Controller is in channelized mode
  No alarms detected.
  MDL transmission is disabled

  FEAC code received: No code is being received
  Framing is C-BIT Parity (Detected), Clock Source is Internal
  equipment customer loopback
  Data in current interval (155 seconds elapsed):
     290738 P-bit Coding Violation
     290736 C-bit Coding Violation, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     34 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
     31 AIS Defect Secs, 0 FERF Defect Secs
     1 Near-end path failures, 0 Far-end path failures
     0 CP-bit Far-End Unavailable Secs, 107 Far-End Coding Violations
     2 Far-End Errored Secs, 1 Far-End Severely Errored Secs
```

Cisco IOS Release 12.2(33)SB3 --4HHCT3 and 6CHT3 Cards

```
Router# show controllers t3 8/0/0
T3 8/0/0 is down.  Hardware is C10K Half Height CT3 line card
  Applique type is Channelized T3
  Controller is in channelized mode
  Receiver has loss of signal.
  MDL transmission is disabled

  FEAC code received: No code is being received
  Framing is C-BIT Parity (Configured)
```

```
Line Code is B3ZS, Clock Source is Internal
equipment customer loopback
Data in current interval (617 seconds elapsed):
   6120 Line Code Violations, 0 P-bit Coding Violation
   0 C-bit Coding Violation, 0 P-bit Err Secs
   0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
   25 Unavailable Secs, 0 Line Errored Secs
   0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
   0 AIS Defect Secs, 25 LOS Defect Secs
   1 Near-end path failures
   0 Far-end path failures, 0 FERF Defect Secs
   24 CP-bit Far-End Unavailable Secs, 4771 Far-End Coding Violations
   0 Far-End Errored Secs, 0 Far-End Severely Errored Secs
```

The table below describes the significant fields shown in the display.

Table 13: show controllers t3 Field Descriptions--Cisco 10000 series router

Field	Description
AIS	Alarm indication signal.
T3 2/0/0.1 is up	T3 controller connected to this Cisco 10000 series router in shelf 2, slot 0, port 0.1 is up. The controller's state can be up, down, or administratively down. Loopback conditions are shown by Locally Looped or Remotely Looped.
T3 8/0/0 is down	T3 controller connected to this Cisco 10000 series router in shelf 8, slot 0, port 0 is down. The controller's state can be up, down, or administratively down. Loopback conditions are shown by Locally Looped or Remotely Looped.
Applique type	Describes the type of controller.
No alarms detected	Any alarms detected by the controller are displayed here. Possible alarms are as follows: • Receiver has loss of frame (LOF). • Receiver has loss of signal (LOS). • Receiver has no alarms. • Receiver has remote alarm. • Receiver is getting AIS. • Transmitter is sending alarm indication signal (AIS). • Transmitter is sending remote alarm.
MDL transmission	Maintenance Data Link status (either enabled or disabled). Used for carrying performance information and control signals across the network toward the far-end T3 unit. It is the counterpart of Facility Data Link (FDL) in a T1 link.

Field	Description
FEAC code received	Whether a far-end alarm code request is being received. Possible values are as follows: • Common Eqpt. Failure (NSA) • DS1 Eqpt. Failure (NSA) • DS1 Eqpt. Failure • DS3 AIS Received • DS3 Eqpt. Failure (NSA) • DS3 Eqpt. Failure (SA) • DS3 IDLE Received • DS3 LOS/HBER • DS3 Out-of-Frame • Multiple DS1 LOS/HBER • No code is being received • Single DS1 LOS/HBER
Framing	Standard T3 framing type: M23, C-bit, or Auto-detect.
Line Code	Standard T3 line-coding format. In this example, the line-coding format is bipolar 3-zero substitution (B3ZS).
Clock Source	The source of the synchronization signal (clock): Line or Internal. In this example, the line is providing the clock signal.
Data in current interval (617 seconds elapsed)	Summary statistics for T3 signal quality for the current time interval of 900 seconds (15 minutes). In this example, the statistics are for current partial interval. Statistics roll into the 24-hour accumulation buffer every 15 minutes. The oldest 15-minute period falls off the back of the 24-hour accumulation buffer.
Line Code Violations	Count of both Bipolar Violations (BPVs) and Excessive Zeros (EXZs) that occur over the accumulation period. An EXZ increments the line code violations (LCVs) by one, regardless of the length of the zero string.
P-bit Coding Violation	P-bit parity error event. A P-bit parity error event is the occurrence of a received P-bit code on the DS3 M-frame that is not identical to the corresponding locally calculated code. Referred to as PCV.
C-bit Coding Violation	Count of coding violations reported via the C-bits. For C-bit parity, it is the count of CP-bit parity errors that occur during the accumulation interval. Referred to as CCV.
P-bit Err Secs	Number of seconds with one or more PCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when unavailable seconds are counted.

Field	Description
P-bit Severely Err Secs	Number of seconds with 44 or more PCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when unavailable seconds are counted.
Severely Err Framing Secs	Number of a seconds with one or more out-of-frame defects or a detected incoming AIS.
Unavailable Secs	Number of seconds during which the interface was not available in this interval. Referred to as UAS.
Line Errored Secs	Number of seconds in this interval during which one or more code violations or one or more LOS defects occurred. Referred to as LES.
C-bit Errored Secs	Number of seconds with one or more C-bit code violations (CCV), one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when UASs are counted. Referred to as CES.
C-bit Severely Errored Secs	Number of seconds with 44 or more CCVs, one or more out-of-frame defects, or a detected incoming AIS. This gauge is not incremented when UASs are counted.

Series Router

The following is a sample output from the **show controllers t3** command on the Cisco series routers:

```
Router# show controllers t3 0/4/40
T3 0/4/40 is up.
Hardware is -48T3E3-CE
Applique type is Clear Channel T3
No alarms detected.
MDL transmission is disabled
FEAC code received: No code is being received
Framing is C-BIT Parity, Line Code is B3ZS, Cablelength Short less than 225ft
BER thresholds: SF = 10e-10 SD = 10e-10
Clock Source is internal
Equipment customer loopback
Data in current interval (240 seconds elapsed):
  Near End
     0 Line Code Violations, 0 P-bit Coding Violations
     0 C-bit Coding Violations, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     0 Unavailable Secs, 0 Line Errored Secs
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
     0 Severely Errored Line Secs, 0 Path Failures
     0 AIS Defect Secs, 0 LOS Defect Secs
   Far End
     0 Errored Secs, 0 Severely Errored Secs
     0 C-bit Unavailable Secs, 0 Path Failures
     0 Code Violations, 0 Service Affecting Secs
  Data in Interval 1:
   Near End
     0 Line Code Violations, 0 P-bit Coding Violations
     0 C-bit Coding Violations, 0 P-bit Err Secs
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs
     20 Unavailable Secs, 20 Line Errored Secs
```

```
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
     20 Severely Errored Line Secs, 1 Path Failures
     0 AIS Defect Secs, 20 LOS Defect Secs
   Far End
     0 Errored Secs, 0 Severely Errored Secs
     0 C-bit Unavailable Secs, 0 Path Failures
     0 Code Violations, 0 Service Affecting Secs
  Total Data (last 1 15 minute intervals):
   Near End
     0 Line Code Violations, 0 P-bit Coding Violations,
     0 C-bit Coding Violations, 0 P-bit Err Secs,
     0 P-bit Severely Err Secs, 0 Severely Err Framing Secs,
     20 Unavailable Secs, 20 Line Errored Secs,
     0 C-bit Errored Secs, 0 C-bit Severely Errored Secs
     20 Severely Errored Line Secs, 1 path failures
     0 AIS Defect Secs, 20 LOS Defect Secs
   Far End
     0 Errored Secs, 0 Severely Errored Secs
     0 C-bit Unavailable Secs, 0 Path Failures
     0 Code Violations, 0 Service Affecting Secs
T1 1 is up
  timeslots:
  FDL per AT&T 54016 spec.
  No alarms detected.
  Framing is ESF, Clock Source is Internal
  Data in current interval (250 seconds elapsed):
   Near End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavailable Secs, 0 Stuffed Secs
     0 Path Failures, 0 SEF/AIS Secs
   Far End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs
     0 Unavailable Secs 0 Path Failures
  Data in Interval 1:
   Near End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
     0 Unavailable Secs, 0 Stuffed Secs
     1 Path Failures, 2 SEF/AIS Secs
   Far End
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
     0 Unavailable Secs 0 Path Failures
  Total Data (last 1 15 minute intervals):
   Near End
     0 Line Code Violations,0 Path Code Violations,
     0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
     2 Errored Secs, 0 Bursty Err Secs, 2 Severely Err Secs
     0 Unavailable Secs, 0 Stuffed Secs
     1 Path Failures, 2 SEF/AIS Secs
   Far End
     0 Line Code Violations,0 Path Code Violations
     0 Slip Secs, 2 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins,
     3 Errored Secs, 0 Bursty Err Secs, 3 Severely Err Secs
     0 Unavailable Secs, 0 Path Failures
```

Use **show controller t3** *0/1/20 path* to verify DS3 CEP configuration:

```
rtr2#show controller t3 0/1/20 path

T3 0/1/20 PATH 1.

Asynchronous Mapping for DS3 into STS-1

TX : TDM to PSN direction
RX : PSN to TDM direction

Clock Source is internal

  AIS = 0          RDI = 0          REI = 349        BIP(B3) = 22
  LOP = 0          PSE = 0          NSE = 0          NEWPTR = 0
  LOM = 0          PLM = 0          UNEQ = 0
Active Defects: None
Detected Alarms: None
Asserted/Active Alarms: None
Alarm reporting enabled for: None

TCA threshold:  B3 = 10e-6
Rx: C2 = FF
Tx: C2 = 01

Tx J1 Length : 64
Tx J1 Trace

  72 74 72 32 20 30 2F 31 2F 32 30 2E 31 00 00 00     rtr2 0/1/20.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

Expected J1 Length : 64
Expected J1 Trace

  72 74 72 32 20 30 2F 31 2F 32 30 2E 31 00 00 00     rtr2 0/1/20.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

PATH TRACE BUFFER : UNSTABLE

Rx J1 Length : 64
Rx J1 Trace

  72 73 70 32 20 30 2F 35 2F 31 32 2E 31 00 00 00     rsp2 0/5/12.1...
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00     ................

rtr2#
```

Note The verification output does not provide the alarm details.

show controllers t3 bert

To display BER test statistics, use the show controllers t3 bert command in user EXEC or privileged EXEC mode.

show controllers t3 *slot*/*subslot*/*port* [/*t1-number*] **bert**

Syntax Description

slot	Chassis line card slot number.
subslot	Chassis line card subslot number.
port	Interface number on the line card.
t1-number	(Optional) Logical T1 interface number.
bert	Displays BER test statistics.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
12.2(28)SB	This command was introduced on the Cisco 10000 series routers.

Examples

The following example shows BER test statistics for an unchannelized T3 interface:

```
Router# show controllers t3 6/1/0 bert

T3 6/1/0 is up.
BERT test result (done)
Test Pattern : 2^15, Status : Not Sync, Sync Detected : 1
Interval : 5 minute(s), Time Remain : 0 minute(s)
Bit Errors (since BERT started): 0 bits,
Bits Received (since BERT started): 13025 Mbits
Bit Errors (since last sync): 0 bits
Bits Received (since last sync): 13025 Mbits
```

The following example shows BER test statistics for a channelized T3 interface:

```
Router# show controllers t3 6/1/0 bert

T3 6/1/0 is up.
BERT test result (running)
Test Pattern : 2^15, Status : Sync, Sync Detected : 1
Interval : 3 minute(s), Time Remain : 1 minute(s)
Bit Errors (since BERT started): 0 bits,
Bits Received (since BERT started): 5493 Mbits
Bit Errors (since last sync): 0 bits
Bits Received (since last sync): 5493 Mbits
```

The following example shows BER test statistics for a T1 interface:

```
Router# show controllers t3 6/1/1/1 bert

T3 6/1/1/1 is up. Hardware is C10K Half Height CT3 line card
T1 1
BERT test result (running)
Test Pattern : 2^15, Status : Sync, Sync Detected : 1
Interval : 5 minute(s), Time Remain : 5 minute(s)
Bit Errors (since BERT started): 0 bits,
Bits Received (since BERT started): 36 Mbits
Bit Errors (since last sync): 0 bits
Bits Received (since last sync): 36 Mbits
```

Related Commands

Command	Description
bert	Configures a BER test for an unchannelized or channelized T3 interface.
t1 bert pattern	Configures a BER test for a T1 interface.

show controllers token

To display information about memory management and error counters on the Token Ring Interface Processor (TRIP) for the Cisco 7500 series routers, use the **showcontrollerstoken** command in privileged EXEC mode.

show controllers token

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
10.0	This command was introduced.
11.3(3)T	The information was modified to include the PA-4R-FDX full-duplex Token Ring port adapter.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Depending on the card being used, the output can vary. This command also displays information that is proprietary to Cisco Systems. Thus, the information that the **showcontrollerstoken** command displays is of primary use to Cisco technical personnel. Information that is useful to users can be obtained with the **showinterfacestokenring** command, which is described later in this chapter.

Examples

The following is sample output for the PA-4R-DTR from the **showcontrollerstoken**command. In this example, the current operating mode is classic Token Ring station.

```
Router# show controllers token
Interface TokenRing4/0 state: up
  Data from IDB:
    Current MAC address: 0008.2a36.1a04, Burned in MAC address: 0008.2a36.1a04
    Group address: 80000000
    Functional address: 08000000, enables: CDP
    Ring mode: 0000, enables:
  Last Ring Status: none
    Stats: soft: 0/0, hard: 0/0, sig loss: 0/0, throttle: 0/0
           tx beacon: 0/0, wire fault 0/0, recovery: 0/0
           only station: 0/0, remote removal: 0/0
  Interface failures: 0
  Current operating mode:
    Classic token ring station
      MAC state: inserted
      Duplex: half
      Access protocol: TKP
      Ring speed: 16 Mbps
      Ring monitor role: Standby monitor
  Internal controller data:
    MAC microcode version: 0.240
    Hawkeye ASIC revision: 0
    Node address: 0008.2a36.1a04
    Functional address: 08000000, Group address: 80000000
```

```
Hawkeye ASIC registers:
  last hisr: 0004h, himr: 00002ABFh, inpace: 0000h
  utility: 6316h, txphthre: 1010h, rxtxdmathre: 2828h
  dmactrl: 0000E004h, earlyrxthre: 0000h, llcstop: 0000h
  reset: 0000h
  txhidescstart: 4B0A45C0h, txlodescstart: 00000000h
  rxdescstart: 4B0A4180h, srbctrl: 0038h, descipoll: 0100h
  congestcnt: 0000h
Hawkeye transmit error counts:
  Underrun: 0/0
Hawkeye receive error counts:
  Out of descriptors: 0/0, Giants: 0/0
  Corrupted frames: 0/0, CRC errors: 0/0
  FIFO overflow: 0/0
Device driver ring buffer data:
  Transmit ring:
    Descriptors outstanding (curr/max): 0/256
    Head pointer: 7   Tail pointer: 7
  Receive ring:
    Ring size: 64 descriptors
    Head pointer: 7
Internal controller soft error counts:
  Line errors: 0/0, Internal errors: 0/0
  Burst errors: 0/0, ARI/FCI errors: 0/0
  Abort errors: 0/0, Lost frame errors: 0/0
  Copy errors: 0/0, Receiver congestion: 0/0
  Token errors: 0/0, Frequency errors: 0/0
Internal controller SMT state:
  Adapter MAC:     0008.2a36.1a04, Physical drop:       00000000
  NAUN address:    0060.3ebb.0a21, NAUN drop:           00000000
  Last beacon src: 0000.0000.0000, Last poll:           0060.3ebb.0a21
  Last MVID:       0006,           Last attn code:      0000
  Txmit priority:  0007,           Auth funct class:    FFFF
  Monitor error:   0000,           Front end errors:    0000
  Correlator:      0000,           Soft error timer:    00C8
  Local ring:      0000,           Ring status:         0000
  Beacon rcv type: 0000,           Beacon txmit type:   0000
  Last beacon type:0000,           Bcn station NAUN:    0000.0000.0000
  Beacon drop:     00000000,       Phantom support:     0000
  Access prot req: 0000,           Access prot resp:    0000
  Policy flags:    0110,           Protocol event state:000D
  Ctrl ring state: 0001,           Protocol join state: 0000
  Reserved:        0000,           Protocol mon state:  0000
```

The table below describes the significant fields shown in the display.

Table 14: show controllers token Field Descriptions

Field	Description
Tokenring4/0	Interface processor type, slot, and port.

Field	Description
Last Ring Status	Last abnormal ring condition. Can be any of the following: • Signal Loss • HW Removal • Remote Removal • Counter Overflow • Only station • Ring Recovery
Current operating mode	Operating mode. Can be one of the following: • Classic token ring station (standard half-duplex Token Ring station) • DTR station (full-duplex Token Ring station) • DTR concentrator (concentrator port)
MAC state	The MAC state indicates the state of the Token Ring MAC layer protocol. Can be one of the following: • Not inserted (not connected to any ring) • Inserting (currently entering a ring) • Inserted (connected to an active Token ring)

Related Commands

Command	Description
show interfaces tokenring	Displays information about the Token Ring interface and the state of source-route bridging.
show source-bridge	Displays the current source bridge configuration and miscellaneous statistics.

show controllers vg-anylan

To display the controller information for the 100VG-AnyLAN port adapter on Cisco 7200 series routers and Cisco 7500 series routers, use the **showcontrollersvg-anylan** command in user EXEC or privileged EXEC mode.

Cisco 7200 Series
show controllers vg-anylan *slot/port*

Cisco 7500 Series with VIP Cards
show controllers vg-anylan *slot/port-adapter/port*

Syntax Description

slot	Slot number. Refer to the appropriate hardware manual for slot and port information.
/ *port*	Port number. Refer to the appropriate hardware manual for slot and port information.
/ *port-adapter*	Port adapter number. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
11.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The information displayed is generally useful for diagnostic tasks performed by technical support personnel only.

Examples

The following is sample output from the **showcontrollersvg-anylan** command:

```
Router# show controllers vg-anylan 3/0
Interface VG-AnyLAN3/0
Hardware is MC68852
 mc68852_ds=0x60A4C930, registers=0x3C300000, ib=0x4B056240
 rx ring entries=31, tx ring entries=31
 rxring=0x4B056340, rxr shadow=0x60A4CA08, rx_head=0, rx_tail=0
 txring=0x4B057180, txr shadow=0x60A4D07C, tx_head=0, tx_tail=2,
tx_count=2,
MC68852 Registers:
 hw_id: 5048, hw_id & page: 7053, opr1=0x26, opr2=0x2C, opr3=0x00
  Page 0 - Performance:
  isr=0x3400, imr=0x0A0A, flreg=0x0000
  xfrct=0xC07E0080, rxcnt=0, txcnt=1F
  Page 1 - MAC Address/Hash Table:
  addrlow= 6009B9, addrhigh=9B1809B9,hash bytes=06 00 20 00 00 00 00 00
  Page 2 - Hardware Mapping:
  mmmsw=0x3785, mmlsw=0x0000, bmreg =0x04
```

```
 Page 4 - LAN Configuration:
 tccnf1=0x00, tccnf2=0x01
 vccnf=0x99, vtrrg=0x0020, valow1=0x0000, valow2=0x0000
 maccr1=0xBE, maccr2=0x00, maccr3=0x04, maccr4=0x03
 Page 5 - MMU Registers:
 rx mem stop addr=0xFF03, tx mem stop addr=0xFF07
MC68852 PCI registers:
 bus_no=6, device_no=0
 CFID=0x0005101A, CFCS=0x02800005, CFRV=0x02000000, CFLT=0x0000F800
 CBIO=0x00006001, CBMA=0x00000000, CFIT=0x20080100, CFDA=0x0000000C
Actel Hardware CAM Control Registers:
 CAM DEVICE BASE: 0x3C300800  Register Address: 0x3C300C00
 CSR: 0x8000  CAMCR: 0xFFFF
 USAR: 0000  MSAR: 0000  LSAR: 0000
 FIFOCR: 0x8000  WRMASK: 0x0080
 COMPARAND REG: 0000.0000.0000
 PERSISTENT SOURCE: 0x0   PERSISTENT DEST: 0xFD010000
ACTEL CAM PCI registers:
 bus_no=6, device_no=1
 CFID=0x555511AA, CFCS=0x04800003, CFRV=0xF0F0F001, CFLT=0x00000000
 CBIO=0x00006800, CBMA=0x00000000, CFIT=0x00000000, CFDA=0x00000000
 pak_to_host=0x0, filtered_pak=0
 throttled=0, enabled=0, disabled=0
 tx_carrier_loss=0
 fatal_tx_err=0, mult_ovfl=0
```

show controllers wanphy

T o display the SPA mode (LAN mode or WAN mode), alarms, and the J1 byte string value, use the **showcontrollerswanphy**commandin Privileged EXEC mode.

show controllers wanphy *slot/subslot/port*

Syntax Description

slot	The SIP slot number in which the Cisco 1-Port 10 Gigabit Ethernet LAN/WAN-PHY Shared Port Adapter has been installed.
subslot	The subslot number in which the Cisco 1-Port 10 Gigabit Ethernet LAN/WAN-PHY Shared Port Adapter has been installed.
port	The port number of the Cisco 1-Port 10 Gigabit Ethernet LAN/WAN-PHY Shared Port Adapter. **Note** There is only 1 port (0) in the Cisco 1-Port 10 Gigabit Ethernet LAN/WAN-PHY Shared Port Adapter.

Command Default

No default values are available.

Command Modes

Privileged EXEC Mode (EXEC)

Command History

Release	Modification
Cisco IOS XE Release 3.3.0S	This command was introduced on the Cisco ASR 1000 Series Routers.

Usage Guidelines

The **showcontrollerwanphy**command has been introduced on the Cisco ASR 1000 Series Router in Cisco IOS XE Release 3.3.0S. This command is used to display:

- LAN or WAN mode of operation in which the SPA is currently working
- Configured alarms and active alarms (if any)
- Remote J1 byte string value passed to check the connectivity from local SPA to the remote SPA
- SF-BER and SD-BER threshold values

Examples

The following example shows the output of **showcontrollerswanphy** command:

```
Router# show controllers wanphy 0/1/0
TenGigabitEthernet0/1/0
Mode of Operation: WAN Mode
SECTION
  LOF = 0             LOS    = 0                           BIP(B1) = 0
LINE
  AIS = 0             RDI    = 0          FEBE = 0         BIP(B2) = 0
PATH
  AIS = 0             RDI    = 0          FEBE = 0         BIP(B3) = 0
  LOP = 0             NEWPTR = 0          PSE  = 0         NSE     = 0
WIS ALARMS
```

```
  SER    = 0          FELCDP = 0          FEAISP = 0
  WLOS   = 0          PLCD   = 0
  LFEBIP = 0          PBEC   = 0
Active Alarms[All defects]: SWLOF LAIS PAIS SER
Active Alarms[Highest Alarms]: SWLOF
Alarm reporting enabled for: SF SWLOF B1-TCA B2-TCA PLOP WLOS
  Rx(K1/K2): 00/00  Tx(K1/K2): 00/00
  S1S0 = 00, C2 = 0x1A
PATH TRACE BUFFER: UNSTABLE
  Remote J1 Byte :
BER thresholds:  SD = 10e-6  SF = 10e-3
TCA thresholds:  B1 = 10e-6  B2 = 10e-6  B3 = 10e-6
```

Related Commands

Command	Description
clear controller wanphy	Clears the counter of alarms generated, and resets it back to zero.

show controllers wlan-controller

To show the Cisco Wireless Local Area Network (WLAN) controller network module on the router, use the **showcontrollerswlan-controller** command in privileged EXEC mode.

show controllers wlan-controller slot/unit

Syntax Description

slot/unit	Specifies the router slot and unit numbers for the WLAN controller network module.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(2)XA1	This command was introduced on the router software.
12.4(6)T	This command was integrated into Cisco IOS Release 12.4(6)T.

Examples

The following example shows how to display interface information for the WLAN controller network module:

```
Router# show controllers wlan-controllers 1/0
Interface wlan-controller1/0
Hardware is Intel 82559 FastEthernet
IDB: 67796B08, FASTSEND: 60E073CC, MCI_INDEX: 0

INSTANCE=0x67797BE8
  Rx Ring entries = 64
  Rx Shadow = 0x67797ED0
  Rx Ring = 0x2DCC1840
  Rx Ring Head = 5
  Rx Ring Last = 4
  Rx Buffer Descr = 0x2DCC3040
  Rx Buffer Descr Head = 5
  Rx Buffer Descr Last = 4
  Rx Shadow (malloc) = 0x67797ED0
  Rx Ring (malloc) = 0x2DCC1840
  Rx Buffer Descr (malloc) = 0x2DCC3040
  Tx Ring entries = 128
  Tx Shadow = 0x67798008
  Tx Shadow Head = 13
  Tx Shadow Tail = 13
  Tx Shadow Free = 128
  Tx Ring = 0x2DCFAA40
  Tx Head = 15
  Tx Last = 14
  Tx Tail = 15
  Tx Count = 0
  Tx Buffer Descr = 0x2DCF9080
  Tx Buffer Descr Head = 0
  Tx Buffer Descr Tail = 0
  Tx Shadow (malloc) = 0x67798008
  Tx Ring (malloc) = 0x2DCFAA40
```

```
  Tx Buffer Descr (malloc) = 0x2DCF9080

CONTROL AND STATUS REGISTERS (CSR)=0x4B000000
  SCB Intr Mask    = 00
  SCB CU/RU Cmd    = 00
  SCB Intr Status  = 00
  SCB CU Status    = 01
  SCB RU Status    = 04
  SCB General Ptr  = 00000000
  PORT             = 00000000
  EEPROM           = 0008
  FLASH            = 0002
  MDI              = 1821782D
  Rx Byte Count    = 00000608
  PMDR             = 80
  FC Cmd           = 00
  FC Threshold     = 03
  Early Rx         = 00
  General Status   = 07
  General Control  = 00

PHY REGISTERS
  Register 0x00:   1000  782D  02A8  0154  0501  45E1  0003  0000
  Register 0x08:   0000  0000  0000  0000  0000  0000  0000  0000
  Register 0x10:   0203  0000  0001  0000  0000  0000  0000  0000
  Register 0x18:   0001  0000  8B10  0000  0000  0000  0000  0000

HARDWARE STATISTICS
  Rx good frames:         69
  Rx CRC:                 0
  Rx alignment:           0
  Rx resource:            0
  Rx overrun:             0
  Rx collision detects:   0
  Rx short:               0
  Tx good frames:         13
  Tx maximum collisions:  0
  Tx late collisions:     0
  Tx underruns:           0
  Tx lost carrier sense:  0
  Tx deferred:            0
  Tx single collisions:   0
  Tx multiple collisions: 0
  Tx total collisions:    0
  FC Tx pause:            0
  FC Rx pause:            0
  FC Rx unsupported:      0

INTERRUPT STATISTICS
  CX  = 468239
  FR  = 2393445
  CNA = 0
  RNR = 0
  MDI = 0
  SWI = 0
  FCP = 0

Receive All Multicasts = enabled
Receive Promiscuous = disabled
Loopback Mode = disabled


Module Reset Statistics:
  CLI reset count = 0
```

```
CLI reload count = 0
Registration request timeout reset count = 0
Error recovery timeout reset count = 0
Module registration count = 1
```

show counters interface

To display the information about the interface counter, use the **showcountersinterface** command in user EXEC or privileged EXEC mode.

show counters interface *type mod/port* [**delta**]

Syntax Description

type	Interface type; possible valid values are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **port-channel**, **pos**, **atm**, **null**, **tunnel**, and **ge-wan**
mod / port	Module and port number.
delta	(Optional) Displays the interface counters values since the last **clearcounters** command.

Command Default

This command has no default settings.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(18)SXE	This command was changed to support the **delta** keyword on the Supervisor Engine 720 only.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **showcountersinterface** command is not supported on SVIs.

The **showcountersinterfacedelta**command displays a detailed list of the last-saved counter values.

Examples

This example shows how to display the information about the interface counter:

```
Router# show counters interface fastethernet 5/2
64 bit counters:
 0.                      rxHCTotalPkts = 1
 1.                      txHCTotalPkts = 1
 2.                    rxHCUnicastPkts = 0
 3.                    txHCUnicastPkts = 0
 4.                  rxHCMulticastPkts = 0
 5.                  txHCMulticastPkts = 0
 6.                  rxHCBroadcastPkts = 1
 7.                  txHCBroadcastPkts = 1
 8.                         rxHCOctets = 78
 9.                         txHCOctets = 78
10.                 rxTxHCPkts64Octets = 0
11.            rxTxHCPkts65to127Octets = 2
12.           rxTxHCPkts128to255Octets = 0
13.           rxTxHCPkts256to511Octets = 0
14.          rxTxHCpkts512to1023Octets = 0
```

```
15.         rxTxHCpkts1024to1518Octets = 0
16.                   txHCTrunkFrames = 0
17.                   rxHCTrunkFrames = 0
18.                    rxHCDropEvents = 0
32 bit counters:
 0.                  rxCRCAlignErrors = 0
 1.                  rxUndersizedPkts = 0
 2.                   rxOversizedPkts = 0
 3.                    rxFragmentPkts = 0
 4.                         rxJabbers = 0
 5.                       txCollisions = 0
 6.                         ifInErrors = 0
 7.                        ifOutErrors = 0
 8.                       ifInDiscards = 0
 9.                  ifInUnknownProtos = 0
10.                      ifOutDiscards = 0
11.           txDelayExceededDiscards = 0
12.                               txCRC = 0
13.                         linkChange = 1
14.                    wrongEncapFrames = 0
All Port Counters
 1.                           InPackets = 1
 2.                            InOctets = 78
 3.                          InUcastPkts = 0
 4.                          InMcastPkts = 0
 5.                          InBcastPkts = 1
 6.                         OutPackets = 1
 7.                           OutOctets = 78
 8.                         OutUcastPkts = 0
 9.                         OutMcastPkts = 0
10.                         OutBcastPkts = 1
11.                             AlignErr = 0
12.                               FCSErr = 0
13.                              XmitErr = 0
14.                               RcvErr = 0
15.                            UnderSize = 0
16.                            SingleCol = 0
17.                             MultiCol = 0
18.                              LateCol = 0
19.                         ExcessiveCol = 0
20.                         CarrierSense = 0
21.                                Runts = 0
22.                               Giants = 0
23.                           InDiscards = 0
24.                          OutDiscards = 0
25.                             InErrors = 0
26.                            OutErrors = 0
27.                       TrunkFramesTx = 0
28.                       TrunkFramesRx = 0
29.                          WrongEncap = 0
30.     Broadcast_suppression_discards = 0
31.     Multicast_suppression_discards = 0
32.       Unicast_suppression_discards = 0
33.                   rxTxHCPkts64Octets = 0
34.              rxTxHCPkts65to127Octets = 2
35.             rxTxHCPkts128to255Octets = 0
36.             rxTxHCPkts256to511Octets = 0
37.            rxTxHCpkts512to1023Octets = 0
38.           rxTxHCpkts1024to1518Octets = 0
39.                           DropEvents = 0
40.                     CRCAlignErrors = 0
41.                     UndersizedPkts = 0
42.                      OversizedPkts = 0
43.                       FragmentPkts = 0
```

```
44.                           Jabbers = 0
45.                        Collisions = 0
46.               DelayExceededDiscards = 0
47.                         bpduOutlost = 0
48.                         qos0Outlost = 0
49.                         qos1Outlost = 0
50.                         qos2Outlost = 0
51.                         qos3Outlost = 0
52.                      bpduCbicOutlost = 0
53.                      qos0CbicOutlost = 0
54.                      qos1CbicOutlost = 0
55.                      qos2CbicOutlost = 0
56.                      qos3CbicOutlost = 0
57.                           bpduInlost = 0
58.                           qos0Inlost = 0
59.                           qos1Inlost = 0
60.                           qos2Inlost = 0
61.                           qos3Inlost = 0
62.                           qos4Inlost = 0
63.                           qos5Inlost = 0
64.                           qos6Inlost = 0
65.                           qos7Inlost = 0
66.                           pqueInlost = 0
67.                             Overruns = 0
68.                             maxIndex = 0
Router#
```

This example shows how to display the values for the interface counters since the last **clearcounters** command:

```
Router# show counters interface gigabitethernet 5/2 delta

Time since last clear
---------------------
1d08h
64 bit counters:
0. rxHCTotalPkts = 508473
1. txHCTotalPkts = 2366
2. rxHCUnicastPkts = 411611
3. txHCUnicastPkts = 193
4. rxHCMulticastPkts = 81868
5. txHCMulticastPkts = 2155
6. rxHCBroadcastPkts = 14994
7. txHCBroadcastPkts = 18
8. rxHCOctets = 36961992
.
.
.
Router#
```

Related Commands

Command	Description
clear counters	Clears the interface counters.

show diag

To display hardware and diagnostic information for a networking device, line card, processor, jacket card, chassis, or network module, use the **show diag** command in privileged EXEC mode.

show diag [*slot-number*] [**details** | **summary**]

Cisco 7304 Router
show diag [*slot-number* | **chassis** | **subslot** *slot/subslot*] [**details** | **summary**]

Shared Port Adapters
show diag [**subslot** *slot/subslot*] [**details** | **summary**]

Network Module
show diag [*slot-number*]

Cisco 10000 Series Router
show diag [*slot/subslot*] [**details** | **summary**] [**crashdump**]

Cisco uBR10012 Universal Broadband Router
show diag [*slot/subslot* | *slot/subslot/port* | **summary**]

Cisco uBR7225VXR and Cisco uBR7246VXR Universal Broadband Routers
show diag *slot*

Cisco ASR 1000 Series Aggregation Services Routers
show diag [**all** | **chassis** | **slot** | **subslot**] **eeprom**

Cisco 4400 Series Integrated Services Router
show diag [**all** | **chassis** | **slot** | **subslot**] **eeprom**

Syntax Description

slot-number	(Optional) Slot number of the interface. If a slot number is not specified, diagnostic information for all slots is displayed.
details	(Optional) Displays more details than the normal **show diag** output.
summary	(Optional) Displays a summary (one line per slot) of the chassis.
chassis	(Optional) Specifies the display of diagnostic information about the backplane, power supplies, and fan modules.

subslot *slot* / *subslot*	(Optional) **Shared Port Adapters** Specifies the display of diagnostic information about the shared port adapter (SPA), where: • *slot* --Chassis slot number. See the appropriate hardware manual for slot information. For SPA interface processor (SIP), refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide. • *subslot* --Secondary slot number on a SIP where a SPA is installed. See the platform-specific SPA hardware installation guide and the corresponding "Specifying the Interface Address on a SPA" topic in the platform-specific SPA software configuration guide for subslot information. (Optional) Specifies subslot location information for the connected network modules and interfaces.
slot / *subslot/port*	(Optional) **Cisco uBR10012 Universal Broadband Router** Displays diagnostic information about the specified line card, where: • *slot* --Slot number of the line card in the uBR10012 router. The range is 0 to 8. • *subslot* --Subslot of the half-height line card in the uBR10012 router. The value t is either 0 or 1. • *port* --Port number on the cable interface. Valid values are 0 to 4 (depending on the cable interface).
slot	(Optional) **Cisco uBR7225VXR and Cisco uBR7246VXR Universal Broadband Routers** Displays diagnostic information about the specified line card, where: • *slot* --Slot number of the line card in the Cisco uBR7225VXR or Cisco uBR7246VXR router. Cisco uBR7246VXR router: The range is 3 to 6. Cisco uBR7225VXR router: The range is 1 to 2.
all	(Optional) Displays all diagnostic information related to EEPROM.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.1CA	This command was introduced.
11.2	This command was integrated into Cisco IOS Release 11.2.

Release	Modification
11.2P	This command output was modified for the PA-12E/2FE port adapter, PA-E3 port adapter, and PA-T3 port adapter.
11.2GS	This command was implemented on the Cisco 12000 series Internet router.
11.3 XA	This command was integrated in Cisco IOS Release 11.3 XA.
12.0	This command was implemented on the Cisco AS5300.
12.0(5)XQ	This command was implemented on the Cisco 1750 router.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0(7)T.
12.1(9)EX	This command was introduced on the Cisco 7300 series routers, and the *slot-number* argument and **chassis** keyword were added.
12.1(10)EX	This command was enhanced to display information about Field-Programmable Gate Array (FPGA) image versions on installed NSEs and line cards on Cisco 7304 routers.
12.2(11)YZ	Support was added for the 7300-CC-PA.
12.2(8)T	This command was implemented for AIC and WIC cards on the Cisco 2600 series routers and the Cisco 3600 series routers.
12.2(13)T	This command was implemented for the AIM-VPN/EPII and AIM-VPN/HPII cards on the Cisco 2691, Cisco 3660, Cisco 3725, and Cisco 3745 routers.
12.2(15)ZJ	This command was implemented for the AIM-VPN/BPII card on the Cisco 2610XM, Cisco 2611XM, Cisco 2620XM, Cisco 2621XM, Cisco 2650XM, and Cisco 2651XM routers.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S and implemented on the Cisco 7304 router.
12.3(4)T	Support for the AIM-VPN/BPII card on the Cisco 2600XM series was integrated into Cisco IOS Release 12.3(4)T.
12.2(20)S2	This command was integrated into Cisco IOS Release 12.2(20)S2 and the **subslot***slotsubslot*keyword and arguments were added to support SPAs on the Cisco 7304 router.
12.0(31)S	This command was integrated into Cisco IOS Release 12.0(31)S and the **subslot***slotsubslot*keyword and arguments were added to support SIPs and SPAs on the Cisco 12000 series Internet router.
12.4(4)T	This command was implemented for the HWIC-1ADSL and HWIC-1ADSLI interface cards on the following platforms: Cisco 1800 (modular) series, Cisco 2800 series, and Cisco 3800 series routers.
12.4(9)T	This command was implemented for the NME-AON-K9= enhanced network module on the following platforms: Cisco 2811, Cisco 2821, Cisco 2851, Cisco 3725, and Cisco 3745 routers.

Release	Modification
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(33)SB	This command was enhanced with a crashdump option to enable you to display crashdump files collected on the SIP. This was implemented on the Cisco 10000 series router for the PRE3 and PRE4.
12.2(33)SCC	The output for this command was modified to display the diagnostic mode for the Cisco uBR10-MC5X20H cable interface line card on the uBR10012 router, when the field diagnostic image is loaded.
12.2(33)SCD	This command was modified. Support was added for the Cisco uBR7225VXR and Cisco uBR7246VXR routers.
12.2(33)XNE	This command was modified. The **all** keyword was added.
12.2(33)SCG	This command was modified. The output was modified to display all hardware and EEPROM information, including PID and PCB information for the Cisco uBR10-MC5X20H cable interface line card on the Cisco uBR10012 router.
IOS XE 3.9S	This command was integrated into Cisco IOS XE Release 3.9S.

Usage Guidelines

Use this command to determine the type of hardware installed in your router and to show detailed hardware information and EEPROM version information.

This command displays information for the motherboard, WAN interface cards (WICs), voice interface cards (VICs), high-speed WICs (HWICs), ATM interface cards (AICs), advanced integration modules (AIMs), port adapters, shared port adapters (SPAs), modular services cards (MSCs), SPA interface processors (SIPs), and enhanced network modules (NME).

For the Cisco 7304 router, this command applies to NEs, line cards, MSCs, and SPAs.

- To display hardware information for an NSE, line card, or MSC in the specified slot, use the *slot-number*argument. For MSCs, using this argument displays information about the MSC and each of its installed SPAs.
- To display hardware information about the backplane, power supplies, and fan modules, use the **chassis** keyword.

Shared Port Adapter Usage Guidelines

- To display hardware information for an MSC or SIP only in a specified slot, use the *slot-number*argument.
- To display hardware information for a SPA only, use the **show diag subslot***slot*/*subslot*version of this command.

Cisco 10000 Series Router Usage Guidelines

The **crashdump** keyword of the **show diag** command enables you to display any crashdump files collected on the SIP. The SIP stores the crashdump files by a reference number from 1 to 60.

To view a crashdump file, do the following:

1. Determine the most recent crashdump number:
   a. Enter the show diag slot/subslot command.
   b. Look for the latest crashdump number in the following section of the command output:

```
Number of crashdumps : output number
```

   c. Enter the following command to view the crashdump file:

```
show diag slot/subslot crashdump number
```

Note The subslot value is always zero for the SIP.

Cisco uBR10012 Router Usage Guidelines

- In the command syntax, the argument *slot/subslot* refers to a half-height line-card on the Cisco uBR10012 Router.
- This command applies to all cable interface line cards. The output for this command additionally displays the diagnostic mode when the Cisco uBR10-MC5X20H line card is enabled with the Field Diagnostic image.

Examples

1-Port T3 Serial Port Adapter: Example

The following is a sample output from the **show diag** command for a 1-port T3 serial port adapter in chassis slot 1 on a Cisco 7200 series router:

```
Router# show diag 1

Slot 1:
        Physical slot 1, ~physical slot 0xE, logical slot 1, CBus 0
        Microcode Status 0x4
        Master Enable, LED, WCS Loaded
        Board is analyzed
        Pending I/O Status: None
        EEPROM format version 1
        VIP2 controller, HW rev 2.4, board revision D0
        Serial number: 04372053  Part number: 73-1684-03
        Test history: 0x00        RMA number: 00-00-00
        Flags: cisco 7000 board; 7500 compatible

        EEPROM contents (hex):
          0x20: 01 15 02 04 00 42 B6 55 49 06 94 03 00 00 00 00
          0x30: 68 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

        Slot database information:
        Flags: 0x4      Insertion time: 0x14A8 (5d02h ago)

        Controller Memory Size: 16 MBytes DRAM, 1024 KBytes SRAM

        PA Bay 0 Information:
                T3 Serial PA, 1 ports
```

```
        EEPROM format version 1
        HW rev FF.FF, Board revision UNKNOWN
        Serial number: 4294967295  Part number: 255-65535-255
```

Cisco 12000 Series Internet Router: Example

The following is a sample output from the **show diag** command on a Cisco 12000 series Internet router:

```
Router# show diag 3

SLOT 3  (RP/LC 3 ): 4 Port Packet Over SONET OC-3c/STM-1 Multi Mode
  MAIN: type 33,  00-0000-00 rev 70 dev 0
        HW config: 0x01    SW key: 00-00-00
  PCA:  73-2147-02 rev 94 ver 2
        HW version 1.0  S/N 04499695
  MBUS: MBUS Agent (1)  73-2146-05 rev 73 dev 0
        HW version 1.1  S/N 04494882
        Test hist: 0x00    RMA#: 00-00-00    RMA hist: 0x00
  DIAG: Test count: 0x05000001    Test results: 0x00000000

  MBUS Agent Software version 01.27 (RAM) using CAN Bus A
  ROM Monitor version 00.0D
  Fabric Downloader version used 00.0D (ROM version is 00.0D)
  Board is analyzed
  Board State is Line Card Enabled (IOS  RUN )
  Insertion time: 00:00:10 (00:04:51 ago)
  DRAM size: 33554432 bytes
  FrFab SDRAM size: 67108864 bytes
  ToFab SDRAM size: 16777216 bytes
```

The following is a sample output from the **show diag** command with the **summary** keyword:

```
Router# show diag summary

SLOT 0  (RP/LC 0 ): Route Processor
SLOT 2  (RP/LC 2 ): 4 Port Packet Over SONET OC-3c/STM-1 Single Mode
SLOT 4  (RP/LC 4 ): 4 Port Packet Over SONET OC-3c/STM-1 Single Mode
SLOT 7  (RP/LC 7 ): 4 Port Packet Over SONET OC-3c/STM-1 Single Mode
SLOT 9  (RP/LC 9 ): 4 Port Packet Over SONET OC-3c/STM-1 Single Mode
SLOT 11 (RP/LC 11): 4 Port Packet Over SONET OC-3c/STM-1 Single Mode
SLOT 16 (CSC 0   ): Clock Scheduler Card
SLOT 17 (CSC 1   ): Clock Scheduler Card
SLOT 18 (SFC 0   ): Switch Fabric Card
SLOT 19 (SFC 1   ): Switch Fabric Card
SLOT 20 (SFC 2   ): Switch Fabric Card
SLOT 24 (PS A1   ): AC Power Supply
SLOT 26 (PS B1   ): AC Power Supply
SLOT 28 (TOP FAN ): Blower Module
SLOT 29 (BOT FAN ): Blower Module
```

The following is a sample output from the **show diag** command with the **details** keyword:

```
Router# show diag 4 details

SLOT 4  (RP/LC 4): 4 Port Packet Over SONET OC-3c/STM-1 Single Mode
  MAIN: type 33,  800-2389-01 rev 71 dev 16777215
        HW config: 0x00    SW key: FF-FF-FF
  PCA:  73-2275-03 rev 75 ver 3
        HW version 1.1  S/N 04529465
```

```
  MBUS: MBUS Agent (1)  73-2146-06 rev 73 dev 0
        HW version 1.1  S/N 04541395
        Test hist: 0xFF    RMA#: FF-FF-FF    RMA hist: 0xFF
  DIAG: Test count: 0x05000001    Test results: 0x00000000

  EEPROM contents (hex):
  00: 01 00 01 00  49 00 08 62  06 03 00 00  00 FF FF FF
  10: 30 34 35 34  31 33 39 35  FF FF FF FF  FF FF FF FF
  20: 01 01 00 00  00 00 00 FF  FF FF FF FF  FF FF FF FF
  30: A5 FF A5 A5  A5 A5 FF A5  A5 A5 A5 A5  A5 A5 A5 A5
  40: 00 21 01 01  00 49 00 08  E3 03 05 03  00 01 FF FF
  50: 03 20 00 09  55 01 01 FF  FF FF 00 FF  FF FF FF FF
  60: 30 34 35 32  39 34 36 35  FF FF FF FF  FF FF FF FF
  70: FF FF FF FF  FF FF FF FF  05 00 00 01  00 00 00 00

  MBUS Agent Software version 01.24 (RAM)
  Fabric Downloader version 00.0D
  Board is analyzed
  Flags: 0x4
  Board State is Line Card Enabled (IOS  RUN)
  Insertion time: 00:00:10 (00:04:51 ago)
  DRAM size: 33554432 bytes
  FrFab SDRAM size: 67108864 bytes
  ToFab SDRAM size: 16777216 bytes
```

ATM SAR AIM in a Cisco 3660: Example

The following is a sample output from the **show diag** command for one ATM Segmentation and Reassembly (SAR) AIM in a Cisco 3660 router:

```
Router# show diag 0

3660 Chassis type: ENTERPRISE

c3600 Backplane EEPROM:
 Hardware Revision        : 1.0
 Top Assy. Part Number    : 800-04740-02

.
.
.

ATM AIM: 1
 ATM AIM module with SAR only (no DSPs)
 Hardware Revision        : 1.0
 Top Assy. Part Number    : 800-03700-01
 Board Revision           : A0
 Deviation Number         : 0-0
 Fab Version              : 02
 PCB Serial Number        : JAB9801ABCD
```

NM-AIC-64 Installed in a Cisco 2611: Example

The following is a sample output from the **show diag** command for a Cisco 2611 router with the NM-AIC-64 installed.

```
Router# show diag
```

```
Slot 0:
C2611 2E Mainboard Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware Revision : 2.3
PCB Serial Number : JAD044808SG (1090473337)
Part Number : 73-2840-13
RMA History : 00
RMA Number : 0-0-0-0
Board Revision : C0
Deviation Number : 0-0
EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 00 92 41 02 03 C1 18 4A 41 44 30 34 34
0x10: 38 30 38 53 47 20 28 31 30 39 30 34 37 33 33 33
0x20: 37 29 82 49 0B 18 0D 04 00 81 00 00 00 00 42 43
0x30: 30 80 00 00 00 00 FF FF FF FF FF FF FF FF FF FF
0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

Slot 1:
NM_AIC_64 Port adapter, 3 ports
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware Revision : 1.0
Part Number : 74-1923-01
Board Revision : 02
PCB Serial Number : DAN05060012
EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 02 55 41 01 00 82 4A 07 83 01 42 30 32
0x10: C1 8B 44 41 4E 30 35 30 36 30 30 31 32 FF FF FF
0x20: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

The table below describes significant fields shown in the display.

Table 15: show diag (AIC) Field Descriptions

Field	Description
C2611 2E Mainboard Port adapter, 2 ports	Line card type; number of ports available.
Port adapter is analyzed	The system has identified the port adapter.
Port adapter insertion time	Elapsed time since insertion.
Hardware Revision	Version number of the port adapter.
PCB Serial Number	Serial number of the printed circuit board.
Part Number	Part number of the port adapter.

Field	Description
RMA History	Counter that indicates how many times the port adapter has been returned and repaired.
RMA Number	Return material authorization number, which is an administrative number assigned if the port adapter needs to be returned for repair.
Board Revision	Revision number (signifying a minor revision) of the port adapter.
Deviation Number	Revision number (signifying a minor deviation) of the port adapter.
EEPROM format version	Version number of the EEPROM format.
EEPROM contents (hex)	Dumps of EEPROM programmed data.

AIM-VPN in a Cisco 2611XM: Example

The following example shows how to obtain hardware information about an installed AIM-VPN on the Cisco 2611XM router.

Router# **show diag 0**

Encryption AIM 1:

Hardware Revision :1.0

Top Assy. Part Number :800-03700-01

Board Revision :A0

Deviation Number :0-0

Fab Version :02

PCB Serial Number :JAB9801ABCD

RMA Test History :00

RMA Number :0-0-0-0

RMA History :00

EEPROM format version 4

EEPROM contents (hex):

0x00:04 FF 40 03 0B 41 01 00 C0 46 03 20 00 0E 74 01

0x10:42 41 30 80 00 00 00 00 02 02 C1 8B 4A 41 42 39

0x20:38 30 31 41 42 43 44 03 00 81 00 00 00 00 04 00

0x30:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

0x40:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

0x50:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

0x60:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

0x70:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

The table below describes significant fields shown in the display.

Table 16: show diag (AIM-VPN) Field Descriptions

Field	Description
Hardware Revision	Version number of the port adapter.
Top Assy. Part Number	Part number of the port adapter.
Board Revision	Revision number (signifying a minor revision) of the port adapter.
Deviation Number	Revision number (signifying a minor deviation) of the port adapter.
PCB Serial Number	Serial number of the printed circuit board.
RMA Number	Return material authorization number, which is an administrative number assigned if the port adapter needs to be returned for repair.
RMA History	Counter that indicates how many times the port adapter has been returned and repaired.
EEPROM format version	Version number of the EEPROM format.
EEPROM contents (hex)	Dumps of EEPROM programmed data.

MSC-100 on the Cisco 7304 Router: Example

The following is a sample output from the **show diag** *slot-number* version of the command for an MSC-100 located in slot number 4 on a Cisco 7304 router. Information about the MSC is followed by information for its associated SPAs:

```
Router# show diag 4

Slot 4:
        7304-MSC-100 SPA Carrier Card Line Card
        Line Card state: Active
        Insertion time: 00:08:49 ago
        Bandwidth points: 4000000
        EEPROM contents at hardware discovery:
        Hardware Revision        : 0.18
        Boot Time out            : 0000
        PCB Serial Number        : CSJ07288905
        Part Number              : 73-8789-01
        Board Revision           : A0
        Fab Version              : 02
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Deviation Number         : 0-0
        Product Number           : 7304-MSC-100
        Top Assy. Part Number    : 68-1163-04
        Manufacturing Test Data  : 00 00 00 00 00 00 00 00
        Field Diagnostics Data   : 00 00 00 00 00 00 00 00
        Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
```

```
      Calibration values :
    EEPROM format version 4

    EEPROM contents (hex):
      0x00: 04 FF 40 04 50 41 00 12 46 00 00 C1 8B 43 53 4A
      0x10: 30 37 32 38 38 39 30 35 82 49 22 55 01 42 41 30
      0x20: 02 02 03 00 81 00 00 00 00 04 00 80 00 00 00 00
      0x30: CB 94 37 33 30 34 2D 4D 53 43 2D 31 30 30 20 20
      0x40: 20 20 20 20 20 20 87 44 04 8B 04 C4 08 00 00 00
      0x50: 00 00 00 00 00 C5 08 00 00 00 00 00 00 00 00 C8
      0x60: 09 00 00 00 00 00 00 00 00 00 C7 7C F6 44 3F 30
      0x70: 00 00 00 00 00 00 00 00 00 00 00 00 02 EE FF C8
      0x80: C8 37 26 05 DC 64 28 1E 37 26 09 C4 64 32 28 32
      0x90: DD 0C E4 64 32 28 43 24 2E E0 AA 82 64 F4 24 00
      0xA0: 00 00 00 00 00 00 F0 2E FF FF FF FF FF FF FF FF
      0xB0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0xC0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0xD0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0xE0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0xF0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x100: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x110: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x120: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x130: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x140: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x150: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x160: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x170: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x180: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x190: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x1A0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x1B0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x1C0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x1D0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x1E0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
      0x1F0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

    FPGA information:
      Current FPGA version     : 00.23
      IOS bundled FPGA version : 00.23
    CPLD version     : 01.02

Subslot 4/1:
    Shared port adapter: SPA-4FE-7304, 4 ports
    State: ok
    Insertion time: 00:15:13 ago
    Bandwidth: 400000 kbps
    EEPROM contents:
```

NSE-100 on the Cisco 7304 Router: Example

The following example displays diagnostic information about the NSE-100 in slot 0 of a Cisco 7304 router:

```
Router# show diag 0

Slot 0/1:
    NSE Card state:Primary
    Insertion time:00:03:47 ago
C7300 NSE Mainboard EEPROM:
    Hardware Revision        :2.3
```

```
        PCB Serial Number         :CAB0532JYYT
        Part Number               :73-5198-02
        Board Revision            :A0
        Fab Version               :02
        RMA Test History          :00
        RMA Number                :0-0-0-0
        RMA History               :00
        Deviation Number          :0-0
        Product Number            :7300-NSE-100
        Top Assy. Part Number     :68-1002-02
        Manufacturing Test Data   :00 00 00 00 00 00 00 00
        Field Diagnostics Data    :00 00 00 00 00 00 00 00
        Calibration Data          :Minimum:0 dBmV, Maximum:0 dBmV
              Calibration values :
        EEPROM format version 4

        EEPROM contents (hex):
          0x00:04 FF 40 02 8B 41 02 03 C1 8B 43 41 42 30 35 33
          0x10:32 4A 59 59 54 82 49 14 4E 02 42 41 30 02 02 03
          0x20:00 81 00 00 00 00 04 00 80 00 00 00 00 CB 94 37
          0x30:33 30 30 2D 4E 53 45 2D 31 30 30 20 20 20 20 20
          0x40:20 20 20 87 44 03 EA 02 C4 08 00 00 00 00 00 00
          0x50:00 00 C5 08 00 00 00 00 00 00 00 00 C8 09 00 00
          0x60:00 00 00 00 00 00 00 C7 7C F6 44 3F 30 F6 44 3F
          0x70:30 F6 44 3F 30 00 00 00 00 07 08 64 32 28 37 26
          0x80:09 C4 5A 32 28 32 DD 0C E4 5A 2D 23 43 24 13 88
          0x90:64 32 28 65 BA 2E E0 AA 82 64 F4 24 00 00 00 00
          0xA0:00 00 00 EF 1C FF FF FF FF FF FF FF FF FF FF FF
          0xB0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xC0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xD0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xE0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xF0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

C7300 NSE Daughterboard EEPROM:
        Hardware Revision         :2.0
        PCB Serial Number         :CAB0533K3PP
        Part Number               :73-5673-03
        Board Revision            :A0
        Fab Version               :03
        RMA Test History          :00
        RMA Number                :0-0-0-0
        RMA History               :00
        Deviation Number          :0-0
        Product Number            :7300-NSE-100
        Top Assy. Part Number     :68-1002-02
        Manufacturing Test Data   :00 00 00 00 00 00 00 00
        Field Diagnostics Data    :00 00 00 00 00 00 00 00
        Calibration Data          :Minimum:0 dBmV, Maximum:0 dBmV
              Calibration values :
        EEPROM format version 4
        EEPROM contents (hex):
          0x00:04 FF 40 02 8C 41 02 00 C1 8B 43 41 42 30 35 33
          0x10:33 4B 33 50 50 82 49 16 29 03 42 41 30 02 03 03
          0x20:00 81 00 00 00 00 04 00 80 00 00 00 00 CB 94 37
          0x30:33 30 30 2D 4E 53 45 2D 31 30 30 20 20 20 20 20
          0x40:20 20 20 87 44 03 EA 02 C4 08 00 00 00 00 00 00
          0x50:00 00 C5 08 00 00 00 00 00 00 00 00 C8 09 00 00
          0x60:00 00 00 00 00 00 00 C7 7C F6 44 3F 30 00 00 00
          0x70:00 00 00 00 00 00 00 00 00 06 72 64 1E 1C 37 26
          0x80:07 08 64 32 28 37 26 00 00 00 00 00 00 00 00 00
          0x90:00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xA0:00 00 00 FB BA FF FF FF FF FF FF FF FF FF FF FF
          0xB0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

```
          0xC0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xD0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xE0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0xF0:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

        FPGA information:
          Current NSE MB FPGA version     :0.3
          IOS bundled NSE MB FPGA version :0.12
          Current NSE DB FPGA version     :0.3
          IOS bundled NSE DB FPGA version :0.10
Fault History Buffer:
7300 Software (C7300-IS-M), Experimental Version 12.1(20011206:191841) [user-ws1 179]
Compiled Tue 29-Jan-02 08:10 by
Signal = 22, Code = 0x0, Uptime 00:00:48
$0 :FFFFFFFF, AT :47001098, v0 :10020028, v1 :0000006F
a0 :A0000000, a1 :00000005, a2 :00000001, a3 :10020028
t0 :00000028, t1 :3401E101, t2 :34018100, t3 :FFFF00FF
t4 :40332E68, t5 :43204650, t6 :70646174, t7 :69707065
s0 :FFFFFFFF, s1 :FFFFFFFF, s2 :FFFFFFFF, s3 :FFFFFFFF
s4 :FFFFFFFF, s5 :FFFFFFFF, s6 :FFFFFFFF, s7 :FFFFFFFF
t8 :00000000, t9 :00000000, k0 :3041D001, k1 :30410000
gp :FFFFFFFF, sp :41AA8F20, s8 :FFFFFFFF, ra :4036B6A4
EPC :4036B69C, SREG :3401E103, Cause :FFFFFFFF
Error EPC :FFFFFFFF, BadVaddr :FFFFFFFF

ROMMON Last Error Info:
count:19,  reason:reset
pc:0x4020BFBC,  error address:0x00000000
Stack Trace:
FP:0x00000000, PC:0x00000000
FP:0x00000000, PC:0x00000000
```

Shared Port Adapters on the Cisco 7304 Router: Example

The following is a sample output from the **show diag subslot** command for a 4-Port 10/100 Fast Ethernet SPA located in the bottom subslot (1) of the MSC that is installed in slot 4 on a Cisco 7304 router:

```
Router# show diag subslot 4/1

Subslot 4/1:
        Shared port adapter: SPA-4FE-7304, 4 ports
        Info: hw-ver=0x100, sw-ver=0x0 fpga-ver=0x0
        State: ok
        Insertion time: 23:20:42 ago
        Bandwidth: 400000 kbps
        EEPROM contents:
        Hardware Revision        : 1.0
        Boot Time out            : 0190
        PCB Serial Number        : JAB073204G5
        Part Number              : 73-8717-03
        73/68 Level Revision     : 01
        Fab Version              : 02
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Deviation Number         : 0
        Product Number           : SPA-4FE-7304
        Product Version Id       : V01
        Top Assy. Part Number    : 68-2181-01
        73/68 Level Revision     : A0
```

```
CLEI Code                : CNS9420AAA
Base MAC Address         : 0000.0000.0000
MAC Address block size   : 1024
Manufacturing Test Data  : 00 00 00 00 00 00 00 00
Field Diagnostics Data   : 00 00 00 00 00 00 00 00
Field Diagnostics Data   : 00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00
Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
      Calibration values :
Power Consumption        : 160000mW max
                  Mode 1 : 0mW
                  Mode 2 : 0mW
                  Mode 3 : 0mW
EEPROM format version 4
EEPROM contents (hex):
  0x00: 04 FF 40 04 35 41 01 00 46 01 90 C1 8B 4A 41 42
  0x10: 30 37 33 32 30 34 47 35 82 49 22 0D 03 8A 30 31
  0x20: 20 20 02 02 03 00 81 00 00 00 00 04 00 88 00 00
  0x30: 00 00 CB 94 53 50 41 2D 34 46 45 2D 37 33 30 34
  0x40: 20 20 20 20 20 20 20 20 89 56 30 31 20 87 44 08
  0x50: 85 01 8A 41 30 20 20 C6 8A 43 4E 53 39 34 32 30
  0x60: 41 41 41 CF 06 00 00 00 00 00 00 43 04 00 C4 08
  0x70: 00 00 00 00 00 00 00 00 C5 08 00 00 00 00 00 00
  0x80: 00 00 F4 00 64 00 00 00 00 00 00 00 00 00 00 00
  0x90: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0xA0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0xB0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0xC0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0xD0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0xE0: 00 00 00 00 00 00 00 00 00 C8 09 00 00 00 00 00
  0xF0: 00 00 00 00 D7 08 3E 80 00 00 00 00 00 00 F3 00
  0x100: 41 01 08 F6 48 43 34 F6 49 44 35 02 31 04 B0 B4
  0x110: A0 8C 00 00 05 DC 64 46 32 00 00 07 08 64 46 32
  0x120: 00 00 09 C4 64 46 32 00 00 0C E4 64 46 32 00 00
  0x130: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 FE 02
  0x140: F2 A6 FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x150: CC A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x160: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x170: 00 00 D4 A0 00 00 00 00 00 00 00 00 00 00 00 00
  0x180: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x190: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x1A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x1B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x1C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x1D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x1E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0x1F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
FPGA version:
  Software version : 04.17
  Hardware version : 04.17
```

The following is a sample output from the **show diag subslot** command for a 2-Port 10/100/1000 Gigabit Ethernet SPA located in the top subslot (0) of the MSC that is installed in slot 4 on a Cisco 7304 router:

```
Router# show diag subslot 4/0

Subslot 4/0:
Shared port adapter: SPA-2GE-7304, 2 ports
Info: hw-ver=0x17, sw-ver=0x0 fpga-ver=0x0
State: ok
Insertion time: 00:08:47 ago
Bandwidth: 2000000 kbps
EEPROM contents:
Hardware Revision : 0.23
Boot Time out : 0190
PCB Serial Number : JAB073406YH
Part Number : 73-8792-02
73/68 Level Revision : 01
Fab Version : 02
RMA Test History : 00
RMA Number : 0-0-0-0
RMA History : 00
Deviation Number : 0
Product Number : SPA-2GE-7304
Product Version Id : V01
Top Assy. Part Number : 68-2181-01
73/68 Level Revision : A0
CLEI Code : CNS9420AAA
Base MAC Address : 0000.0000.0000
MAC Address block size : 1024

Manufacturing Test Data : 00 00 00 00 00 00 00 00
Field Diagnostics Data :  00 00 00 00 00 00 00 00
Field Diagnostics Data :  00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00 00 00 00 00
                          00 00 00 00

Calibration Data : Minimum: 0 dBmV, Maximum: 0 dBmV
Calibration values :
Power Consumption : 160000mW max
Mode 1 : 0mW
Mode 2 : 0mW
Mode 3 : 0mW

EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 04 36 41 00 17 46 01 90 C1 8B 4A 41 42
0x10: 30 37 33 34 30 36 59 48 82 49 22 58 02 8A 30 31
0x20: 20 20 02 02 03 00 81 00 00 00 00 04 00 88 00 00
0x30: 00 00 CB 94 53 50 41 2D 32 47 45 2D 37 33 30 34
0x40: 20 20 20 20 20 20 20 20 89 56 30 31 20 87 44 08
0x50: 85 01 8A 41 30 20 20 C6 8A 43 4E 53 39 34 32 30
0x60: 41 41 41 CF 06 00 00 00 00 00 00 43 04 00 C4 08
```

```
0x70: 00 00 00 00 00 00 00 00 C5 08 00 00 00 00 00 00
0x80: 00 00 F4 00 64 00 00 00 00 00 00 00 00 00 00 00
0x90: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0xA0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0xB0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0xC0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0xD0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0xE0: 00 00 00 00 00 00 00 00 00 C8 09 00 00 00 00 00
0xF0: 00 00 00 00 D7 08 3E 80 00 00 00 00 00 00 F3 00
0x100: 41 01 08 F6 48 43 34 F6 49 44 35 02 31 03 E8 B4
0x110: A0 8C 37 26 05 DC 64 46 32 37 26 07 08 64 46 32
0x120: 37 26 09 C4 64 46 32 32 DD 0C E4 64 46 32 43 24
0x130: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 FE 02
0x140: EF E2 FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x150: CC A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x160: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x170: 00 00 D4 A0 00 00 00 00 00 00 00 00 00 00 00 00
0x180: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x190: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x1A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x1B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x1C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x1D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x1E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x1F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

FPGA version:
Software version : 04.17
Hardware version : 04.17
```

Shared Port Adapter on a Cisco 12000 Series Internet Router: Example

The following is a sample output from the **show diag subslot** command for the 1-Port OC-192c/STM-64c POS/RPR XFP SPA in subslot 1 of the SIP located in chassis slot 1 on a Cisco 12000 series Internet router:

```
Router# show diag subslot 1/1

SUBSLOT  1/1 (SPA-OC192POS-XFP): 1-port OC192/STM64 POS/RPR XFP Optics Shared Port Adapter
       Product Identifier (PID) : SPA-OC192POS-XFP
       Version Identifier (VID) : V01
       PCB Serial Number        : PRTA1304061
       Top Assy. Part Number    : 68-2190-01
       Top Assy. Revision       : A0
       Hardware Revision        : 2.0
       CLEI Code                : UNASSIGNED
       Insertion Time           : 00:00:10 (13:14:17 ago)
       Operational Status       : ok
```

The table below describes the significant fields shown in the display.

Table 17: show diag subslot Field Descriptions for Cisco 12000 Series Internet Routers

Field	Description
Product Identifier (PID)	Product number of the SPA.
Version Identifier (VID)	Version number of the SPA.
PCB Serial Number	Serial number of the printed circuit board.

Field	Description
Top Assy. Part Number	Part number of the SPA.
Top Assy. Revision	Revision number (signifying a minor revision) of the SPA.
Hardware Revision	Revision number (signifying a minor revision) of the SPA hardware.
CLEI Code	Common Language Equipment Identification number.
Insertion Time	Time when the SPA was installed, and elapsed time between that insertion time and the current time.
Operational Status	Current status of the SPA. For more information about the status field descriptions, refer to the **show hw-module subslot oir** command.

The following is a sample output from the **show diag subslot details**command for the 1-Port OC-192c/STM-64c POS/RPR XFP SPA in subslot 1 of the SIP located in chassis slot 1 on a Cisco 12000 series Internet router:

```
Router# show diag subslot 1/1 details

SUBSLOT  1/1 (SPA-OC192POS-XFP): 1-port OC192/STM64 POS/RPR XFP Optics Shared Port Adapter
       EEPROM version           : 4
       Compatible Type          : 0xFF
       Controller Type          : 1100
       Hardware Revision        : 2.0
       Boot Timeout             : 400 msecs
       PCB Serial Number        : PRTA1304061
       PCB Part Number          : 73-8546-01
       PCB Revision             : A0        Fab Version             : 01
       RMA Test History         : 00
       RMA Number               : 0-0-0-0
       RMA History              : 00
       Deviation Number         : 0
       Product Identifier (PID) : SPA-OC192POS-XFP
       Version Identifier (VID) : V01
       Top Assy. Part Number    : 68-2190-01
       Top Assy. Revision       : A0        IDPROM Format Revision   : 36
       System Clock Frequency   : 00 00 00 00 00 00 00 00
                                  00 00 00 00 00 00 00 00
                                  00 00 00 00 00 00
       CLEI Code                : UNASSIGNED
       Base MAC Address         : 00 00 00 00 00 00
       MAC Address block size   : 0
       Manufacturing Test Data  : 00 00 00 00 00 00 00 00
       Field Diagnostics Data   : 00 00 00 00 00 00 00 00
       Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
             Calibration values :
       Power Consumption        : 11000 mWatts (Maximum)
       Environment Monitor Data : 03 30 04 B0 46 32 07 08
                                  46 32 09 C4 46 32 0C E4
                                  46 32 13 88 46 32 07 08
                                  46 32 EB B0 50 3C 00 00
                                  00 00 00 00 00 00 00 00
                                  00 00 00 00 00 00 00 00
                                  00 00 FE 02 F6 AC
       Processor Label          : 00 00 00 00 00 00 00
       Platform features        : 00 00 00 00 00 00 00 00
                                  00 00 00 00 00 00 00 00
```

```
                                00 00 00 00 00 00 00 00
                                00 00 00 00 00 00 00 00
      Asset ID                :
      Asset Alias             :
      Insertion Time          : 00:00:10 (13:14:24 ago)
      Operational Status      : ok
```

SPA Interface Processor on a Cisco 12000 Series Internet Router: Example

The following is a sample output from the **show diag** command for a SIP located in chassis slot 2 on a Cisco 12000 series Internet router:

```
Router# show diag 2

SLOT 2  (RP/LC 2 ): Modular 10G SPA Interface Card
  MAIN: type 149,  800-26270-01 rev 84
        Deviation: 0
        HW config: 0x00    SW key: 00-00-00
  PCA:  73-9607-01 rev 91 ver 1
        Design Release 1.0  S/N SAD08460678
  MBUS: Embedded Agent
        Test hist: 0x00    RMA#: 00-00-00    RMA hist: 0x00
  DIAG: Test count: 0x00000000    Test results: 0x00000000
  FRU:  Linecard/Module: 12000-SIP-650
  FRU:  Linecard/Module: 12000-SIP-650
        Processor Memory: MEM-LC5-1024=(Non-Replaceable)
        Packet Memory: MEM-LC5-PKT-256=(Non-Replaceable)
  L3 Engine: 5 - ISE OC192 (10 Gbps)
  MBUS Agent Software version 1.114 (RAM) (ROM version is 3.4)
  ROM Monitor version 255.255
  Fabric Downloader version used 3.7 (ROM version is 255.255)
  Primary clock is CSC 1
  Board is analyzed
  Board State is Line Card Enabled (IOS  RUN )
  Insertion time: 1d00h (2d08h ago)
  Processor Memory size: 1073741824 bytes
  TX Packet Memory size: 268435456 bytes, Packet Memory pagesize: 32768 bytes
  RX Packet Memory size: 268435456 bytes, Packet Memory pagesize: 32768 bytes
  0 crashes since restart
  SPA Information:
        subslot 2/0: SPA-OC192POS-XFP (0x44C), status is ok
        subslot 2/1: Empty
        subslot 2/2: Empty
        subslot 2/3: Empty
```

ADSL HWICs: Example

The following is a sample output from the **show diag** command for a Cisco 2811 router with HWIC-1ADSL installed in slot 1 and HWIC-1ADSLI installed in slot 2. Each HWIC has a daughtercard as part of its assembly. The command results below give the output from the HWIC followed by the output from its daughtercard.

Router# **show diag 0**

Slot 0:

```
C2811 Motherboard with 2FE and integrated VPN Port adapter, 2 ports
        Port adapter is analyzed
```

```
        Port adapter insertion time unknown
        Onboard VPN             : v2.2.0
        EEPROM contents at hardware discovery:
        PCB Serial Number       : FOC09052HHA
        Hardware Revision       : 2.0
        Top Assy. Part Number   : 800-21849-02
        Board Revision          : B0
        Deviation Number        : 0
        Fab Version             : 06
        RMA Test History        : 00
        RMA Number              : 0-0-0-0
        RMA History             : 00
        Processor type          : 87
        Hardware date code      : 20050205
        Chassis Serial Number   : FTX0908A0B0
        Chassis MAC Address     : 0013.1ac2.2848
        MAC Address block size  : 24
        CLEI Code               : CNMJ7N0BRA
        Product (FRU) Number    : CISCO2811
        Part Number             : 73-7214-09
        Version Identifier      :   NA
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF C1 8B 46 4F 43 30 39 30 35 32 48 48 41 40
          0x10: 03 E7 41 02 00 C0 46 03 20 00 55 59 02 42 42 30
          0x20: 88 00 00 00 00 02 06 03 00 81 00 00 00 00 04 00
          0x30: 09 87 83 01 31 F1 1D C2 8B 46 54 58 30 39 30 38
          0x40: 41 30 42 30 C3 06 00 13 1A C2 28 48 43 00 18 C6
          0x50: 8A 43 4E 4D 4A 37 4E 30 42 52 41 CB 8F 43 49 53
          0x60: 43 4F 32 38 31 31 20 20 20 20 20 20 82 49 1C 2E
          0x70: 09 89 20 20 4E 41 D9 02 40 C1 FF FF FF FF FF FF

WIC Slot 1:
        ADSL over POTS
        Hardware Revision       : 7.0
        Top Assy. Part Number   : 800-26247-01
        Board Revision          : 01
        Deviation Number        : 0
        Fab Version             : 07
        PCB Serial Number       : FHH093600D4
        RMA Test History        : 00
        RMA Number              : 0-0-0-0
        RMA History             : 00
        Product (FRU) Number    : HWIC-1ADSL
        Version Identifier      : V01
        CLEI Code               :
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 04 C8 41 07 00 C0 46 03 20 00 66 87 01
          0x10: 42 30 31 88 00 00 00 00 02 07 C1 8B 46 48 48 30
          0x20: 39 33 36 30 30 44 34 03 00 81 00 00 00 00 04 00
          0x30: CB 94 48 57 49 43 2D 31 41 44 53 4C 20 20 20 20
          0x40: 20 20 20 20 20 20 89 56 30 31 20 D9 02 40 C1 C6
          0x50: 8A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
        EM Slot 0:
        ADSL over POTS non-removable daughtercard
        Hardware Revision       : 5.0
        Part Number             : 73-9307-05
        Board Revision          : 03
        Deviation Number        : 0
        Fab Version             : 05
        PCB Serial Number       : FHH0936006E
```

```
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Fab Part Number          : 28-6607-05
        Manufacturing Test Data  : 00 00 00 00 00 00 00 00
        Field Diagnostics Data   : 00 00 00 00 00 00 00 00
        Connector Type           : 01
        Version Identifier       : V01
        Product (FRU) Number     :
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 04 7A 41 05 00 82 49 24 5B 05 42 30 33
          0x10: 88 00 00 00 00 02 05 C1 8B 46 48 48 30 39 33 36
          0x20: 30 30 36 45 03 00 81 00 00 00 00 04 00 85 1C 19
          0x30: CF 05 C4 08 00 00 00 00 00 00 00 00 C5 08 00 00
          0x40: 00 00 00 00 00 00 05 01 89 56 30 31 20 FF FF FF
          0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

WIC Slot 2:
        ADSL over ISDN
        Hardware Revision        : 7.0
        Top Assy. Part Number    : 800-26248-01
        Board Revision           : 01
        Deviation Number         : 0
        Fab Version              : 07
        PCB Serial Number        : FHH093600DA
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Product (FRU) Number     : HWIC-1ADSLI
        Version Identifier       : V01
        CLEI Code                :
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 04 C9 41 07 00 C0 46 03 20 00 66 88 01
          0x10: 42 30 31 88 00 00 00 00 02 07 C1 8B 46 48 48 30
          0x20: 39 33 36 30 30 44 41 03 00 81 00 00 00 00 04 00
          0x30: CB 94 48 57 49 43 2D 31 41 44 53 4C 49 20 20 20
          0x40: 20 20 20 20 20 20 89 56 30 31 20 D9 02 40 C1 C6
          0x50: 8A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
        EM Slot 0:
        ADSL over ISDN non-removable daughtercard
        Hardware Revision        : 5.0
        Part Number              : 73-9308-05
        Board Revision           : 03
        Deviation Number         : 0
        Fab Version              : 05
        PCB Serial Number        : FHH0936008M
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Fab Part Number          : 28-6607-05
        Manufacturing Test Data  : 00 00 00 00 00 00 00 00
        Field Diagnostics Data   : 00 00 00 00 00 00 00 00
        Connector Type           : 01
        Version Identifier       : V01
        Product (FRU) Number     :
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 04 7B 41 05 00 82 49 24 5C 05 42 30 33
```

```
  0x10: 88 00 00 00 00 02 05 C1 8B 46 48 48 30 39 33 36
  0x20: 30 30 38 4D 03 00 81 00 00 00 00 04 00 85 1C 19
  0x30: CF 05 C4 08 00 00 00 00 00 00 00 00 C5 08 00 00
  0x40: 00 00 00 00 00 00 00 05 01 89 56 30 31 20 FF FF FF
  0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

NME-AON-K9= Installed in a Cisco 3845: Example

The following is a sample output from the **show diag** command for an integrated-service-engine port adapter in slot 2 on a Cisco 3845 router:

```
Slot 2:
        Integrated Service Engine Port adapter, 1 port
        Port adapter is analyzed
        Port adapter insertion time unknown
        EEPROM contents at hardware discovery:
        Hardware Revision        : 1.0
        Top Assy. Part Number    : 800-28152-01
        Board Revision           : 03
        Deviation Number         : 0
        Fab Version              : 01
        PCB Serial Number        : FOC101430NK
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Version Identifier       : NA
        CLEI Code                : TDB
        Product (FRU) Number     : NME-AON-K9
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 05 5B 41 01 00 C0 46 03 20 00 6D F8 01
          0x10: 42 30 33 88 00 00 00 00 02 01 C1 8B 46 4F 43 31
          0x20: 30 31 34 33 30 4E 4B 03 00 81 00 00 00 00 04 00
          0x30: 89 4E 41 00 00 D9 02 40 C1 C6 8A 54 44 42 00 00
          0x40: 00 00 00 00 00 CB 88 4E 4D 45 2D 52 56 50 4E FF
          0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

The table below describes the significant fields shown in the display.

Table 18: show diag subslot Field Descriptions for Cisco 3845 Series Routers

Field	Description
Hardware Revision	Revision number (signifying a minor revision) of the SPA hardware.
Top Assy. Part Number	Part number of the SPA.
Product Identifier (PID)	Product number of the SPA.
Board Revision	Revision number of the circuit board in the module.
Deviation Number	Deviation number of the module.
Fab Version	Fabrication version of the module.

Field	Description
PCB Serial Number	Serial number of the printed circuit board.
Top Assy. Revision	Revision number (signifying a minor revision) of the SPA.
RMA Test History	History of RMA testing.
RMA Number	RMA number of the module.
RMA History	History of RMA on this module.
Version Identifier	Nonapplicable to this module.
CLEI Code	Common Language Equipment Identification number. (nonapplicable on this module)
Product (FRU) Number	Product identification number.
EEPROM Format Version	Version of EEPROM format.
EEPROM Contents	Contents of EEPROM output.

Cisco uBR10012 and ubR7200 Series Broadband Routers

The following is a sample output from the **show diag** command displaying diagnostic information for the cable clock card:

```
router# show diag

Clockcard:
 National clock card with T1 controller
 EEPROM contents at hardware discovery:
 Hardware Revision        :1.1
 Part Number              :800-05867-02
 Board Revision           :11
 Deviation Number         :0-0
 Fab Version              :02
 PCB Serial Number        :CAB04046NXV
 RMA Test History         :00
 RMA Number               :0-0-0-0
 RMA History              :00
 EEPROM format version 4
 EEPROM contents (hex):
   0x00:04 FF 40 01 AC 41 01 01 C0 46 03 20 00 16 EB 02
   0x10:42 31 31 80 00 00 00 00 02 02 C1 8B 43 41 42 30
   0x20:34 30 34 36 4E 58 56 03 00 81 00 00 00 00 04 00
```

The table below describes the fields displayed by the **show diag** command.

Table 19: show diag Field Descriptions for Cisco uBR10012 and uBR7200 Series Routers

Field	Description
National clock card with T1 controller	The system has identified the cable clock card.

Field	Description
EEPROM contents at hardware discovery	EEPROM programmed data present when the system identified the clock card.
Hardware Revision	Version number of the card.
Part Number	Part number of the card.
Board Revision	Revision number (signifying a minor revision) of the card.
Deviation Number	Revision number (signifying a minor deviation) of the card.
Fab Version	Manufacturing fabrication version number.
PCB Serial Number	Serial number of the printed circuit board.
RMA Test History	Counter indicating how many times diagnostics have been performed on this card.
RMA Number	Return material authorization number, which is an administrative number assigned if the card needs to be returned for repair.
RMA History	Counter indicating how many times the card has been returned and repaired.
EEPROM format version	Version number of the EEPROM format.
EEPROM contents (hex)	Dumps of EEPROM programmed data.

The following is a sample output from the **show diag** command displaying revision-level information for the cable line card (slot 6):

```
Router# show diag

Slot 6:
        MC11 port adapter, 1 port
        Port adapter is analyzed
        Port adapter insertion time 02:37:10 ago
        Hardware Revision        : 1.2
        Part Number              : 800-02455-02
        Board Revision           : 03
        Deviation Number         : 0-3
        Fab Version              : 03
        PCB Serial Number        : 00004500239
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Calibration Data         : Minimum: -8 dBmV, Maximum: 8 dBmV
              Calibration values : 0x5D43 0x3F05 0x1794
        Unknown Field (type 0083): 83 FF FF FF
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 00 F1 41 01 02 C0 46 03 20 00 09 97 02
          0x10: 42 30 33 80 00 00 00 03 02 03 C1 8B 30 30 30 30
          0x20: 34 35 30 30 32 33 39 03 00 81 00 00 00 00 04 00
          0x30: C8 09 F8 08 03 5D 43 3F 05 17 94 83 83 FF FF FF
          0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

```
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

The table below describes the fields displayed by the **show diag** command for the cable line card (slot 6).

Table 20: show diag Field Descriptions for Cable Line Card

Field	Description
MC11 port adapter	Line card type.
Port adapter is analyzed	The system has identified the Cisco CMTS port adapter.
Port adapter insertion time	Elapsed time since insertion.
Hardware Revision	Version number of the Cisco CMTS port adapter.
Part Number	In the Cisco CMTS, the part number of the port adapter.
Board Revision	Revision number (signifying a minor revision) of the Cisco CMTS port adapter.
Deviation Number	Revision number (signifying a minor deviation) of the Cisco CMTS port adapter.
Fab Version	Manufacturing fabrication version number.
PCB Serial Number	Serial number of the printed circuit board.
RMA Test History	Counter indicating how many times diagnostics have been performed on this port adapter.
RMA Number	Return material authorization number, which is an administrative number assigned if port adapter needs to be returned for repair.
RMA History	Counter indicating how many times the port adapter has been returned and repaired.
Calibration Data	Input power calibration range.
Calibration values	Upstream port gain calibration constant.
Unknown Field (type)	Unrecognized EEPROM fields.
EEPROM format version	Version number of the EEPROM format.
EEPROM contents (hex)	Dumps of EEPROM programmed data.

Tip In Cisco IOS Release 12.1(12)EC, Release 12.2(8)BC1, and later releases, you can add a timestamp to **show** commands using the **exec prompt timestamp** command in line configuration mode.

The following is a sample output displaying information on the Cisco Ethernet SPA:

```
Router# show diag 1/0

SPA Information:
bay 1/0       SPA-5X1GE-V2         ok
SW Version 1.0
Expected Switchover Action: NO INFORMATION
Product Identifier (PID) : SPA-5X1GE-V2
Version Identifier (VID) : V02
PCB Serial Number        : JAE1224L5DQ
Top Assy. Part Number    : 68-2616-02
Top Assy. Revision       : B0
Hardware Revision        : 1.2
CLEI Code                : CNUIAWYAAA
No Transceiver  in slot 1 subslot 0 port 1 .
No Transceiver  in slot 1 subslot 0 port 2 .
No Transceiver  in slot 1 subslot 0 port 3 .
No Transceiver  in slot 1 subslot 0 port 4 .

ETHERNET SPA Information: // Output displaying the additional Ethernet SPA inforamtion//

slot/bay 1/0:

SPA-5X1GE-V2 card, 5 ports
Card is half slot size
Card is analyzed
Card detected 00:10:29 ago
Card uptime: Not Supported
Card idle time: Not Supported
Voltage status:
Nominal 3300mV, Current 3314mV
Nominal 2500mV, Current 2527mV
Nominal 1500mV, Current 1524mV
Nominal 1200mV, Current 1209mV

EERPOM contents, slot/bay 1/0:

Controller Type          : 1290
Hardware Revision        : 1.2
Boot Timeout             : 400 msecs
PCB Serial Number        : JAE1224L5DQ
PCB Part Number          : 73-10421-02
PCB Revision             : B0
Fab Version              : 01
RMA Test History         : 00
RMA Number               : 0-0-0-0
RMA History              : 00
Deviation Number         : 0

Product Identifier (PID) : SPA-5X1GE-V2
Version Identifier (VID) : V02
Top Assy. Part Number    : 68-2616-02
Top Assy. Revision       : B0
IDPROM Format Revision   : 36
System Clock Frequency   : 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00
CLEI Code                : CNUIAWYAAA
Base MAC Address         : 00 00 00 00 00 00
MAC Address block size   : 0
Manufacturing Test Data  : 00 00 00 00 00 00 00 00
Field Diagnostics Data   : 00 00 00 00 00 00 00 00
Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
```

```
Calibration values :
Power Consumption        : 13100 mWatts (Maximum)
Environment Monitor Data : 03 30 0C E4 46 32 09 C4
46 32 05 DC 46 32 04 B0
46 32 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 FE 02 F9 9B
Processor Label          : 00 00 00 00 00 00 00
Platform features        : 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00
Asset ID                 :
Asset Alias              :

SPA Information:  //Output displaying the Ethernet SPA summary information.//

bay 1/1       SPA-1X10GE-L-V2      ok

SW Version 1.0
Expected Switchover Action: NO INFORMATION
Product Identifier (PID) : SPA-1X10GE-L-V2
Version Identifier (VID) : V02
PCB Serial Number        : JAE1209A3LA
Top Assy. Part Number    : 68-2614-02
Top Assy. Revision       : B0
Hardware Revision        : 1.2
CLEI Code                : IPUIA5VRAA
No Transceiver  in slot 1 subslot 1 port 0 .
ETHERNET SPA Information: //Output displaying the additional Ethernet SPA information//

slot/bay 1/1:

SPA-1XTENGE-XFP-V2 card, 1 ports
Card is half slot size
Card is analyzed
Card detected 00:10:33 ago
Card uptime: Not Supported
Card idle time: Not Supported

Voltage status:
Nominal 3300mV, Current 3307mV
Nominal 2500mV, Current 2524mV
Nominal 1500mV, Current 1518mV
Nominal 1200mV, Current 1212mV
Nominal 1800mV, Current 1807mV
Nominal 1200mV, Current 1223mV
Nominal 1800mV, Current 1797mV
Nominal 5000mV, Current 4990mV
Nominal -5200mV, Current -5233mV

EERPOM contents, slot/bay 1/1:

Controller Type          : 1292
Hardware Revision        : 1.2
Boot Timeout             : 400 msecs
PCB Serial Number        : JAE1209A3LA
PCB Part Number          : 73-10419-02
PCB Revision             : A0
Fab Version              : 02
RMA Test History         : 00
RMA Number               : 0-0-0-0
```

```
RMA History              : 00
Deviation Number         : 0

Product Identifier (PID) : SPA-1X10GE-L-V2
Version Identifier (VID) : V02
Top Assy. Part Number    : 68-2614-02
Top Assy. Revision       : B0
IDPROM Format Revision   : 36
System Clock Frequency   : 00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00

CLEI Code                : IPUIA5VRAA
Base MAC Address         : 00 00 00 00 00 00
MAC Address block size   : 0
Manufacturing Test Data  : 00 00 00 00 00 00 00 00
Field Diagnostics Data   : 00 00 00 00 00 00 00 00
Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
Calibration values :
Power Consumption        : 17400 mWatts (Maximum)
Environment Monitor Data : 03 30 0C E4 46 32 09 C4
46 32 05 DC 46 32 04 B0
46 32 07 08 46 32 04 B0
46 32 07 08 46 32 13 88
46 32 EB B0 46 32 00 00
00 00 00 00 00 00 00 00
00 00 FE 02 F4 3B
Processor Label          : 00 00 00 00 00 00 00
Platform features        : 00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00
Asset ID                 :
Asset Alias              :
```

The following is a sample output displaying the Cisco Wideband SPA information:

```
Router# show diag 1/0

SPA Information:
bay 1/2 SPA-24XDS-SFP ok
SW Version 1.0
Expected Switchover Action: NO INFORMATION
Product Identifier (PID) : SPA-24XDS-SFP
Version Identifier (VID) : V01
PCB Serial Number : CAT11105RXX
Top Assy. Part Number : 68-2562-03
Top Assy. Revision : B0
Hardware Revision : 1.0
CLEI Code : IPUIA1JRAA
The Transceiver in slot 1 subslot 2 port 0 is ENABLED.
The Transceiver in slot 1 subslot 2 port 1 is ENABLED.

Wideband Information: //Output displaying the Wideband SPA information for slot/bay 1/2//

slot/bay 1/2:

24rfchannel-spa-1 card, 1 port + 1 redundant port
Card is half slot size
Card is analyzed
Card detected 00:07:51 ago
Card uptime: Not Supported
Card idle time: Not Supported
Voltage status: 3.3V (+3.286) NOMINAL 2.5V (+2.490) NOMINAL
```

```
1.2V (+1.196) NOMINAL  1.8V (+1.816) FIXED

EEPROM contents, slot/bay 1/2:

Controller Type          : 1198
Hardware Revision        : 1.0
Boot Timeout             : 500 msecs
PCB Serial Number        : CAT11105RXX
PCB Part Number          : 73-9597-03
PCB Revision             : A0
Fab Version              : 03
RMA Test History         : 00
RMA Number               : 0-0-0-0
RMA History              : 00
Deviation Number         : 90114

Product Identifier (PID) : SPA-24XDS-SFP
Version Identifier (VID) : V01
Top Assy. Part Number    : 68-2562-03
Top Assy. Revision       : B0
IDPROM Format Revision   : 36
System Clock Frequency   : 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00
CLEI Code                : IPUIA1JRAA
Base MAC Address         : 00 1A A1 32 79 72
MAC Address block size   : 1
Manufacturing Test Data  : 00 00 00 00 00 00 00 00
Field Diagnostics Data   : 00 00 00 00 00 00 00 00
Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
Calibration values :

Power Consumption        : 14000 mWatts (Maximum)
Environment Monitor Data : 03 30 0C E4 46 32 09 C4
                           46 32 00 00 00 00 04 B0
                           46 32 00 00 00 00 07 08
                           46 32 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 FE 02 FA 6D

Processor Label          : 00 00 00 00 00 00 00
Platform features        : 00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00 00
                           00 00 00 00 00 00 00
Asset ID                 :
Asset Alias              :
```

The following is a sample output from the **show diag** command for a Cisco uBR10-MC5X20H cable line card on a Cisco uBR10012 router using Cisco IOS Release 12.2(33)SCG:

```
Router# show diag 6/0

Slot/Subslot 6/0:
5cable-mc520h-d card, 5 ports
Card is half slot size
Card is analyzed
Card detected 00:01:18 ago
Card uptime 0 days, 0 hours, 1 minutes, 42 seconds
Card idle time N/A
Voltage status: 5V Nominal 3.3V Nominal 2.5V Nominal EEPROM contents,
```

```
slot 6/0:
Controller Type : 1159
Hardware Revision : 5.0
Top Assy. Part Number : 800-25212-05
Board Revision : B0
Product Identifier (PID) : UBR10-MC5X20H-D
CLEI Code : IPUCAHEBAA
Deviation Number : 0
Fab Version : 05
PCB Serial Number : CAT10505HA9
RMA Test History : 00
RMA Number : 0-0-0-0
RMA History : 00
Version Identifier (VID) : V01

LCMON version, slot 6/0
IOS (tm) 7200 Software (UBR10KCLC-LC-M), Experimental Version
12.3(20060207:230254) [xxxxx-after_520h 103]
Compiled Thu 09-Feb-06 11:59 by xxxxx
Reset due to: power-on
Operational Image version, slot 6/0
Cisco IOS Software, 10000 Software (UBR10KCLC-LCK8-M), Version 12.2(32.9.8)SCG,
EXPERIMENTAL IMAGE ENGINEERING C10K_WEEKLY BUILD, synced to V122_32_8_SCG

Compiled Mon 02-Jul-12 17:20 by xxxxx
SW Version 1.0
Code MD5 D41D8CD98F00B204E9800998ECF8427E
FPGA MD5 00000000000000000000000000000000
Expected Switchover Action: NO INFORMATION
```

The table below describes the significant fields shown in the display.

Table 21: show diag Field Descriptions for Cable Line Card

Field	Description
Hardware Revision	Version number of the card.
Top Assy. Part Number	Part number of the port adapter.
Board Revision	Revision number (signifying a minor revision) of the Cisco CMTS port adapter.
CLEI Code	Common language equipment identifier codes that are used by Telcordia licenses to uniquely identify the telecommunication equipment in their network.
Deviation Number	Revision number (signifying a minor deviation) of the Cisco CMTS port adapter.
Fab Version	Manufacturing fabrication version number.
PCB Serial Number	Serial number of the printed circuit board.
RMA Test History	Counter indicating how many times diagnostics have been performed on this port adapter.
RMA Number	Return material authorization number, which is an administrative number assigned if port adapter needs to be returned for repair.

Field	Description
RMA History	Counter indicating how many times the port adapter has been returned and repaired.

Cisco uBR7225VXR and Cisco uBR7246VXR Universal Broadband Routers: Example

The following is a sample output from the **show diag** command for a Cisco uBR-MC88V cable interface line card, on a Cisco uBR7246VXR universal broadband router. The output shows that the diagnostic mode on the line card is enabled.

Router# show diag5

```
Slot 5:

        DOCSIS Modem Card (Universal) 8 Down/8 Up (F-connector) with
            Integrated Up-converter Port adapter, 2 ports
        Port adapter is analyzed
        Port adapter insertion time 3w1d ago
        EEPROM contents at hardware discovery:
        Controller Type          : 1653
        PCB Serial Number        : CSJ12514210
        Hardware Revision        : 6.5
        Top Assy. Part Number    : 800-17733-09
        Top Assy. Revision       : A0
        Product Identifier (PID) : UBR-MC88V
        Version Identifier (VID) : V04
        CLEI Code                : IPUIA5XRAA
        Deviation Number         : 0
        Fab Version              : 06
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Licensing Transaction ID : 8
        EEPROM format version 4

        EEPROM contents (hex):
          0x00: 04 FF 40 06 75 C1 8B 43 53 4A 31 32 35 31 34 32
          0x10: 31 30 41 06 05 C0 46 03 20 00 45 45 09 8D 41 30
          0x20: 20 20 CB 89 55 42 52 2D 4D 43 38 38 55 89 56 30
          0x30: 34 20 C6 8A 49 50 55 49 41 35 58 52 41 41 88 00
          0x40: 00 00 00 02 06 03 00 81 00 00 00 00 04 00 8B 00
          0x50: 00 00 08 D9 03 40 C1 CB FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x80: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0x90: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xA0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xB0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xC0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xD0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xE0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
          0xF0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

        License                  : 8X8
        Calibration Data
```

```
                Number of US points: 8
                Number of freqs    : 3
                                 measured gain
                US  freq(kHz)    0db       1db       2db       4db       8db
 16db
                 0   5000       34.8876   33.8322   32.7126   30.6040   26.4336
18.4096
                 1   5000       34.8876   33.9016   32.7126   30.6342   26.6766
18.4096
                 2   5000       35.3706   34.3750   33.3282   31.3718   27.2786
19.0466
                 3   5000       35.3706   34.3750   33.3282   31.3626   27.1574
19.0466
                 4   5000       35.7702   34.8876   33.8322   31.3902   27.3962
19.3112
                 5   5000       35.3706   34.3750   33.3282   31.3532   26.9278
18.7344
                 6   5000       35.8262   34.8876   33.8322   31.3992   27.5134
19.3112
                 7   5000       34.8876   33.8322   32.7126   30.6242   26.5632
18.4096

                                 measured gain
                US  freq(kHz)    0db       1db       2db       4db       8db
 16db
                 0  30000       32.1330   31.3626   30.5834   28.2632   24.0922
15.8262
                 1  30000       32.7126   31.3992   30.6142   28.5760   24.4296
16.2078
                 2  30000       33.3282   32.0502   31.3532   29.1476   24.9126
16.6738
                 3  30000       33.3282   32.0502   31.3436   29.0630   24.8932
16.6240
                 4  30000       33.3282   32.0502   31.3532   29.2424   25.0476
17.0212
                 5  30000       32.7126   32.0502   30.6440   28.8658   24.5942
16.6240
                 6  30000       33.3282   32.7126   31.3718   29.4198   25.2018
17.0212
                 7  30000       32.7126   31.3810   30.6040   28.4732   24.2630
16.2078

                                 measured gain
                US  freq(kHz)    0db       1db       2db       4db       8db
 16db
                 0  65000       29.8170   29.0630   28.0608   26.0302   21.8206
13.8322
                 1  65000       30.6142   29.6032   28.5760   26.5632   22.2546
13.9016
                 2  65000       31.3532   29.8276   29.1596   27.1574   22.8458
14.8876
                 3  65000       31.3340   29.8062   28.9646   26.9278   22.6460
14.3750
                 4  65000       31.3532   29.8170   29.1476   27.0630   22.8458
14.8876
                 5  65000       30.6342   29.7842   28.7668   26.6926   22.4660
14.3750
                 6  65000       31.3718   30.5938   29.4198   27.2936   23.0430
14.8876
                 7  65000       30.6142   29.5240   28.5632   26.4336   22.2546
13.9016
```

The table below describes significant fields shown in the display.

Table 22: show diag Field Descriptions for Cisco uBR7225VXR and Cisco uBR7246VXR Series Routers

Field	Description
Controller Type	Line card type.
PCB Serial Number	Serial number of the printed circuit board.
Hardware Revision	Version number of the port adapter.
Top Assy. Part Number	Part number of the port adapter.
Top Assy. Revision	Revision number (signifying a minor revision) of the port adapter.
Product Identifier (PID)	Cisco product ID.
Version Identifier (VID)	Used to track the version of the customer orderable PID.
CLEI Code	Common language equipment identifier codes that are used by Telcordia licenses to uniquely identify the telecommunication equipment in their network.
Deviation Number	Revision number (signifying a minor deviation) of the port adapter.
Fab Version	Version number (signifying a major version) of the port adapter.
RMA Test History	Counter indicating the number of times the port adapter has been returned and repaired.
RMA Number	Return material authorization number. An administrative number assigned when the port adapter is returned for repair.
RMA History	Counter indicating the number of times the port adapter has been returned and repaired.
Licensing Transaction ID	License transaction identifier.
EEPROM contents (hex)	Dumps of EEPROM programmed data.
License	License type.
Calibration Data	Calibration data of upstream VGA chips.
Number of US points	Number of physical upstream channels supported by the port adapter.
Number of freqs	Number of upstream frequencies used in the upstream calibration process (5, 30, and 65 MHz).

Cisco ASR 1000 Series Aggregation Services Routers: Example

The following is a sample output from the **show diag** command for a Cisco ASR 1000 Series Router.

```
Router# show diag all eeprom

MIDPLANE EEPROM data:
```

```
        Product Identifier (PID) : ASR1006
        Version Identifier (VID) : V01
        PCB Serial Number        : NWG122200GZ
        Top Assy. Part Number    : 68-2584-05
        Hardware Revision        : 1.0
        Asset ID                 :
        CLEI Code                : COMUD00ARA

Power/Fan Module P0 EEPROM data:
        Product Identifier (PID) : ASR1006-PWR-AC
        Version Identifier (VID) : V01
        PCB Serial Number        : ART1226Q00L
        Hardware Revision        : 3.0
        Asset ID                 :
        CLEI Code                : COUPACBBAA

Power/Fan Module P1 EEPROM data:
        Product Identifier (PID) : ASR1006-PWR-AC
        Version Identifier (VID) : V01
        PCB Serial Number        : ART1226Q00Q
        Hardware Revision        : 3.0
        Asset ID                 :
        CLEI Code                : COUPACBBAA

Slot R0 EEPROM data:
        Product Identifier (PID) : ASR1000-RP1
        Version Identifier (VID) : V03
        PCB Serial Number        : JAE12056VBZ
        Top Assy. Part Number    : 68-2625-08
        Hardware Revision        : 1.0
        CLEI Code                : COUCAENCAC

Slot R1 EEPROM data:
        Product Identifier (PID) : ASR1000-RP1
        Version Identifier (VID) : V03
        PCB Serial Number        : JAE1225MQIY
        Top Assy. Part Number    : 68-2625-08
        Hardware Revision        : 1.0
        CLEI Code                : COUCAENCAC

Slot F0 EEPROM data:
        Product Identifier (PID) : ASR1000-ESP10
        Version Identifier (VID) : V03
        PCB Serial Number        : JAE1228OBVV
        Top Assy. Part Number    : 68-2633-10
        Hardware Revision        : 1.1
        CLEI Code                : COUCAERCAC

Slot F1 EEPROM data:
        Product Identifier (PID) : ASR1000-ESP10
        Version Identifier (VID) : V03
        PCB Serial Number        : JAE1227NNN1
        Top Assy. Part Number    : 68-2633-10
        Hardware Revision        : 1.1
        CLEI Code                : COUCAERCAC

Slot 0 EEPROM data:
        Product Identifier (PID) : ASR1000-SIP10
        Version Identifier (VID) : V03
        PCB Serial Number        : JAE1224L050
        Top Assy. Part Number    : 68-2629-07
        Hardware Revision        : 1.0
        CLEI Code                : COUCAEPCAC
```

```
Slot 1 EEPROM data is not initialized
Slot 2 EEPROM data is not initialized

SPA EEPROM data for subslot 0/0:
        Product Identifier (PID) : SPA-2X1GE-V2
        Version Identifier (VID) : V01
        PCB Serial Number        : JAE1227NK77
        Top Assy. Part Number    : 68-2707-02
        Top Assy. Revision       : B0
        Hardware Revision        : 1.0
        CLEI Code                : CNUIANBAAA

SPA EEPROM data for subslot 0/1:
        Product Identifier (PID) : SPA-2XOC3-POS
        Version Identifier (VID) : V01
        PCB Serial Number        : JAE1225M5AO
        Top Assy. Part Number    : 68-2168-01
        Top Assy. Revision       : J0
        Hardware Revision        : 1.0
        CLEI Code                : IPUIAFMRAA

SPA EEPROM data for subslot 0/2 is not available
SPA EEPROM data for subslot 0/3 is not available
SPA EEPROM data for subslot 1/0 is not available
SPA EEPROM data for subslot 1/1 is not available
SPA EEPROM data for subslot 1/2 is not available
SPA EEPROM data for subslot 1/3 is not available
SPA EEPROM data for subslot 2/0 is not available
SPA EEPROM data for subslot 2/1 is not available
SPA EEPROM data for subslot 2/2 is not available
SPA EEPROM data for subslot 2/3 is not available
```

The table below describes significant fields shown in the display.

Table 23: show diag Field Descriptions for Cisco ASR 1000 Series Routers

Field	Description
Asset ID	Power or fan module identifier.
CLEI Code	Common language equipment identifier codes that are used by licensees to uniquely identify the telecommunication equipment in their network.
Hardware Revision	Version number of the port adapter.
PCB Serial Number	Serial number of the printed circuit board.
Product Identifier (PID)	Cisco product ID.
Top Assy. Part Number	Part number of the port adapter.
Top Assy. Revision	Revision number (signifying a minor revision) of the port adapter.
Version Identifier (VID)	Used to track the version of the customer orderable PID.

Cisco 4400 Series Integrated Services Router: Example

The following is a sample output from**show diag all eeprom detail** for Cisco 4400 Series Integrated Services Router.

```
Router# show diag all eeprom detail

MIDPLANE EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
        PCB Serial Number        : FOC15520B7L
        Controller Type          : 1902
        Hardware Revision        : 1.0
        PCB Part Number          : 73-13854-02
        Top Assy. Part Number    : 800-36894-01
        Board Revision           : 05
        Deviation Number         : 123968
        Fab Version              : 02
        Product Identifier (PID) : ISR4451/K9
        Version Identifier (VID) : V01
        CLEI Code                : TDBTDBTDBT
        Processor type           : D0
        Chassis Serial Number    : FGL1601129D
        Chassis MAC Address      : 30f7.0d53.c7e0
        MAC Address block size   : 144
        Manufacturing Test Data  : 00 00 00 00 00 00 00 00
        Asset ID                 : P1B-R2C
Power/Fan Module P0 EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
        Controller Type          : 1509
        Unknown Field (type 00DF): 1.85.1.236.1
        Deviation Number         : 0
        PCB Serial Number        : DCA1547X037
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Version Identifier (VID) : XXX
        Product Identifier (PID) : XXX-XXXX-XX
        CLEI Code                : 0000000000
        Environment Monitor Data : 41 01 C2 42 00 05 F8 00
                                   50 01 F4 1B 58 03 E8 1F
                                   4A 05 DC 21 34 07 D0 21
                                   FC 09 C4 22 60 0B B8 22
                                   92 0D AC 22 D8 0F A0 22
                                   F8 11 94 22 F6 13 88 23
                                   3C 15 7C 23 28 17 70 23
                                   00 19 64 22 D8 1B 58 22
                                   C4 1D 4C 22 BA 1F 40 22
                                   A6 21 34 22 9C 23 28 22
                                   92 25 1C 22 88 27 10 22
                                   60
        Board Revision           : P0
Power/Fan Module P1 EEPROM data is not initialized

Power/Fan Module P2 EEPROM data is not initialized

Slot R0 EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
```

```
        PCB Serial Number        : FOC15520B7L
        Controller Type          : 1902
        Hardware Revision        : 1.0
        PCB Part Number          : 73-13854-02
        Top Assy. Part Number    : 800-36894-01
        Board Revision           : 05
        Deviation Number         : 123968
        Fab Version              : 02
        Product Identifier (PID) : ISR4451/K9
        Version Identifier (VID) : V01
        CLEI Code                : TDBTDBTDBT
        Processor type           : D0
        Chassis Serial Number    : FGL1601129D
        Chassis MAC Address      : 30f7.0d53.c7e0
        MAC Address block size   : 144
        Manufacturing Test Data  : 00 00 00 00 00 00 00 00
        Asset ID                 : P1B-R2C
        Asset ID                 :
Slot F0 EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
        Controller Type          : 3567
        Hardware Revision        : 4.1
        PCB Part Number          : 73-12387-01
        MAC Address block size   : 15
        Chassis MAC Address      : aabb.ccdd.eeff
        Product Identifier (PID) : ISR4451-FP
        Version Identifier (VID) : V00
        PCB Serial Number        : FP123456789
        Asset ID                 :
Slot 0 EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
        Controller Type          : 1612
        Hardware Revision        : 4.1
        PCB Part Number          : 73-12387-01
        MAC Address block size   : 15
        Chassis MAC Address      : aabb.ccdd.eeff
        Product Identifier (PID) : ISR4451-NGSM
        Version Identifier (VID) : V00
        PCB Serial Number        : NGSM1234567
        Asset ID                 :
Slot 1 EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
        Controller Type          : 1612
        Hardware Revision        : 4.1
        PCB Part Number          : 73-12387-01
        MAC Address block size   : 15
        Chassis MAC Address      : aabb.ccdd.eeff
        Product Identifier (PID) : ISR4451-NGSM
        Version Identifier (VID) : V00
        PCB Serial Number        : NGSM1234567
        Asset ID                 :
Slot 2 EEPROM data:

        EEPROM version           : 4
        Compatible Type          : 0xFF
        Controller Type          : 1612
        Hardware Revision        : 4.1
        PCB Part Number          : 73-12387-01
```

```
        MAC Address block size   : 15
        Chassis MAC Address      : aabb.ccdd.eeff
        Product Identifier (PID) : ISR4451-NGSM
        Version Identifier (VID) : V00
        PCB Serial Number        : NGSM1234567
        Asset ID                 :
SPA EEPROM data for subslot 0/0:

        EEPROM version           : 5
        Compatible Type          : 0xFF
        Controller Type          : 1902
        Hardware Revision        : 2.2
        Boot Timeout             : 400 msecs
        PCB Serial Number        : JAB092709EL
        PCB Part Number          : 73-8700-01
        PCB Revision             : A0
        Fab Version              : 01
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        Deviation Number         : 78409
        Product Identifier (PID) : ISR4451-4X1GE
        Version Identifier (VID) : V01
        Top Assy. Part Number    : 68-2236-01
        Top Assy. Revision       : A0
        IDPROM Format Revision   : 36
        System Clock Frequency   : 00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00
        CLEI Code                : CNUIAHSAAA
        Base MAC Address         : 00 00 00 00 00 00
        MAC Address block size   : 0
        Manufacturing Test Data  : 00 00 00 00 00 00 00 00
        Field Diagnostics Data   : 00 00 00 00 00 00 00 00
        Calibration Data         : Minimum: 0 dBmV, Maximum: 0 dBmV
              Calibration values :
        Power Consumption        : 13100 mWatts (Maximum)
        Environment Monitor Data : 03 30 0C E4 46 32 09 C4
                                   46 32 05 DC 46 32 05 DC
                                   46 32 00 00 00 00 00 00
                                   00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00 00 00
                                   00 00 FE 02 F9 6E
        Processor Label          : 00 00 00 00 00 00 00
        Platform features        : 00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00 00 00
                                   00 00 00 00 00 00 00
        Asset ID                 :
        Asset Alias              :
SPA EEPROM data for subslot 0/1 is not available

SPA EEPROM data for subslot 0/2 is not available

SPA EEPROM data for subslot 0/3 is not available

SPA EEPROM data for subslot 0/4 is not available

SPA EEPROM data for subslot 1/0 is not available

SPA EEPROM data for subslot 1/1 is not available

SPA EEPROM data for subslot 1/2 is not available
```

```
SPA EEPROM data for subslot 1/3 is not available

SPA EEPROM data for subslot 1/4 is not available

SPA EEPROM data for subslot 2/0 is not available

SPA EEPROM data for subslot 2/1 is not available

SPA EEPROM data for subslot 2/2 is not available

SPA EEPROM data for subslot 2/3 is not available

SPA EEPROM data for subslot 2/4 is not available
```

Related Commands

Command	Description
dsl operating-mode (ADSL)	Modifies the operating mode of the digital subscriber line for an ATM interface.
show c7300	Displays the types of hardware (processors, line cards, jacket cards, and so on) installed in the Cisco 7304 router slots, including the bundled Flash, and current FPGA versions.
show c7300 errorlog	Displays error information on a Cisco 7304 router.
show dsl interface atm	Shows all ADSL-specific information for a specified ATM interface.
showcontrollers fastethernet	Displays Fast Ethernet interface information, transmission statistics and errors, and applicable MAC destination address and VLAN filtering tables.
show controllers gigabitethernet	Displays Gigabit Ethernet interface information, transmission statistics and errors, and applicable MAC destination address and VLAN filtering tables.
show controllers integrated-service-engine	Displays controller information for integrated-service-engine network modules.
showinterfaces integrated-service-engine	Displays basic interface configuration information for integrated-service-engine network modules.

show diagnostic bootup level

To display the coverage level for the configured bootup diagnostics, use the **showdiagnosticbootuplevel**command in user EXEC or privileged EXEC mode.

show diagnostic bootup level

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command displays the bootup diagnostic level configured on the switch. The bootup diagnostic level determines which diagnostic tests will be performed when the device boots. The following bootup diagnostic levels can be displayed in the output of this command:

Level	Explanation
Bypass	The device performs no bootup diagnostic tests.
Complete	The device performs all diagnostic tests marked with attribute M (Minimal) or C (Complete) in the output of the **showdiagnosticcontentmodule** command.
Minimal	The device performs all diagnostic tests marked with attribute M (Minimal) in the output of the **showdiagnosticcontentmodule** command.

Examples

This example shows how to display the configured bootup diagnostic level:

```
Router# show diagnostic bootup level
Current Bootup Diagnostic Level = Complete
```

Related Commands

Command	Description
diagnostic bootup level	Sets the bootup diagnostic level.
show diagnostic content module	Displays the available diagnostic tests.

show diagnostic content module

To display information about available tests, including test ID, test attributes, and supported coverage test levels for each test and for all modules, use the **showdiagnosticcontentmodule**command in user EXEC or privileged EXEC mode.

show diagnostic content module {**all***listslot* | *slot*/*subslot*}

Syntax Description

all	Displays information about available tests for all modules.
list	List of modules in the following format: • Entries are separated by a comma, for example, 1,4,6-10. • Ranges are specified with a hyphen, for example, 1-4,6-10.
slot	Single module by slot number.
slot / *subslot*	Single submodule by slot number and subslot or bay within the module.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXI4	This command was integrated into Cisco IOS Release 12.2(33)SXI4. A health-monitoring (HM) test, TestAclFpgaMonitor, was introduced for ABA cards.

Usage Guidelines

For each available diagnostic test, a set of attributes is displayed as a series of characters in the Attributes field of the command output. An asterisk (*) in the character location indicates that the attribute is not applicable to the test. The following set of attributes is displayed:

Character	Attribute	Description
1	M	The test runs when the bootup diagnostic level is set to either Minimal or Complete.
	C	The test runs when the bootup diagnostic level is set to Complete.
2	B	The test runs when the **diagnosticstart***platform***testbasic** command is entered.
3	P	The test runs on a port, not the entire device (per-port test).
	V	The test runs on the entire device (per-device test).

Character	Attribute	Description
4	D	The test disrupts the network traffic (disruptive test).
	N	The test can be run when the system is online without disrupting the network traffic (nondisruptive test).
5	S	If the card under test is a standby card, only the standby card runs the test. The test does not run from the active card. If the card under test is an active card, the active card runs the test on itself.
6	X	The test is not an HM test.
7	F	The monitoring interval of the test cannot be modified by the user (fixed monitoring test).
8	E	The user cannot disable the test (always enabled test).
9	A	Monitoring is active for this test.
	I	Monitoring is inactive for this test.
10	R	The test cycles power to the line cards and reloads the supervisor engine.
11	K	The test resets the line card after completion.
12	T	The test shuts down all ports and reloads the supervisor engine.

If a test is configured to run periodically, the interval will be displayed in the Test Interval field of the command output in the format ddd hh:mm:ss.ms, indicating days, hours, minutes, seconds, and milliseconds. For example, the test interval of a test that will run every 15 minutes will be displayed as 000 00:15:00.00. The test interval of a test that will run every 14 days will be displayed as 014 00:00:00.00.

If a test failure is determined by multiple errors rather than a single error, the error threshold will be displayed in the Threshold field of the command output.

You can use the **showdiagnosticdescriptionmodule**command to see a detailed description of a diagnostic test.

Examples

The following example shows how to display the test suite, the monitoring interval, and test attributes for module 5:

```
Router# show diagnostic content module 5
Module 5: Supervisor Engine 2T 10GE w/ CTS (Active)
Diagnostics test suite attributes:
    M/C/* - Minimal bootup level test / Complete bootup level test / NA
      B/* - Basic ondemand test / NA
    P/V/* - Per port test / Per device test / NA
    D/N/* - Disruptive test / Non-disruptive test / NA
      S/* - Only applicable to standby unit / NA
      X/* - Not a health monitoring test / NA
      F/* - Fixed monitoring interval test / NA
      E/* - Always enabled monitoring test / NA
      A/I - Monitoring is active / Monitoring is inactive
      R/* - Power-down line cards and need reload supervisor / NA
      K/* - Require resetting the line card after the test has completed / NA
```

```
     T/* - Shut down all ports and need reload supervisor / NA
                                                          Test Interval   Thre-
ID   Test Name                                Attributes     day hh:mm:ss.ms shold
==== ================================== ============    =============== =====
1) TestScratchRegister -------------> ***N****A***    000 00:00:30.00 5
   2) TestSPRPInbandPing --------------> ***N****A***    000 00:00:15.00 10
   3) TestTransceiverIntegrity --------> **PD****I***    not configured  n/a
   4) TestActiveToStandbyLoopback -----> M*PDSX**I***    not configured  n/a
   5) TestLoopback --------------------> M*PD*X**I***    not configured  n/a
   6) TestTxPathMonitoring ------------> M**N****A***    000 00:00:02.00 10
   7) TestNewIndexLearn ---------------> M**N****I***    000 00:00:15.00 10
   8) TestDontConditionalLearn --------> M**N****I***    000 00:00:15.00 10
   9) TestBadBpduTrap -----------------> M**D*X**I***    not configured  n/a
  10) TestMatchCapture ----------------> M**D*X**I***    not configured  n/a
  11) TestProtocolMatchChannel --------> M**D*X**I***    not configured  n/a
  12) TestFibDevices ------------------> M**N****I***    000 00:00:15.00 10
  13) TestIPv4FibShortcut -------------> M**N****I***    000 00:00:15.00 10
  14) TestL3Capture2 ------------------> M**D*X**I***    not configured  n/a
  15) TestIPv6FibShortcut -------------> M**N****I***    000 00:00:15.00 10
  16) TestMPLSFibShortcut -------------> M**N****I***    000 00:00:15.00 10
  17) TestNATFibShortcut --------------> M**N****I***    000 00:00:15.00 10
  18) TestAclPermit -------------------> M**D*X**I***    not configured  n/a
  19) TestAclDeny ---------------------> M**D*X**I***    not configured  n/a
  20) TestQoSTcam ---------------------> M**D*X**I***    not configured  n/a
  21) TestL3VlanMet -------------------> M**D*X**I***    not configured  n/a
  22) TestIngressSpan -----------------> M**D*X**I***    not configured  n/a
  23) TestEgressSpan ------------------> M**D*X**I***    not configured  n/a
  24) TestNetflowInlineRewrite --------> C*PD*X**I***    not configured  n/a
  25) TestTrafficStress ---------------> ***D*X**I**T    not configured  n/a
  26) TestFibTcamSSRAM ----------------> ***D*X**IR**    not configured  n/a
  27) TestAsicMemory ------------------> ***D*X**IR**    not configured  n/a
  28) TestAclQosTcam ------------------> ***D*X**IR**    not configured  n/a
  29) TestNetflowTcam -----------------> ***D*X**IR**    not configured  n/a
  30) ScheduleSwitchover --------------> ***D*X**I***    not configured  n/a
  31) TestFirmwareDiagStatus ----------> M**N****I***    000 00:00:15.00 10
  32) TestAsicSync --------------------> ***N****A***    000 00:00:15.00 10
  33) TestUnusedPortLoopback ----------> **PN****A***    000 00:01:00.00 10
  34) TestErrorCounterMonitor ---------> ***N****A***    000 00:00:30.00 10
  35) TestPortTxMonitoring ------------> **PN****A***    000 00:01:15.00 5
  36) TestL3HealthMonitoring ----------> ***N**FEA***    000 00:00:05.00 10
  37) TestCFRW ------------------------> M*VN*X**I***    not configured  n/a
  38) TestRwEngineOverSubscription ----> ***N****I***    000 00:00:01.00 10
  39) TestAclFpgaMonitor --------------> ***N****A***    000 00:00:00.80 1
40) TestNVRAMBatteryMonitor ---------> ***N**F*A***    000 01:00:00.00 72
```

Note The HM test, TestAclFpgaMonitor, is applicable only for Aphrodite, Berytos, and Anteros (ABA) cards. This test is run to monitor the access control list (ACL) ternary content addressable memory (TCAM) reply status.

Note The HM test TestNVRAMBatteryMonitor monitors the NVRAM battery status and is applicable only to the Supervisor Engine 2T.

The table below describes the significant fields shown in the display.

Table 24: show diagnostic content module Field Descriptions

Field	Description
ID	Unique identifier of the diagnostic test.
Test Name	Name of the diagnostic test.
Attributes	Health state of the diagnostic.
Test Interval	Periodic interval at which the test is run.
Threshold	Maximum number of consecutive test failures required by the diagnostic test to take recovery action.

Related Commands

Command	Description
diagnostic bootup level	Sets the bootup diagnostic level.
diagnostic monitor	Configures the HM diagnostic testing.
diagnostic ondemand	Configures the on-demand diagnostics.
diagnostic schedule test	Sets the scheduling of test-based diagnostic testing for a specific module or schedules a supervisor engine switchover.
show diagnostic description module	Describes the diagnostic tests.

show diagnostic cns

To display the information about the CNS subject, use the **show diagnostic cns** command in user EXEC or privileged EXEC mode.

show diagnostic cns {**publish** | **subscribe**}

Syntax Description

publish	Displays the subject with which the diagnostic results is published.
subscribe	Displays the subscribed subjects.

Command Default

This command has no default settings.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command is not supported on Cisco 7600 series routers that are configured with a Supervisor Engine 2.

The CNS subsystem communicates with remote network applications through the CNS-event agent and follows the publish and subscribe model. An application sets itself up to receive events by subscribing to the approprate event subject name.

Examples

This example shows how to display the subject with which the diagnostic results is published:

```
Router# show diagnostic cns publish

Subject: cisco.cns.device.diag_results
```

This example shows how to display the subscribed subject:

```
Router# show diagnostic cns subscribe

Subject: cisco.cns.device.diag_get_results
```

Related Commands

Command	Description
diagnostic cns	Configures the CNS diagnostics.

show diagnostic description module

To display a detailed description of a diagnostic test available on a module, use the **showdiagnosticdescriptionmodule**command in user EXEC or privileged EXEC mode.

show diagnostic description module {**slot** | **slot**/**subslot**} **test** {**all** | **test-id** | **test-name**}

Syntax Description

slot	Specifies a module by slot number.
slot/subslot	Specifies a submodule by slot number and subslot or bay within the module.
all	Displays descriptions of all available tests.
test-id	Test identification number. See the Usage Guidelines for a list of tests.
test-name	Test name. See the Usage Guidelines for a list of tests.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

You can display detailed descriptions of diagnostic tests by specifying the test ID, the test name, or the **all**keyword in this command. The test ID and test name for available diagnostic tests are displayed in the output of the **showdiagnosticcontentmodule**command.

Examples

This example shows how to display the description of TestIPv6FibShortcut on module 1:

```
Router# show diagnostic description module 1 test TestIPv6FibShortcut
TestIPv6FibShortcut :
        This test verifies the IPv6 FIB forwarding of the layer 3 forwarding
        engine. One diagnostic IPv6 FIB and an adjacency entry are installed
        and a diagnostic IPv6 packet is sent to make sure it is forwarded
        accordingly based on rewritten MAC and VLAN information.
```

This example shows how to display the description of test number 15 on module 1:

```
Router# show diagnostic description module 1 test 15
TestIPv6FibShortcut :
        This test verifies the IPv6 FIB forwarding of the layer 3 forwarding
        engine. One diagnostic IPv6 FIB and an adjacency entry are installed
        and a diagnostic IPv6 packet is sent to make sure it is forwarded
        accordingly based on rewritten MAC and VLAN information.
```

Related Commands

Command	Description
show diagnostic content module	Displays the available diagnostic tests.

show diagnostic events

To display the diagnostic event log, use the **showdiagnosticevents**command in user EXEC or privileged EXEC mode.

show diagnostic events [**event-type** *event-type* | **module** {**all***slotslot/subslot*}]

Cisco ASR 1000 Series Aggregation Services Routers
show diagnostic events [**event-type** *event-type* | **slot** {*number* | **all**}]

Syntax Description

event-type *event-type*	(Optional) Displays events of a specified type, where *event-type* values are **error**, **info**, and **warning**.
module	(Optional) Displays the event log for a module, where: • **all** --Displays the event log for all modules. • *slot* --Chassis slot location of the module. • *slot* / *subslot* --Subslot or bay location of the submodule.
slot {*number* | **all**}	(Optional--Cisco ASR 1000 Series Routers) Displays the event log for the specified hardware slots, where: • *number* --Chassis slot location of the hardware, such as **R0** for route processor 0. • **all** --Displays the event log for hardware in all supported slots.

Command Default

When no optional keywords are specified, the **showdiagnosticevents** command displays all events for all hardware module or slot locations.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.6	This command was integrated into Cisco IOS XE Release 2.6.

Usage Guidelines

If you do not enter a **module** keyword and argument for the **showdiagnosticevents** command, the event log for all modules is displayed.

On the Cisco ASR 1000 Series Aggregation Services Routers, if no optional keywords are entered, the event log for all supported slots is displayed.

The following fields are displayed in the command output:

Field	Description
Time Stamp	Date and time of the diagnostic event, in the format MM:DD hh:mm:ss.mss.
ET	Type of event (I=Info, W=Warning, E=Error).
Card	Module associated with the event.
Event Message	Event description.

Examples

The following example shows how to display the diagnostic event log for events of type Info:

```
Router# show diagnostic events event-type info
Diagnostic events (storage for 500 events, 14 events recorded)
Number of events matching above criteria = 10
Event Type (ET):I - Info, W - Warning, E - Error
Time Stamp         ET [Card] Event Message
------------------ --  ------------------------------------------------------
08/26 15:51:04.335 I  [1] TestIndexLearn Passed
08/26 15:51:04.335 I  [1] Diagnostics Passed
08/26 15:51:15.511 I  [8] TestLoopback Passed
08/26 15:51:15.511 I  [8] Diagnostics Passed
08/26 16:15:02.247 I  [1] TestDontLearn Passed
08/26 16:15:02.247 I  [1] Diagnostics Passed
08/26 16:15:12.683 I  [8] TestNetflowInlineRewrite Passed
08/26 16:15:12.683 I  [8] Diagnostics Passed
08/26 16:15:42.207 I  [2] TestActiveToStandbyLoopback Passed
08/26 16:15:42.207 I  [2] Diagnostics Passed
```

The following example shows the results of all events for the predefined TestErrorCounterMonitor test on route processor 0 on a Cisco ASR 1000 Aggregation Services Router:

```
Router# show diagnostic events slot R0

Diagnostic events (storage for 10 events, 10 events recorded)
Number of events matching above criteria = 10
Event Type (ET): I - Info, W - Warning, E - Error
Time Stamp         ET [Card] Event Message
------------------ -- ------ ----------------------------------------------------
10/13 04:29:00.384 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:05.501 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:10.607 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:15.730 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:20.835 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:25.939 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:31.044 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:36.149 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:41.252 E  [R0]    TestErrorCounterMonitor Failed
10/13 04:29:46.356 E  [R0]    TestErrorCounterMonitor Failed
```

Related Commands

Command	Description
diagnostic event-log size	Modifies the diagnostic event log size dynamically.
diagnostic monitor	Configures the health-monitoring diagnostic testing.

Command	Description
diagnostic ondemand	Configures the on-demand diagnostics.
diagnostic schedule test	Sets the scheduling of test-based diagnostic testing for a specific module or schedule a supervisor engine switchover.
diagnostic start	Runs the specified diagnostic test.
diagnostic stop	Stops the testing process.

show diagnostic result slot

To display diagnostic test results for supported hardware slot locations, use the **showdiagnosticresultslot** command in privileged EXEC configuration mode.

show diagnostic result slot [*number* [**detail** | **failure** [**detail**] | **test** *testid* [**detail**] | **xml**] | **all** [**detail** | **failure** [**detail**]]]

Syntax Description

number	(Optional) Slot location of the hardware for which you want diagnostic test results, such as **R0** for route processor slot 0.
detail	(Optional) Displays additional detailed information for the specified diagnostic test.
failure	(Optional) Displays only failed diagnostic test results.
test *test-id*	(Optional) Displays diagnostic test results for one or more specific tests, where *test-id* is one of the following: • Name of a diagnostic test. • Number of a diagnostic test. • Range of diagnostic test numbers (startrange-endrange). • List of diagnostic test numbers or range of numbers, separated by commas. • **all** --Keyword specifying all diagnostic tests.
xml	(Optional) Displays diagnostic text results in Extensible Markup Language (XML) format.
all	(Optional) Displays diagnostic test results for all supported hardware locations.

Command Default

If you do not specify any options, the command displays diagnostic test results for all supported hardware slot locations.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 2.6	This command was introduced.

Usage Guidelines

If a test does not exist for the hardware, "*Diagnostic is not available* " is shown.

In the command output, the possible testing results are as follows:

- Passed (.)
- Failed (F)
- Unknown (U)

Examples

The following example shows a passed diagnostic test (indicated by a ".") called TestErrorCounterMonitor on route processor slot 0, and no supported diagnostic tests on slot F0 and slot 0:

```
Router# show diagnostic result slot all
Current bootup diagnostic level: minimal
slot R0: ASR1000-RP1           SerialNo : JAE1218GSMR
  Overall Diagnostic Result for slot R0 : PASS
  Diagnostic level at card bootup: minimal
  Test results: (. = Pass, F = Fail, U = Untested)
    1) TestErrorCounterMonitor ---------> .
Diagnostic[slot F0]: Diagnostic is not available.
Diagnostic[slot 0]: Diagnostic is not available.
```

The following example shows detailed information about the diagnostic test on the hardware in slot R0:

```
Router# show diagnostic result slot R0 detail

Current bootup diagnostic level: minimal
slot R0: ASR1000-RP1           SerialNo : JAE1224L2QP
  Overall Diagnostic Result for slot R0 : PASS
  Diagnostic level at card bootup: minimal
  Test results: (. = Pass, F = Fail, U = Untested)
  _____________________________________________________________________________
    1) TestErrorCounterMonitor ---------> .
          Error code ------------------> 0 (DIAG_SUCCESS)
          Total run count -------------> 871
          Last test testing type ------> Health Monitoring
          Last test execution time ----> Oct 13 2009 03:15:47
          First test failure time -----> Oct 13 2009 02:02:32
          Last test failure time ------> Oct 13 2009 03:10:09
          Last test pass time ---------> Oct 13 2009 03:15:47
          Total failure count ---------> 10
          Consecutive failure count ---> 0
  _____________________________________________________________________________
```

show diagnostic simulation failure

To display a list of simulated test failures installed by the user for a module, use the **showdiagnosticsimulationfailure** command in user EXEC or privileged EXEC mode.

show diagnostic simulation failure [**all** | **module** {**all***list slot* | *slot*/*subslot*}]

Syntax Description

all	(Optional) Displays the diagnostic simulation failure for all modules.
module	(Optional) Specifies the module number.
list	A list of modules in the following format: • Entries are separated by a comma, for example, 1,4,6-10. • Ranges are specified with a hyphen, for example, 1-4,6-10.
slot	Specifies a single module by slot number.
slot / *subslot*	Specifies a single submodule by slot number and subslot or bay within the module.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

If you do not enter a **module** keyword and argument for this command, information for all modules is displayed.

A diagnostic test configured for failure simulation is identified in the output of this command by its test ID number. You can use the **showdiagnosticdescriptionmodule**command to see the name and detailed description of a diagnostic test.

Examples

The following example shows how to display the simulated test failures installed by the user on module 1:

```
Router# show diagnostic simulation failure module 1
Module 1:
    Test #17: Simulation = Always Fail
```

Related Commands

Command	Description
show diagnostic description module	Describes the diagnostic tests.
test diagnostic simulation	Configures simulated diagnostic test conditions.

show diagnostic health

To display the output for the health checks performed, use the **showdiagnostichealth**command in user EXEC or privileged EXEC mode.

show diagnostic health

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

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

Usage Guidelines

The command output displays the following system health check information:

- CPU and memory utilization
  - Displays warning if the CPU utilization in the last five minutes is greater than 70%
  - Displays total, free, and reserved memory statistics
- EARL recovery patch occurrences, shown as a log
- Nonzero ASIC error registers on all modules using the output listing of TestErrorCounterMonitor
- Nonzero port level error counters for all ports

Examples

This example shows how to display the output for the health checks performed:

```
Router# show diagnostic health
CPU utilization for the past 5 mins is greater than 70%
five minutes: 81%
EARL reset history:
Module 1 : WS-SUP32-GE-3B EARL patch log -
Num. of times patch applied   : 0
Num. of times patch requested : 0
Non-zero port counters for 1/8 -
13.                          linkChange = 338702
Non-zero port counters for 1/9 -
 0.                    rxCRCAlignErrors = 2
 3.                      rxFragmentPkts = 9
 6.                          ifInErrors = 30
13.                          linkChange = 1
Current bootup diagnostic level: minimal
Test results: (. = Pass, F = Fail, U = Untested)
36) TestErrorCounterMonitor ---------> F
Error code ------------------> 1 (DIAG_FAILURE)
Total run count -------------> 29
Last test execution time ----> Mar 16 2008 19:04:02
First test failure time -----> Mar 16 2008 19:03:21
Last test failure time ------> Mar 16 2008 19:04:02
```

```
Last test pass time ---------> Mar 16 2008 19:03:19
Total failure count ---------> 4
Consecutive failure count ---> 4
Error Records as following.
ID -- Asic Identification
IN -- Asic Instance
PO -- Asic Port Number
RE -- Register Identification
RM -- Register Identification More
EG -- Error Group
DV -- Delta Value
CF -- Consecutive Failure
TF -- Total Failure
ID IN PO RE RM DV EG CF TF
------------------------------------------------------------------
26 0 0 338 255 256 2 13 13
26 0 0 344 255 256 2 13 13
26 0 0 358 255 256 2 13 13
System Memory: 524288K total, 353225K used, 171063K free, 1000K kernel reserved
Lowest(b) : 171020288
Process kernel, type POSIX, PID = 1
0K total, 0K text, 0K data, 0K stack, 0K dynamic
Process sbin/chkptd.proc, type POSIX, PID = 16386
2296K total, 1988K text, 120K data, 12K stack, 176K dynamic
65536 heapsize, 55356 allocated, 8084 free
```

Related Commands

Command	Description
diagnostic monitor	Configures the health-monitoring diagnostic testing.

show diagnostic ondemand settings

To display the settings for the on-demand diagnostics, use the **showdiagnosticondemandsettings**command in user EXEC or privileged EXEC mode.

show diagnostic ondemand settings

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The command output shows the number of test iterations to be performed and the action to be taken on a test failure. Possible actions are:

- continue--Continue the ondemand tests until the test failure limit is reached.
- stop--Stop the ondemand tests immediately if a test fails.

Examples

This example shows how to display the settings for the on-demand diagnostics:

```
Router# show diagnostic ondemand settings
Test iterations = 1
Action on test failure = continue
```

Related Commands

Command	Description
diagnostic ondemand	Configures the on-demand diagnostics.

show diagnostic result module

To display the diagnostic test results for a module, use the **showdiagnosticresult**command in user EXEC or privileged EXEC mode.

show diagnostic result module {**all***listslot* | *slot*/*subslot*} [**detail** | **failure** [**detail**] | **test** *test-id* [**detail**] | **xml**]

Syntax Description

all	Displays diagnostic test results for all modules.
list	A list of modules in the following format: • Entries are separated by a comma, for example, 1,4,6-10. • Ranges are specified with a hyphen, for example, 1-4,6-10.
slot	Specifies a single module by slot number.
slot/subslot	Specifies a single submodule by slot number and subslot or bay within the module.
detail	(Optional) Displays the detailed test results.
failure	(Optional) Displays the failed test results.
test *test-id*	(Optional) Displays the test results only for the specified test. See the Usage Guidelines for a list of tests.
xml	(Optional) Displays the test results in XML form.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for theSupervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

In the command output, the possible testing results are as follows:

- Passed (.)
- Failed (F)
- Unknown (U)

To display only the results of failed diagnostic tests, use the **failure**keyword.

To display the results of a specific diagnostic test, specify the *test-id* number using the **test***test-id*keyword and argument. The *test-id* numbers for available diagnostic tests are displayed in the output of the **showdiagnosticcontentmodule**command.

You can use the **showdiagnosticdescriptionmodule**command to see a detailed description of a diagnostic test.

Examples

This example shows how to display a summary of all diagnostic test results for the module in slot 3:

```
Router# show diagnostic result module 3
Current bootup diagnostic level:complete
Module 3:
  Overall Diagnostic Result for Module 8 :PASS
  Diagnostic level at card bootup:complete
  Test results:(. = Pass, F = Fail, U = Untested)
   1) TestLoopback :
      Port  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
      ------------------------------------------------------------------------
            .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
      Port 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
      ------------------------------------------------------------------------
            .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
   2) TestNewLearn --------------------> .
   3) TestIndexLearn ------------------> .
   4) TestDontLearn -------------------> .
   5) TestConditionalLearn ------------> .
   6) TestDontLearn -------------------> .
   7) TestConditionalLearn ------------> .
   8) TestBadBpdu ---------------------> .
   9) TestTrap ------------------------> .
  10) TestMatch -----------------------> .
  11) TestCapture ---------------------> .
  12) TestProtocolMatch ---------------> .
  13) TestChannel ---------------------> .
  14) TestIPFibShortcut ---------------> .
  15) TestDontShortcut ----------------> .
  16) TestL3Capture2 ------------------> .
  17) TestL3VlanMet -------------------> .
  18) TestIngressSpan -----------------> .
  19) TestEgressSpan ------------------> .
  20) TestAclPermit -------------------> .
  21) TestAclDeny ---------------------> .
  22) TestNetflowInlineRewrite:
      Port  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
      ------------------------------------------------------------------------
            .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
      Port 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
      ------------------------------------------------------------------------
            .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
```

This example shows how to display the detailed test results for the module in slot 1:

```
Router# show diagnostic result module 1 detail
Current bootup diagnostic level:complete
Module 1:
  Overall Diagnostic Result for Module 1 :PASS
  Diagnostic level at card bootup:complete
  Test results:(. = Pass, F = Fail, U = Untested)
_____________________________________________________________________________
   1) TestDummy ----------------------> .
```

```
          Error code ------------------> 0 (DIAG_SUCCESS)
          Total run count -------------> 90
          Last test execution time ----> Dec 10 2002 12:34:30
          First test failure time -----> Dec 10 2002 11:57:39
          Last test failure time ------> Dec 10 2002 12:34:10
          Last test pass time ---------> Dec 10 2002 11:34:30
          Total failure count ---------> 65
          Consecutive failure count ---> 0
_____________________________________________________________________________
 2) TestLoopback:
      Port  1  2
      ----------
            .  .
          Error code ------------------> 0 (DIAG_SUCCESS)
          Total run count -------------> 1
          Last test execution time ----> Dec 10 2002 12:37:18
          First test failure time -----> n/a
          Last test failure time ------> n/a
          Last test pass time ---------> Dec 10 2002 12:37:18
          Total failure count ---------> 0
          Consecutive failure count ---> 0
.
.
.
[...continues...]
```

Related Commands

Command	Description
show diagnostic content module	Displays the available diagnostic tests.
show diagnostic description module	Describes the diagnostic tests.

show diagnostic sanity

To display sanity check results, use the **show diagnostic sanity** command in privileged EXEC mode.

show diagnostic sanity

Syntax Description

This command has no arguments or keywords.

Command Default

Displays information for all the Gigabit Ethernet WAN interfaces in the Cisco 7600 series router.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The sanity check runs a set of predetermined checks on the configuration with a possible combination of certain system states to compile a list of warning conditions. The checks are designed to look for anything that seems out of place and are intended to serve as an aid to maintaining the system sanity.

The following is a list of the checks that are run and the action taken when the condition is found:

- Checks whether the default gateways are reachable. If so, the system stops pinging.
- If a port auto-negotiates to half duplex, the system flags it.

Trunking Checks

- If a trunk port has the mode set to “on,” the system flags it.
- If a port is trunking and mode is auto, the system flags it.
- If a trunk port is not trunking and the mode is desirable, the system flags it.
- If a trunk port negotiates to half duplex, the system flags it.

Channeling Checks

- If a port has channeling mode set to on, the system flags it.
- If a port is not channeling and the mode is set to desirable, the system flags it.
- If a VLAN has a Spanning-Tree root of 32K (root is not set), the system flags it.

Spanning-Tree VLAN Checks

- If a VLAN has a max age on the Spanning-Tree root that is different than the default, the system flags it.
- If a VLAN has a fwd delay on the Spanning-Tree root that is different than the default, the system flags it.
- If a VLAN has a fwd delay on the bridge that is different than the default, the system flags it.

- If a VLAN has a fwd delay on the bridge that is different than the default, the system flags it.
- If a VLAN has a hello time on the bridge that is different than the default, the system flags it.

Spanning-Tree Port Checks

- If a port has a port cost that is different than the default, the system flags it.
- If a port has a port priority that is different than the default, the system flags it.

UDLD Checks

- If a port has UDLD disabled, the system flags it.
- If a port had UDLD shut down, the system flags it.
- If a port had a UDLD undetermined state, the system flags it.

Assorted Port Checks

- If a port had receive flow control disabled, the system flags it.
- If a trunk port had PortFast enabled, the system flags it.
- If a inline power port has any of the following states:
  - denied
  - faulty
  - other
  - off

The system flags it.

- If a port has a native VLAN mismatch, the system flags it.
- If a port has a duplex mismatch, the system flags it.

Bootstring and Config Register Checks

- The config register on the primary supervisor engine (and on the secondary supervisor engine if present) must be one of the following values: 0x2 , 0x102, or 0x2102.
- The system verifies the bootstring on the primary supervisor engine (and on the secondary supervisor engine if present). The system displays a message if the bootstring is empty.
- The system verifies that every file is specified in the bootstring. The system displays a message if the file is absent or shows up with a wrong checksum.

If only *device* **:** is specified as a filename, then the system verifies that the first file is on the device.

Assorted Checks

- The system displays a message if IGMP snooping is disabled.
- The system displays a message if any of the values of the snmp community access strings {RO,RW,RW-ALL} is the same as the default.
- The system displays a message if any of the modules are in states other than “Ok.”

- The system displays a message that lists all the tests that failed (displayed as an “F”) in the **show test all** command.
- The system displays a message if *fast is not configured on the switch anywhere.
- The system displays a message if there is enough room for the crashinfo file on the bootflash:.
- The system displays a message if multicast routing is enabled globally but is not applied to all interfaces.
- The system displays a message if IGMP snooping is disabled and RGMP is enabled.

Examples

This example displays samples of the messages that could be displayed with the **show diagnostic sanity** command:

```
Router# show diagnostic sanity
Pinging default gateway 10.6.141.1 ....
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.6.141.1, timeout is 2 seconds:
..!!.
Success rate is 0 percent (0/5)
IGMP snooping disabled please enable it for optimum config.
IGMP snooping disabled but RGMP enabled on the following interfaces,
please enable IGMP for proper config :
Vlan1, Vlan2, GigabitEthernet1/1
Multicast routing is enabled globally but not enabled on the following
interfaces:
GigabitEthernet1/1, GigabitEthernet1/2
A programming algorithm mismatch was found on the device bootflash:
Formatting the device is recommended.
The bootflash: does not have enough free space to accomodate the crashinfo file.
Please check your confreg value : 0x0.
Please check your confreg value on standby: 0x0.
The boot string is empty. Please enter a valid boot string .
Could not verify boot image "disk0:" specified in the boot string on the
slave.
Invalid boot image "bootflash:asdasd" specified in the boot string on the
slave.
Please check your boot string on the slave.
UDLD has been disabled globally - port-level UDLD sanity checks are
being bypassed.
OR
[
The following ports have UDLD disabled. Please enable UDLD for optimum
config:
Fa9/45
The following ports have an unknown UDLD link state. Please enable UDLD
on both sides of the link:
Fa9/45
]
The following ports have portfast enabled:
Fa9/35, Fa9/45
The following ports have trunk mode set to on:
Fa4/1, Fa4/13
The following trunks have mode set to auto:
Fa4/2, Fa4/3
The following ports with mode set to desirable are not trunking:
Fa4/3, Fa4/4
The following trunk ports have negotiated to half-duplex:
Fa4/3, Fa4/4
The following ports are configured for channel mode on:
Fa4/1, Fa4/2, Fa4/3, Fa4/4
```

```
The following ports, not channeling are configured for channel mode
desirable:
Fa4/14
The following vlan(s) have a spanning tree root of 32768:
1
The following vlan(s) have max age on the spanning tree root different from
the default:
1-2
The following vlan(s) have forward delay on the spanning tree root different
from the default:
1-2
The following vlan(s) have hello time on the spanning tree root different
from the default:
1-2
The following vlan(s) have max age on the bridge different from the
default:
1-2
The following vlan(s) have fwd delay on the bridge different from the
default:
1-2
The following vlan(s) have hello time on the bridge different from the
default:
1-2
The following vlan(s) have a different port priority than the default
on the port FastEthernet4/1
1-2
The following ports have recieve flow control disabled:
Fa9/35, Fa9/45
The following inline power ports have power-deny/faulty status:
Gi7/1, Gi7/2
The following ports have negotiated to half-duplex:
Fa9/45
The following vlans have a duplex mismatch:
Fas 9/45

The following interafaces have a native vlan mismatch:
interface (native vlan - neighbor vlan)
 Fas 9/45 (1 - 64)
The value for Community-Access on read-only operations for SNMP is the same
as default. Please verify that this is the best value from a security point
of view.
The value for Community-Access on write-only operations for SNMP is the same
as default. Please verify that this is the best value from a security point
of view.
The value for Community-Access on read-write operations for SNMP is the same
as default. Please verify that this is the best value from a security point
of view.
Please check the status of the following modules:
8,9
Module 2 had a MINOR_ERROR.
The Module 2 failed the following tests:
TestIngressSpan
The following ports from Module2 failed test1:
1,2,4,48
```

show diagnostic schedule module

To display the current scheduled diagnostic tasks, use the **showdiagnosticschedulemodule**command in user EXEC or privileged EXEC mode.

show diagnostic schedule module {**all***listslot* | *slot*/*subslot*}

Syntax Description

all	Displays the current scheduled diagnostic tasks for all modules.
list	A list of modules in the following format: • Entries are separated by a comma, for example, 1,4,6-10. • Ranges are specified with a hyphen, for example, 1-4,6-10.
slot	Specifies a single module by slot number.
slot/subslot	Specifies a single submodule by slot number and subslot or bay within the module.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

A scheduled diagnostic test is identified in the output of this command by its test ID number. With the test ID number, you can see the name and detailed description of the diagnostic test by using the **showdiagnosticdescriptionmodule**command.

Examples

This example shows how to display the current scheduled diagnostic tasks for the module in slot 1:

```
Router# show diagnostic schedule module 1
Current Time = 07:55:30 UTC Fri August 2 2002
Diagnostic for Module 1:
Schedule #1:
        To be run on January 3 2003 23:32
        Test ID(s) to be executed:1.
Schedule #2:
        To be run daily 14:45
        Test ID(s) to be executed:2.
Schedule #3:
        To be run weekly Monday 3:33
        Test ID(s) to be executed:all.
```

Related Commands

Command	Description
diagnostic schedule test	Sets the scheduling of test-based diagnostic testing for a specific module or schedule a supervisor engine switchover.
show diagnostic description module	Describes the diagnostic tests.

show diagnostic status

To display the currently running diagnostics tests, use the **showdiagnosticstatus**command in user EXEC or privileged EXEC mode.

show diagnostic status

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced for the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

For each installed module, the following fields are displayed in the command output:

Field	Description
Card	The slot number of the module associated with the event
Description	A description of the module
Current Running Test	The diagnostic test running on the module
Run by	The diagnostic test category that initiated the running test. The categories are: • BU--This test is running as a part of the bootup diagnostics • HM--This test is running as a part of the health monitoring diagnostics • OD--This was initiated as an ondemand diagnostic test • SCH--This test is running as a scheduled diagnostic test

Examples

This example shows how to display the currently running diagnostics tests:

```
Router# show diagnostic status
<BU> - Bootup Diagnostics, <HM> - Health Monitoring Diagnostics, <OD> - OnDemand Diagnostics,
 <SCH> - Scheduled Diagnostics
====== ================================ ================================ ======
Card   Description                      Current Running Test             Run by
------ -------------------------------- -------------------------------- ------
3      CEF720 48 port 10/100/1000mb Ethe TestLoopback                     <OD>
5      Supervisor Engine 720 (Hot)       TestScratchRegister              <HM>
6      Supervisor Engine 720 (Active)    N/A                              N/A
```

```
8       CEF720 8 port 10GE with DFC       N/A                               N/A
====== ================================= ================================= ======
```

Related Commands

Command	Description
diagnostic start	Runs the specified diagnostic test.
diagnostic stop	Stops the testing process.
show diagnostic content module	Displays the available diagnostic tests.
show diagnostic description module	Describes the diagnostic tests.

show dsc clock

To display information about the dial shelf controller clock, use the **showdscclock**command in privileged EXEC mode with the line card execute (**execute-on**) command.

execute-on {**slot** *slot-number* | **all**} **show dsc clock**

Syntax Description

execute-on	Executes commands remotely on a line card.
slot *slot-number*	Displays information for a specific slot. Slot number (12 or 13) must be occupied by a DSC card.
all	Executes the command on all line cards.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

You must use the **showdscclock** command from the router using the **execute-on** command.

Examples

The following is sample output from the **showdscclock** command:

```
Router# execute-on slot 12
 show dsc clock
Router#
Primary Clock:
--------------
Slot: 3, Port 1, Line 0, Priority = 3 up since 00:37:56
Time elapsed since last failure of the primary = 00:38:59

Backup clocks:
Source  Slot    Port    Line    Priority    Status      State
-------------------------------------------------------------
Trunk   1       2       0       10          Good        Configured

All feature boards present are getting good clock from DSC
```

The table below describes the significant fields shown in the display.

Table 25: show dcs clock Field Descriptions

Field	Description
Primary clock	The clock designated as the master timing clock.

Field	Description
Priority	The order in which a clock is designated to back up the primary clock or the next higher priority clock in case of its failure.
Backup Source	The clock signal source, such as a trunk, internal clock, or external generator.
Feature board	An application-specific card in the dial shelf, such as a line card.
Trunk	The trunk line connected to the ISP or central office.
Status	Whether the clock source is capable of providing a synch source signal.
State	Whether the clock source is connected and assigned a priority.

Related Commands

Command	Description
execute-on	Executes commands remotely on a line card.

show dsi

To display information about the dial shelf interconnect (DSI) port adapter parameters, use the **showdsi** command in privileged EXEC mode with the line card execute (**execute-on**) command.

execute-on {**slot** *slot-number* | **all**} **show dsi**

Syntax Description

execute-on	Executes commands remotely on a line card.
slot *slot-number*	Displays information for a specific slot. Slot number (12 or 13) must be occupied by a DSC card.
all	Executes the command on all line cards.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The dial shelf interconnect (DSI) port adapter connects the Cisco 5814 dial shelf to the Cisco 7206 router shelf. The DSI port adapter allows data transfers between the dial shelf and the router shelf. Data is converted into packets by the feature cards, transmitted to a hub on the dial shelf controller card, and from there sent to the router shelf. Conversely, packets from the router shelf are sent to the dial shelf controller card, where they are transmitted over the backplane to the modem and trunk cards. The show dsi command is used to show information about the dial shelf interconnect hardware, interface, physical link, PCI registers, and address filters.

Examples

The following is sample output from the **showdsi**command:

```
Router# execute-on slot 1 show dsi
DSI-Tx-FastEthernet0 is up, line protocol is up
  Hardware is DEC21140A, address is 0008.26b7.b008 (bia 0008.26b7.b008)
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Half-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 01:17:09, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     6 packets input, 596 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 watchdog, 0 multicast
```

```
     0 input packets with dribble condition detected
     6170 packets output, 813483 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
DSI-Rx-FastEthernet1 is up, line protocol is up
Hardware is DEC21140A, address is 0008.26b7.b008 (bia 0008.26b7.b008)
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output never, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     6280 packets input, 362493 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 watchdog, 0 multicast
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
Interface DSI-Tx-FastEthernet0
Hardware is DEC21140A
 dec21140_ds=0x604C9FC4, registers=0x3C000000, ib=0x1912E00
 rx ring entries=128, tx ring entries=256
 rxring=0x1912F00, rxr shadow=0x604CA16C, rx_head=6, rx_tail=0
 txring=0x1913740, txr shadow=0x604CA398, tx_head=138, tx_tail=138, tx_count=0
 PHY link up
 CSR0=0xFE024882, CSR3=0x1912F00, CSR4=0x1913740, CSR5=0xFC660000
 CSR6=0x320CA002, CSR7=0xFFFFA261, CSR8=0xE0000000, CSR9=0xFFFDC3FF
 CSR11=0xFFFE0000, CSR12=0xFFFFFF09, CSR15=0xFFFFFEC8
 DEC21140 PCI registers:
  bus_no=0, device_no=1
  CFID=0x00091011, CFCS=0x02800006, CFRV=0x02000022, CFLT=0x0000FF00
  CBIO=0x00000001, CBMA=0x48000000, CFIT=0x28140100, CFDA=0x00000000
 MII registers:
  Register 0x00:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x08:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x10:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x18:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
 throttled=0, enabled=0, disabled=0
 rx_fifo_overflow=0, rx_no_enp=0, rx_discard=0
 tx_underrun_err=0, tx_jabber_timeout=0, tx_carrier_loss=0
 tx_no_carrier=0, tx_late_collision=0, tx_excess_coll=0
 tx_collision_cnt=0, tx_deferred=0, fatal_tx_err=0, tbl_overflow=0
 HW addr filter: 0x604CABC4, ISL Disabled
  Entry= 0:  Addr=FFFF.FFFF.FFFF
  Entry= 1:  Addr=FFFF.FFFF.FFFF
  Entry= 2:  Addr=FFFF.FFFF.FFFF
  Entry= 3:  Addr=FFFF.FFFF.FFFF
  Entry= 4:  Addr=FFFF.FFFF.FFFF
  Entry= 5:  Addr=FFFF.FFFF.FFFF
  Entry= 6:  Addr=FFFF.FFFF.FFFF
  Entry= 7:  Addr=FFFF.FFFF.FFFF
  Entry= 8:  Addr=FFFF.FFFF.FFFF
  Entry= 9:  Addr=FFFF.FFFF.FFFF
  Entry=10:  Addr=FFFF.FFFF.FFFF
```

```
  Entry=11:  Addr=FFFF.FFFF.FFFF
  Entry=12:  Addr=FFFF.FFFF.FFFF
  Entry=13:  Addr=FFFF.FFFF.FFFF
  Entry=14:  Addr=FFFF.FFFF.FFFF
  Entry=15:  Addr=0008.26B7.B008

Interface DSI-Rx-FastEthernet1
Hardware is DEC21140A
dec21140_ds=0x604DDA4C, registers=0x3C000800, ib=0x1A01FC0
rx ring entries=128, tx ring entries=256
 rxring=0x1A020C0, rxr shadow=0x604DDBF4, rx_head=55, rx_tail=0
 txring=0x1A02900, txr shadow=0x604DDE20, tx_head=2, tx_tail=2, tx_count=0
 PHY link up
 CSR0=0xFE024882, CSR3=0x1A020C0, CSR4=0x1A02900, CSR5=0xFC660000
 CSR6=0x320CA202, CSR7=0xFFFFA261, CSR8=0xE0000000, CSR9=0xFFFDC3FF
 CSR11=0xFFFE0000, CSR12=0xFFFFFF09, CSR15=0xFFFFFEC8
 DEC21140 PCI registers:
  bus_no=0, device_no=2
  CFID=0x00091011, CFCS=0x02800006, CFRV=0x02000022, CFLT=0x0000FF00
  CBIO=0x00000001, CBMA=0x48000800, CFIT=0x28140100, CFDA=0x00000000
 MII registers:
  Register 0x00:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x08:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x10:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x18:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
 throttled=0, enabled=0, disabled=0
 rx_fifo_overflow=0, rx_no_enp=0, rx_discard=0
 tx_underrun_err=0, tx_jabber_timeout=0, tx_carrier_loss=0
 tx_no_carrier=0, tx_late_collision=0, tx_excess_coll=0
 tx_collision_cnt=0, tx_deferred=0, fatal_tx_err=0, tbl_overflow=0
 HW addr filter: 0x604DE64C, ISL Disabled
  Entry= 0:  Addr=FFFF.FFFF.FFFF
  Entry= 1:  Addr=FFFF.FFFF.FFFF
  Entry= 2:  Addr=FFFF.FFFF.FFFF
  Entry= 3:  Addr=FFFF.FFFF.FFFF
  Entry= 4:  Addr=FFFF.FFFF.FFFF
  Entry= 5:  Addr=FFFF.FFFF.FFFF
  Entry= 6:  Addr=FFFF.FFFF.FFFF
  Entry= 7:  Addr=FFFF.FFFF.FFFF
  Entry= 8:  Addr=FFFF.FFFF.FFFF
  Entry= 9:  Addr=FFFF.FFFF.FFFF
  Entry=10:  Addr=FFFF.FFFF.FFFF
  Entry=11:  Addr=FFFF.FFFF.FFFF
  Entry=12:  Addr=FFFF.FFFF.FFFF
  Entry=13:  Addr=FFFF.FFFF.FFFF
  Entry=14:  Addr=FFFF.FFFF.FFFF
  Entry=15:  Addr=0008.26B7.B008
```

The table below describes the significant fields shown in the display.

Table 26: show dsi Field Descriptions

Field	Description
FastEthernet0 ... is up ... is administratively down	Indicates whether the interface hardware is currently active and if it has been taken down by an administrator.
line protocol is	Indicates whether the software processes that handle the line protocol consider the line usable or if it has been taken down by an administrator.
Hardware	Hardware type (for example, MCI Ethernet, SCI,[1] CBus[2] Ethernet) and address.

Field	Description
Internet address	Internet address followed by subnet mask.
MTU	Maximum Transmission Unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100% reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes.
Encapsulation	Encapsulation method assigned to interface.
ARP type:	Type of Address Resolution Protocol assigned.
loopback	Indicates whether loopback is set or not.
keepalive	Indicates whether keepalives are set or not.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface. Useful for knowing when a dead interface failed.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by the interface. Useful for knowing when a dead interface failed.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.
Last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Note that variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared. *** indicates the elapsed time is too large to be displayed. 0:00:00 indicates the counters were cleared more than 231ms (and less than 232ms) ago.
Output queue, input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped due to a full queue.
5 minute input rate, 5 minute output rate	Average number of bits and packets transmitted per second in the last 5 minutes. If the interface is not in promiscuous mode, it senses network traffic it sends and receives (rather than all network traffic). The 5-minute input and output rates should be used only as an approximation of traffic per second during a given 5-minute period. These rates are exponentially weighted averages with a time constant of 5 minutes. A period of four time constants must pass before the average will be within two percent of the instantaneous rate of a uniform stream of traffic over that period.

Field	Description
packets input	Total number of error-free packets received by the system.
bytes	Total number of bytes, including data and MAC encapsulation, in the error free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernets and bursts of noise on serial lines are often responsible for no input buffer events.
Received ... broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the medium's minimum packet size. For instance, any Ethernet packet that is less than 64 bytes is considered a runt.
giants	Number of packets that are discarded because they exceed the medium's maximum packet size. For example, any Ethernet packet that is greater than 1518 bytes is considered a giant.
input errors	Includes runts, giants, no buffer, CRC, frame, overrun, and ignored counts. Other input-related errors can also cause the input errors count to be increased, and some datagrams may have more than one error; therefore, this sum may not balance with the sum of enumerated input error counts.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of collisions or a station transmitting bad data.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a LAN, this is usually the result of collisions or a malfunctioning Ethernet device.
overrun	Number of times the receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be increased.
abort	Number of packets whose receipt was aborted.
watchdog	Number of times watchdog receive timer expired. It happens when receiving a packet with length greater than 2048.
multicast	Number of multicast packets received.

Field	Description
input packets with dribble condition detected	Dribble bit error indicates that a frame is slightly too long. This frame error counter is incremented just for informational purposes; the router accepts the frame.
packets output	Total number of messages transmitted by the system.
bytes	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the transmitter has been running faster than the router can handle. This may never be reported on some interfaces.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this may not balance with the sum of the enumerated output errors, as some datagrams may have more than one error, and others may have errors that do not fall into any of the specifically tabulated categories.
collisions	Number of messages retransmitted due to an Ethernet collision. This is usually the result of an overextended LAN (Ethernet or transceiver cable too long, more than two repeaters between stations, or too many cascaded multiport transceivers). A packet that collides is counted only once in output packets.
interface resets	Number of times an interface has been completely reset. This can happen if packets queued for transmission were not sent within several seconds. On a serial line, this can be caused by a malfunctioning modem that is not supplying the transmit clock signal, or by a cable problem. If the system notices that the carrier detect line of a serial interface is up, but the line protocol is down, it periodically resets the interface in an effort to restart it. Interface resets can also occur when an interface is looped back or shut down.
restarts	Number of times a Type 2 Ethernet controller was restarted because of errors.
babbles	The transmit jabber timer expired.
late collision	Number of late collisions. Late collision happens when a collision occurs after transmitting the preamble.
deferred	Deferred indicates that the chip had to defer while ready to transmit a frame because the carrier was asserted.
lost carrier	Number of times the carrier was lost during transmission.
no carrier	Number of times the carrier was not present during the transmission.
output buffer failures	Number of failed buffers and number of buffers swapped out.

[1] SCI = Single Cell Input
[2] CBus = Command Bus

Command	Description
execute-on	Executes commands on a line card.
show dsip	Displays all information about the DSIP.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

show dsip

To display all information about the Distributed System Interconnect Protocol (DSIP) on a Cisco AS5800, use the **showdsip**command in EXEC mode.

show dsip

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Your Cisco AS5800 universal access server uses a protocol used by the Cisco 7206 router shelf to communicate back and forth with the Cisco 5814 dial shelf controller card(s) and feature cards. Although dial shelf interconnect (DSI) configuration is transparent to the user, there are several show commands to help you view your setup, and debug commands to help you troubleshoot your system.

To display a subset of this information, use the**showdsipclients**, **showdsipnodes**, **showdsipports**, **showdsipqueue**,**showdsiptracing**, **showdsiptransport**, and **showdsipversion** commands.

Examples

The following is sample output from the **showdsip**command. For a description of the fields shown in the sample output, refer to the individual **showdsip**commands listed in the “Usage Guidelines” section.

```
Router# show dsip

DSIP Transport Statistics:
 IPC : input msgs=8233, bytes=699488; output msgs=8233, bytes=483558
       total consumed ipc msgs=682;  total freed ipc msgs = 682
       transmit contexts in use = 11, free = 245, zombie = 0, invalid = 0
       ipc getmsg failures = 0, ipc timeouts=0
       core getbuffer failures=0, api getbuffer failures=0
 dsip test msgs rcvd = 2770, sent = 0
 CNTL: input msgs=1112, bytes=91272; output msgs=146, bytes=8760
       getbuffer failures=0
 DATA: input msgs=0, bytes=0; output msgs=426, bytes=5112

DSIP Private  Buffer Pool Hits  = 0

DSIP Registered Addresses:
 Shelf0 : Master: 00e0.b093.2238, Status=local
 Shelf1 : Slot1 : 0007.5387.4808, Status=remote
 Shelf1 : Slot5 : 0007.5387.4828, Status=remote
 Shelf1 : Slot6 : 0007.5387.4830, Status=remote
 Shelf1 : Slot7 : 0007.5387.4838, Status=remote
```

```
 Shelf1 : Slot8 : 0007.5387.4840, Status=remote
 Shelf1 : Slot9 : 0007.5387.4848, Status=remote
 Shelf1 : Slot11: 0007.5387.4858, Status=remote
 Shelf1 : Slot12: 0007.4b67.8260, Status=remote
DSIP Clients:
-------------
ID    Name
0   Console
1   Clock
2   Modem
3   Logger
4   Trunk
5   Async data
6   TDM
7   Dial shelf manager
8   Environment Mon
9   DSIP Test
Dsip Local Ports:
-----------------
Client:Portname             Portid    In-Msgs   Bytes     Last-i/p
Console:Master              10004     0         0         never
Clock:Master                10005     29        3464      00:00:40
Modem:Master                10006     90        70162     00:23:44
Logger:Master               10007     0         0         never
Trunk:Master                10008     1765      140480    00:00:08
Async data:Master           10009     0         0         never
TDM:Master                  1000A     7         112       00:24:19
Dial shelf manager:Master   1000B     28        4752      00:00:36
DSIP Test:Master            1000C     2922      2922      00:00:00

Dsip Remote Ports:
------------------
Client:Portname             Portid    Out-Msgs  Bytes     Last-o/p  Last-act
Clock:Slave1                101005F   1         24        00:24:21  00:24:21
Trunk:Slave1                1010061   12        1776      00:24:21  00:24:21
Modem:Slave5                1050050   96        2148      00:23:56  00:24:19
Modem:Slave6                1060050   105       2040      00:24:00  00:24:22
Modem:Slave7                1070050   106       2188      00:23:56  00:24:20
Modem:Slave8                1080050   112       2212      00:24:13  00:24:35
Modem:Slave9                1090050   115       2224      00:24:09  00:24:35
Modem:Slave11               10B0050   107       2192      00:24:09  00:24:32
Clock:Slave12               10C000D   1         24        00:24:37  00:24:37
Dial shelf manager:Slave12  10C000E   28        4752      00:00:49  00:24:35
DSIP Test:Slave12           10C000F   0         0         never     00:24:35

DSIP ipc queue:
---------------
There are 0 IPC messages waiting for acknowledgement in the transmit queue.
There are 0 messages currently in use by the system.

DSIP ipc seats:
---------------
There are 9 nodes in this IPC realm.
   ID     Type                Name                          Last  Last
                                                            Sent  Heard
   10000 Local       IPC Master                               0      0
 1060000 DSIP        Seat:Slave6                              10     10
 10C0000 DSIP        Seat:Slave12                             2963   13
 1080000 DSIP        Seat:Slave8                              10     10
 1090000 DSIP        Seat:Slave9                              10     10
 1010000 DSIP        Seat:Slave1                              16     16
 1070000 DSIP        Seat:Slave7                              10     10
 10B0000 DSIP        Seat:Slave11                             10     10
 1050000 DSIP        Seat:Slave5                              10     10
```

```
DSIP version information:
-------------------------
Local DSIP major version =  3,    minor version = 2

All DS slots are running DSIP versions compatible with RS
Local Clients Registered Versions:
-----------------------------------
Client Name      Major Version   Minor Version
Console          3               2
Clock            1               1
Modem            0               0
Logger           No version      No version
Trunk            No version      No version
Async data       No version      No version
TDM              No version      No version
DSIP Test        No version      No version

Mismatched  Remote Client Versions:
-----------------------------------
```

Related Commands

Command	Description
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip nodes	Displays information about the processors running the DSIP.
show dsip ports	Displays information about local and remote ports.
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.
show dsip tracing	Displays DSIP tracing buffer information.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show dsip version	Displays DSIP version information.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

show dsip clients

To display information about Distributed System Interconnect Protocol (DSIP) clients, use the **showdsipclients**command in EXEC mode.

show dsip clients

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use this command to see whether a client is actually registered with DSIP and using its services.

Consider the following example: a client “Trunk” seems to be defunct on a particular node with absolutely no input/output activity. The command show dsip ports does not show any Trunk port among its local ports though all other client ports show up. The problem might be that the Trunk client did not even register with DSIP. To confirm this, use the show dsip clients command.

Examples

The following is sample output from the **showdsipclients**command. This command lists the clients.

```
Router# show dsip clients
ID    Name
0   Console
1   Clock
2   Modem
3   Logger
4   Trunk
5   Async data
6   TDM
7   Dial shelf manager
8   Environment Mon
9   DSIP Test
```

Related Commands

Command	Description
show dsip nodes	Displays information about the processors running the DSIP.
show dsip ports	Displays information about local and remote ports
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.

Command	Description
show dsip tracing	Displays DSIP tracing buffer information.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show dsip version	Displays DSIP version information.

show dsip nodes

To display information about the processors running the Distributed System Interconnect Protocol (DSIP), use the **showdsipnodes**command in EXEC mode.

show dsip nodes

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use show dsip nodes to see the nodes (slots) connected by DSIP and the node specific sequence numbers. The former information is also available from show dsip transport. The sequence numbers are useful for support engineers while debugging a problem.

Examples

The following is sample output from the **showdsipnodes** command:

```
Router# show dsip nodes

DSIP ipc nodes:
---------------
There are 9 nodes in this IPC realm.
   ID     Type                Name                      Last  Last
                                                        Sent  Heard
   10000 Local      IPC Master                            0      0
 1130000 DSIP       Dial Shelf:Slave12                    12     12
 1080000 DSIP       Dial Shelf:Slave1                     1      1
 10A0000 DSIP       Dial Shelf:Slave3                     1      1
 10C0000 DSIP       Dial Shelf:Slave5                     1      1
 10D0000 DSIP       Dial Shelf:Slave6                     1      1
 10E0000 DSIP       Dial Shelf:Slave7                     1      1
 10F0000 DSIP       Dial Shelf:Slave8                     1      1
 1100000 DSIP       Dial Shelf:Slave9                     1      1
```

The table below describes the significant fields shown in the display.

Table 27: show dsip nodes Field Descriptions

Field	Description
ID	DSIP uses Cisco's IPC (Inter Process Communication) module for nondata related (client control messages etc.) traffic. A seat or node is a computational element, such as a processor, that can be communicated with using IPC services. A seat is where entities and IPC ports reside. The IPC maintains a seat table which contains the seatids of all the seats in the system. Normally this seatid is a function of the slot number.
Type	Local: Local node. DSIP: Remote DSIP node.
Name	Each seat (node) has a name to easily identify it. There is only one primary node and rest are subordinate nodes. The master node name is "IPC Master" and the slave node name is "Seat:Slave X", where "X" is the slot number of the node.
Last Sent/Last Heard	Each node maintains two sequence numbers for the last sent and last heard.
Last Sent	Whenever a message is sent out, the "last sent" counter is updated.
Last Heard	Whenever a message is received from a remote node, "last heard" is updated.

Related Commands

Command	Description
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip ports	Displays information about local and remote ports
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.
show dsip tracing	Displays DSIP tracing buffer information.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show dsip version	Displays DSIP version information.

show dsip ports

To display information about local and remote ports, use the **showdsipports**command in EXEC mode.

show dsip ports [**local** | **remote** [**slot**]]

Syntax Description

local	(Optional) Displays information for local ports. The local port is the port created at a seat's local end.
remote	(Optional) Displays information for remote ports. The remote port is the port residing on a remote seat to which DSIP IPC based connection is open.
slot	(Optional) Specifies a slot number to display information for a specific card on the dial shelf.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The DSIP communication going through the IPC stack uses ports. The creation of a port returns a 32-bit port ID which is the endpoint for communication between two IPC clients.

The show dsip ports command is used to check clients that are up and running:

- To see the local ports that are created and the activity on them.
- To see the remote ports which are connected and to see the activity on them.

If no options are specified, information is displayed for both local and remote ports.

Examples

The following is sample output from the **showdsipports** command:

```
Router# show dsip ports

Dsip Local Ports:
----------------
Client:Portname             Portid    In-Msgs   Bytes     Last-i/p
Console:Master              10004     0         0         never
Clock:Master                10005     16        1800      00:00:05
Modem:Master                10006     90        70162     00:10:08
Logger:Master               10007     0         0         never
Trunk:Master                10008     792       62640     00:00:03
Async data:Master           10009     0         0         never
TDM:Master                  1000A     7         112       00:10:44
Dial shelf manager:Master   1000B     15        2256      00:00:27
DSIP Test:Master            1000C     1294      1294      00:00:00
```

```
Dsip Remote Ports:
------------------
Client:Portname              Portid    Out-Msgs  Bytes     Last-o/p  Last-act
Clock:Slave1                 101005F   1         24        00:10:46  00:10:46
Trunk:Slave1                 1010061   12        1776      00:10:46  00:10:46
Modem:Slave5                 1050050   96        2148      00:10:21  00:10:44
Modem:Slave6                 1060050   105       2040      00:10:25  00:10:48
Modem:Slave7                 1070050   106       2188      00:10:21  00:10:45
Modem:Slave8                 1080050   112       2212      00:10:25  00:10:47
Modem:Slave9                 1090050   115       2224      00:10:39  00:11:05
Modem:Slave11                10B0050   107       2192      00:10:39  00:11:02
Clock:Slave12                10C000D   1         24        00:11:07  00:11:07
Dial shelf manager:Slave12   10C000E   15        2256      00:00:45  00:11:05
DSIP Test:Slave12            10C000F   0         0         never     00:11:05
```

The table below describes the significant fields shown in the display.

Table 28: show dsip ports Field Descriptions

Field	Description
Client:Portname	Client name and port name. Port Name. The port names can be determined because they are based on a uniform naming convention that includes the following elements: • Client name • Master/slave status • Slot number Any client can derive the port name of the other client it wants to talk to once it knows its physical location, using the following formula: Master/Slave Status Port Name Syntax Master *Client-Name***:Master,**for example, **Console:Master** Slave *Client-Name***:Slave***Slot*, for example, **Clock:Slave1**
Portid	Port ID. The Port ID is a 32-bit identifier comprised of **seatid** and the **port-number**. The IPC maintains a seat table which contains the seatids of all the seats in the system. A seat is where clients and ports reside. The seat ID is a function of the slot number. Port number is the sequential number of the port that is being created on a particular seat, for example: 0,1, 2, etc.
In-Msgs/	The total number of input messages that were received on a particular port.
Out-Msgs	The total number of output messages that were sent to a particular remote port.
Bytes(in/out)	The total number of bytes that were received on a particular port or sent to a remote port. The number of bytes on this port up to the time of the execution of the **show** command.
Last-i/p	Elapsed time since the last input was received on a local port.
Last-o/p	Elapsed time since the last message was sent to a particular remote port.
Last-act	Elapsed time since the connection to a remote port was opened.

Related Commands

Command	Description
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip nodes	Displays information about the nodes (slots) connected by DSIP on a system.
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.
show dsip tracing	Displays DSIP tracing buffer information.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show dsip version	Displays DSIP version information.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

show dsip queue

To display the number of IPC messages in the transmission queue waiting for acknowledgment, use the **showdsipqueue**command in EXEC mode.

show dsip queue

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

IPC is inter-process communication. Processes communicate by exchanging messages held in queue buffers. Use the show dsip queue to display the status of these queue buffers.

Examples

The following is sample output from the **showdsipqueue**command when the system is operating correctly:

```
Router# show dsip queue

DSIP ipc queue:
---------------
There are 0 IPC messages waiting for acknowledgment in the transmit queue.
There are 0 messages currently in use by the system.
```

Related Commands

Command	Description
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip nodes	Displays information about the nodes (slots) connected by DSIP on a system.
show dsip ports	Displays information about local and remote ports.
show dsip tracing	Displays DSIP tracing buffer information.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show dsip version	Displays DSIP version information.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

show dsip tracing

To display Distributed System Interconnect Protocol (DSIP) tracing buffer information, use the **showdsiptracing**command in EXEC mode.

show dsip tracing [**control** | **data** | **ipc**] [*slot* | **entries** *entry-number* [*slot*]]

Syntax Description

control	(Optional) Displays the control tracing buffer.
data	(Optional) Displays the data tracing buffer.
ipc	(Optional) Displays the inter-process communication tracing buffer.
slot	(Optional) Specifies a specific slot number on the dial shelf. Slot number can range from 0 to 14.
entries *entry-number*	(Optional) Specifies the number of entries to trace. Entries can be 1 to 500.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This feature allows logging of DSIP media header information. Use the **showdsiptracing**command to obtain important information of the various classes of DSIP packets (Control/Data/IPC) coming in. You must first use the **debugdsiptracing** command then use the **showdsiptracing**command to display the logged contents. To clear the information, use the **cleardsiptracing** command.

Examples

The following is sample output from the **showdsiptracing**command:

```
Router# debug dsip tracing
DSIP tracing debugging is on
Router#
Router# show dsip tracing
Dsip Control Packet Trace:
------------------------------------------------------------------------------
Dest:00e0.b093.2238 Src:0007.5387.4808 Type:200B SrcShelf:1 SrcSlot:1 MsgType:0 MsgLen:82
Timestamp: 00:00:03
------------------------------------------------------------------------------
Dest:00e0.b093.2238 Src:0007.5387.4838 Type:200B SrcShelf:1 SrcSlot:7 MsgType:0 MsgLen:82
Timestamp: 00:00:03
------------------------------------------------------------------------------
Dest:00e0.b093.2238 Src:0007.4b67.8260 Type:200B SrcShelf:1 SrcSlot:12 MsgType:0 MsgLen:82
 Timestamp: 00:00:03
------------------------------------------------------------------------------
Dest:00e0.b093.2238 Src:0007.5387.4858 Type:200B SrcShelf:1 SrcSlot:11 MsgType:0 MsgLen:82
```

```
 Timestamp: 00:00:03
--------------------------------------------------------------------------------
Dest:00e0.b093.2238 Src:0007.5387.4848 Type:200B SrcShelf:1 SrcSlot:9 MsgType:0 MsgLen:82
Timestamp: 00:00:03
```

The table below describes the significant fields shown in the display.

Table 29: show dsip tracing Field Descriptions

Field	Description
Dest	The destination MAC address in the DSIP packet.
Src	The source MAC address in the DSIP packet.
Type	There are three types of DSIP packets: • Control--0x200B • IPC--0x200C • Data--0x200D
SrcShelf	The source shelf ID of the DSIP packet.
SrcSlot	The source slot of the DSIP packet.
MsgType	Used to further demultiplex Data packets. Not used for Control and IPC type packets.
MsgLen	Length of the message excluding the DSIP header.
Timestamp	Time elapsed since the packet was received.

Related Commands

Command	Description
clear dsip tracing	Clears DSIP tracing logs.
debug dsip tracing	Enables DSIP trace logging for use with the show dsip tracing commands.
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip nodes	Displays information about the nodes (slots) connected by DSIP on a system.
show dsip ports	Displays information about local and remote ports.
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show dsip version	Displays DSIP version information.

show dsip transport

To display information about the Distributed System Interconnect Protocol (DSIP) transport statistics for the control/data and IPC packets and registered addresses, use the **showdsiptransport**command in EXEC mode.

show dsip transport

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following is sample output from the **showdsiptransport**command:

```
Router# show dsip transport
DSIP Transport Statistics:
 IPC : input msgs=4105, bytes=375628; output msgs=4105, bytes=248324
        total consumed ipc msgs=669;  total freed ipc msgs = 669
        transmit contexts in use = 11, free = 245, zombie = 0, invalid = 0
        ipc getmsg failures = 0, ipc timeouts=0
        core getbuffer failures=0, api getbuffer failures=0
dsip test msgs rcvd = 1200, sent = 0
 CNTL: input msgs=488, bytes=40104; output msgs=68, bytes=4080
        getbuffer failures=0
 DATA: input msgs=0, bytes=0; output msgs=426, bytes=5112

DSIP Private  Buffer Pool Hits  = 0

DSIP Registered Addresses:
 Shelf0 : Master: 00e0.b093.2238, Status=local
 Shelf1 : Slot1 : 0007.5387.4808, Status=remote
 Shelf1 : Slot5 : 0007.5387.4828, Status=remote
 Shelf1 : Slot6 : 0007.5387.4830, Status=remote
 Shelf1 : Slot7 : 0007.5387.4838, Status=remote
 Shelf1 : Slot8 : 0007.5387.4840, Status=remote
 Shelf1 : Slot9 : 0007.5387.4848, Status=remote
 Shelf1 : Slot11: 0007.5387.4858, Status=remote
 Shelf1 : Slot12: 0007.4b67.8260, Status=remote
Router#
```

The table below describes the significant fields shown in the display:

Table 30: show dsip transport Field Descriptions

Field	Description
DSIP Transport Statistics:	There are basically three kinds of communication channels between the DSIP modules running on two processors: 1. IPC: DSIP IPC-based reliable/best-effort channel. 2. CNTL: Control packet channel for DSIP modules to communicate between themselves. For example, keepalive messages and initial handshake messages between two DSIP modules are exchanged over this channel. 3. DATA: DSIP fast data packet channel.
input msgs/output msgs	The number of input/output packets on a particular channel.
bytes	The number of input bytes received or sent on a particular channel.
total consumed ipc msgs	The total number of IPC messages consumed so far from the IPC buffer pool.
total freed ipc msgs	The total number of IPC messages returned to the IPC buffer pool so far.
transmit contexts in use	DSIP for each active reliable connection to a remote port keeps a transmit context. This context holds all the important information pertaining to the remote connection, such as, destination portid, port name, number of message and bytes sent to that port etc. This is created when first time a connection is opened to a remote port and is reused for all subsequent communication to that port.
free	Free transmit context is available.
zombie	When DSIP tears down a connection to a remote slot, all the transmit contexts to that slot should return to the free pool. But instead of immediately returning to the free pool, all such contexts first end up on a zombie queue, spend their last few seconds here and then eventually return to the free queue.
invalid	Each transmit context has a magic number. While returning contexts to the free queue, if any transmit context is found to be corrupted, it is marked as invalid and is not returned to the free queue.
ipc getmsg failures	Number of times we failed to get an ipc message.
ipc timeouts	The retry timeouts of the reliable DSIP transport stack.
core getbuffer failures	The number of times DSIP transport layer has failed to allocate buffers for the IPC transport.
aip getbuffer failures	The number of times DSIP transport has failed to allocate buffers while preparing to transmit data received from the clients.
dsip test msgs received/sent	The DSIP test messages received and sent by invoking received/sent the “DSIP Test” client.

Field	Description
DSIP Private Buffer Pool Hits	DSIP by default gets all its buffers from the public buffer pools. If for some reason, it runs out of those buffers, it falls back on a DSIP private pool. This number indicates the number of times DSIP has used this fallback pool.
DSIP Registered Addresses	The MAC addresses of nodes (slots) participating in DSIP communication including the local node. The master sees N slaves whereas slave sees only master (excluding themselves). The information is presented in the following form: Shelf*X*: Master | Slot*Y* : *MACAddress* : Status= local | remote

Related Commands

Command	Description
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip nodes	Displays information about the nodes (slots) connected by DSIP on a system.
show dsip ports	Displays information about local and remote DSIP ports.
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.
show dsip tracing	Displays DSIP tracing buffer information.
show dsip version	Displays DSIP version information.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

show dsip version

To display Distributed System Interconnect Protocol (DSIP) version information, use the **showdsipversion**command in EXEC mode.

show dsip version

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)AA	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following is sample output from the **showdsipversion**command:

```
Router# show dsip version

DSIP version information:
------------------------
Local DSIP major version = 5,    minor version = 2

All feature boards are running DSIP versions compatible with router shelf

Local Clients Registered Versions:
----------------------------------
Client Name      Major Version   Minor Version
Console          52
Clock            1               1
Modem            0               0
Logger           No version      No version
Trunk            No version      No version
Async data       No version      No version
TDM              No version      No version
DSIP Test        No version      No version

Mismatched  Remote Client Versions:
----------------------------------
```

DSIP is version-controlled software that should be identified and kept current.

Related Commands

Command	Description
show dsip clients	Lists the clients registered with DSIP on a system.
show dsip nodes	Displays information about the nodes (slots) connected by DSIP on a system.

Command	Description
show dsip ports	Displays information about local and remote DSIP ports.
show dsip queue	Displays the number of messages in the retransmit queue waiting for acknowledgment.
show dsip tracing	Displays DSIP tracing buffer information.
show dsip transport	Displays information about the DSIP transport statistics for the control/data and IPC packets and registered addresses.
show version	Displays the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

show dtp interface

To display the desktop publishing (DTP) interface details, use the**showdtpinterface**command in user EXEC or privileged EXEC mode.

show dtp interface [*type number*]

Syntax Description

type	Interface type. For more information, use the question mark (**?**) online help function.
number	Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (**?**) online help function.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced in a release earlier than Cisco IOS Release 12.4(22)T.

Examples

The following is sample output from the **showdtpinterface** command:

```
Router# show dtp interface gigabitEthernet 0/0
DTP Interface Information:
  TOS/TAS/TNS:                          ACCESS/UNKNOWN/ACCESS
  TOT/TAT/TNT:                          UNKNOWN/UNKNOWN/UNKNOWN
  Neighbor address 1:                   000000000000
  Neighbor address 2:                   000000000000
  Hello timer expiration ms/state:      0/STOPPED
  Access timer expiration ms/state:     0/STOPPED
  Negotiation timer expiration ms/state: 0/STOPPED
  Multidrop timer expiration ms/state:  0/STOPPED
  FSM state:                            S1:OFF
  # times multi & trunk:                0
  Enabled:                              0
  In STP:                               0
```

The following is sample output from the **showdtpinterface** command on a Catalyst 3000 series router:

```
Router# show dtp interface
DTP information for GigabitEthernet0/1:
  TOS/TAS/TNS:                              ACCESS/AUTO/ACCESS
  TOT/TAT/TNT:                              NATIVE/NEGOTIATE/NATIVE
  Neighbor address 1:                       000000000000
  Neighbor address 2:                       000000000000
  Hello timer expiration (sec/state):       3/RUNNING
  Access timer expiration (sec/state):      never/STOPPED
  Negotiation timer expiration (sec/state): never/STOPPED
  Multidrop timer expiration (sec/state):   never/STOPPED
  FSM state:                                S2:ACCESS
  # times multi & trunk                     0
  Enabled:                                  yes
  In STP:                                   no

  Statistics
```

```
----------
112868 packets received (0 good)
112868 packets dropped
    0 nonegotiate, 0 bad version, 112868 domain mismatches,
    0 bad TLVs, 0 bad TAS, 0 bad TAT, 0 bad TOT, 0 other
225650 packets output (225650 good)
    112825 native, 112825 software encap isl, 0 isl hardware native
0 output errors
0 trunk timeouts
1 link ups, last link up on Mon Mar 01 1993, 00:01:16
0 link downs
```

The table below describes the significant fields shown in the display.

Table 31: show dtp interface Field Descriptions

Field	Description
TOS	Indicates the Operational Trunk state of the port, except when the port is in the Negotiation phase. In the Negotiation phase, the status is either Trunk or Access.
TAS	Indicates the Trunk Admin state of the port, which is one of the following: ON/OFF/AUTO/DESIRABLE.
TNS	Indicates the Trunk Admin state to be sent in DTP packets when the port is in S3 or S5 DTP negotiation state.
TAT	Indicates the Trunk Admin (Encapsulation) Type of the port which is one of the following: Negotiation/Native/ISL/DOT1Q
TOT	Indicates the Trunk Operation Type or current Operational Encapsulation Type of the port, which is one of the following: Native/ISL/DOT1Q.
TNT	Indicates the Trunk Operational Type to be sent in DTP packets when the port is in either S3 or S5 DTP negotiation state.
Neighbor address 1/2	Indicates the MAC address of the neighbor connected or the Neighbor Port MAC Address 1/2 in case of multi-neighbors on the same port.
Hello timer	Indicates that a DTP advertisement is sent after the timer expires. The timer keeps running as long as DTP is enabled and the port is capable of negotiating. The time interval during negotiation is 1 second, and 30 seconds when the port is in spanning tree protocol (STP) or has reached a final DTP state.
Access timer	This timer is started when the port is in Trunk state, participates in STP (state S6), and the mode is AUTO/DESIRABLE. When the timer expires, the port is set to Access state. The interval for this timer is “10 * Hello Timer.” The interval gets reset/restarted whenever the port (which is in S6 state) receives a DTP packet and confirms its present state.
Negotiation timer	This timer is started when the port enters into an S3 or S5 DTP negotiation state. When the timer expires, the DTP state of the port moves into either Trunk/Non-Trunk. The time interval is 3 seconds and the timer is restarted if the received DTP packet changes the Trunk state or type.

Field	Description
Multidrop timer	This timer is started when the port (which is in Trunk/AUTO/DESIRABLE mode) detects multiple neighbors. The port is then configured as Access port or S4 state. When the timer expires the port moves to negotiation or S2 state. After 3 seconds, port stays in S4 state and manual intervention is needed to move it to Trunk state. The interval for this timer is "10 * Hello Timer" and it gets reset or restarted whenever the port receives a DTP packet from multiple neighbors.
FSM state	Indicates the Finite State Machine State or DTP port state. There are 5 FSM states as follows: • S1: OFF: Physical port is not in the operational state. There is no data packet transmission or receipt. • S2: ACCESS: Port state is non-Trunk and is added to the STP. • S3: NT-DTP: Port state is in negotiation phase. The port is not added to the STP and there is no data packet transmission or receipt. • S4: ACCESS-M: Port state is non-Trunk and is added to the STP. Port receives the DTP packets from multiple neighbors. • S5: T-DTP: Port is in ISL/.1Q Trunk mode. Port is not added to the STP and there is no data packet transmission or receipt. • S6: TRUNK: Port state is ISL/.1Q Trunk mode and is added to the STP. **Note** In DTP, once the final state is negotiated, the port added to the STP is either in Trunk or Access state.
# times multi & trunk	Indicates the presence of multi-neighbors and their count.
Enabled/Disabled	Indicates if DTP is enabled or disabled
In STP	Indicates if the port is added to the STP or not.

Related Commands

Command	Description
show interfaces trunk	Displays interface trunking information.

show eobc

To display the information about the Ethenet out-of-band channel (EOBC) interface, use the **showeobc** command in user EXEC or privileged EXEC mode.

show eobc

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the information about the EOBC interface:

```
Router>
show eobc
EOBC0/0 is up, line protocol is up
  Hardware is DEC21143, address is 0000.2100.0000 (bia 0000.2100.0000)
  MTU 0 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not set
  Unknown duplex, Unknown Speed, MII
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 25/2147483647, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     172196 packets input, 11912131 bytes
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 0 multicast
     0 input packets with dribble condition detected
     172144 packets output, 11363476 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
Interface EOBC0/0
Hardware is DEC21143
 dec21140_ds=0x618FB938, registers=0x3C018000, ib=0x38A9180
 rx ring entries=128, tx ring entries=256, af setup failed=0
 rxring=0x38A9280, rxr shadow=0x618FBB20, rx_head=28, rx_tail=0
 txring=0x38A9AC0, txr shadow=0x618FBD4C, tx_head=72, tx_tail=72, tx_count=0
```

```
 PHY link up
 CSR0=0xF8024882, CSR1=0xFFFFFFFF, CSR2=0xFFFFFFFF, CSR3=0x38A9280
 CSR4=0x38A9AC0, CSR5=0xF0660000, CSR6=0x320CA002, CSR7=0xF3FFA261
 CSR8=0xE0000000, CSR9=0xFFFDC3FF, CSR10=0xFFFFFFFF, CSR11=0x0
 CSR12=0xC6, CSR13=0xFFFF0000, CSR14=0xFFFFFFFF, CSR15=0x8FF80000
 DEC21143 PCI registers:
  bus_no=0, device_no=6
  CFID=0x00191011, CFCS=0x02800006, CFRV=0x02000041, CFLT=0x0000FF00
  CBIO=0x20000801, CBMA=0x48018000, CFIT=0x28140120, CFDD=0x00000400
 MII registers:
  Register 0x00:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x08:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x10:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x18:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
throttled=0, enabled=0, disabled=0
 rx_fifo_overflow=0, rx_no_enp=0, rx_discard=0
 tx_underrun_err=0, tx_jabber_timeout=0, tx_carrier_loss=0
 tx_no_carrier=0, tx_late_collision=0, tx_excess_coll=0
 tx_collision_cnt=0, tx_deferred=0, fatal_tx_err=0, tbl_overflow=0
 HW addr filter: 0x38D2EE0, ISL Disabled
  Entry= 0:  Addr=0000.0000.0000
  Entry= 1:  Addr=0000.0000.0000
  Entry= 2:  Addr=0000.0000.0000
  Entry= 3:  Addr=0000.0000.0000
  Entry= 4:  Addr=0000.0000.0000
  Entry= 5:  Addr=0000.0000.0000
  Entry= 6:  Addr=0000.0000.0000
  Entry= 7:  Addr=0000.0000.0000
  Entry= 8:  Addr=0000.0000.0000
  Entry= 9:  Addr=0000.0000.0000
  Entry=10:  Addr=0000.0000.0000
  Entry=11:  Addr=0000.0000.0000
  Entry=12:  Addr=0000.0000.0000
  Entry=13:  Addr=0000.0000.0000
  Entry=14:  Addr=0000.0000.0000
  Entry=15:  Addr=0000.2100.0000
Router>
```

This example shows how to display the information about the EOBC interface but excludes lines that contain the word output:

```
Router>
show eobc
| exclude output
EOBC0/0 is up, line protocol is up
  Hardware is DEC21143, address is 0000.2100.0000 (bia 0000.2100.0000)
  MTU 0 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not set
  Unknown duplex, Unknown Speed, MII
  ARP type: ARPA, ARP Timeout 04:00:00
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 25/2147483647, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
     175919 packets input, 12196443 bytes
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 0 multicast
     0 input packets with dribble condition detected
     0 babbles, 0 late collision, 0 deferred
```

```
     0 lost carrier, 0 no carrier
Interface EOBC0/0
Hardware is DEC21143
 dec21140_ds=0x618FB938, registers=0x3C018000, ib=0x38A9180
 rx ring entries=128, tx ring entries=256, af setup failed=0
 rxring=0x38A9280, rxr shadow=0x618FBB20, rx_head=7, rx_tail=0
 txring=0x38A9AC0, txr shadow=0x618FBD4C, tx_head=209, tx_tail=209, tx_count=0
 PHY link up
 CSR0=0xF8024882, CSR1=0xFFFFFFFF, CSR2=0xFFFFFFFF, CSR3=0x38A9280
 CSR4=0x38A9AC0, CSR5=0xF0660000, CSR6=0x320CA002, CSR7=0xF3FFA261
 CSR8=0xE0000000, CSR9=0xFFFDC3FF, CSR10=0xFFFFFFFF, CSR11=0x0
 CSR12=0xC6, CSR13=0xFFFF0000, CSR14=0xFFFFFFFF, CSR15=0x8FF80000
 DEC21143 PCI registers:
  bus_no=0, device_no=6
  CFID=0x00191011, CFCS=0x02800006, CFRV=0x02000041, CFLT=0x0000FF00
  CBIO=0x20000801, CBMA=0x48018000, CFIT=0x28140120, CFDD=0x00000400
 MII registers:
  Register 0x00:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x08:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x10:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
  Register 0x18:   FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF
 throttled=0, enabled=0, disabled=0
 rx_fifo_overflow=0, rx_no_enp=0, rx_discard=0
 tx_underrun_err=0, tx_jabber_timeout=0, tx_carrier_loss=0
 tx_no_carrier=0, tx_late_collision=0, tx_excess_coll=0
 tx_collision_cnt=0, tx_deferred=0, fatal_tx_err=0, tbl_overflow=0
 HW addr filter: 0x38D2EE0, ISL Disabled
  Entry= 0:  Addr=0000.0000.0000
  Entry= 1:  Addr=0000.0000.0000
  Entry= 2:  Addr=0000.0000.0000
  Entry= 3:  Addr=0000.0000.0000
  Entry= 4:  Addr=0000.0000.0000
  Entry= 5:  Addr=0000.0000.0000
  Entry= 6:  Addr=0000.0000.0000
  Entry= 7:  Addr=0000.0000.0000
  Entry= 8:  Addr=0000.0000.0000
  Entry= 9:  Addr=0000.0000.0000
  Entry=10:  Addr=0000.0000.0000
  Entry=11:  Addr=0000.0000.0000
  Entry=12:  Addr=0000.0000.0000
  Entry=13:  Addr=0000.0000.0000
  Entry=14:  Addr=0000.0000.0000
  Entry=15:  Addr=0000.2100.0000
Router>
```

Related Commands

Command	Description
show environment alarm	Displays the information about the environmental alarm.
show environment status	Displays the information about the operational FRU status.

show errdisable detect

To display the error-disable detection status, use the **show errdisable detect** command in user EXEC or privileged EXEC mode.

show errdisable detect

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17b)SXA	This command was changed to include packet-buffer error status information.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the error-disable detection status:

```
Router>
show errdisable detect
ErrDisable Reason    Detection status
-----------------    ----------------
udld                 Enabled
bpduguard            Enabled
rootguard            Enabled
packet-buffer-err    Enabled
pagp-flap            Enabled
dtp-flap             Enabled
link-flap            Enabled
Router#
```

Related Commands

Command	Description
errdisable detect cause	Enables the error-disable detection.

show errdisable recovery

To display the information about the error-disable recovery timer, use the **show errdisable recovery** command in EXEC mode.

show errdisable recovery

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the information about the error-disable recovery timer:

```
Router#
show errdisable recovery
ErrDisable Reason    Timer Status
-----------------    --------------
udld                 Enabled
bpduguard            Enabled
rootguard            Enabled
pagp-flap            Enabled
dtp-flap             Enabled
link-flap            Enabled
Timer interval:300 seconds
Interfaces that will be enabled at the next timeout:
Interface    Errdisable reason    Time left(sec)
---------    -----------------    --------------
Fa9/4           link-flap             279
```

Related Commands

Command	Description
errdisable recovery	Configures the recovery mechanism variables.
show interfaces status	Displays the interface status or a list of interfaces in an error-disabled state on LAN ports only.

show esmc

To display the Ethernet synchronization message channel (ESMC) processes on a device, use the **show esmc** command in privileged EXEC mode.

show esmc [**detail** | **interface** *type number*]

Syntax Description

detail	(Optional) Provides a detailed display of ESMC processes.
interface *type number*	(Optional) Specifies the interface type and interface number. For more information, use the question mark (?) online help function.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2) SNI	This command was introduced into Cisco ASR 901 Aggregation Services Router.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Examples

The following example shows the ESMC processes enabled on a device:

```
Device# show esmc detail

Interface: GigabitEthernet0/0/0
Administrative configurations:
  Mode: Synchronous
  ESMC TX: Enable
  ESMC RX : Enable
  QL RX configured : NA
  QL TX configured : NA
Operational status:
  Port status: UP
  QL Receive: QL-SSU-B
  ESMC Information rate : 1 packet/second
  ESMC Expiry: 5 second
```

The table below describes the significant fields shown in the display.

Table 32: show esmc Field Descriptions

Field	Description
Mode	Synchronous or asynchronous mode of packet transmission.
ESMC TX	Option for transmitting ESMC data.
ESMC RX	Option for receiving ESMC data.

Field	Description
QL RX configured	Quality level receive configuration.
QL TX configured	Quality level transmit configuration.
ESMC Information rate	Rate at which ESMC information Protocol Data Unit (PDU) is transmitted in packet per second.
ESMC Expiry	Duration in which the ESMC receipt is expired.

Related Commands

Command	Description
esmc mode ql-disabled	Disables the ESMC on an interface.
esmc process	Enables the ESMC process in a device.
show interfaces accounting	Displays the number of packets of each protocol type that have been sent through all configured interfaces.

show etherchannel

To display EtherChannel information for a channel, use the **showetherchannel** command in privileged EXEC mode.

Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers
show etherchannel [*channel-group*] {**port-channel** | **brief** | **detail** | **summary** | **port** | **load-balance**}

Cisco Catalyst Switches
show etherchannel [*channel-group*] {**port-channel** | **brief** | **detail** | **summary** | **port** | **load-balance** | **protocol**} [*expression*]

Syntax Description

channel -group	(Optional) Number of the channel group. If you do not specify a value for the *channel -group* argument, all channel groups are displayed.
port -channel	Displays port channel information.
brief	Displays a summary of EtherChannel information.
detail	Displays detailed EtherChannel information.
summary	Displays a one-line summary per channel group.
port	Displays EtherChannel port information.
load -balance	Displays load-balance information.
protocol	Displays the enabled protocol.
expression	(Optional) Expression in the output to use as a reference point.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.0(7)XE	This command was introduced on Cisco Catalyst 6000 family switches.
12.1(3a)E3	This command was modified. The number of valid values for the *channel -group* argument were changed.
12.1(5c)EX	This command was modified. The number of valid values for the *channel-group* argument were changed.
12.2(2)XT	This command was modified to support switchport creation on Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(14)SX	This command was implemented on the Supervisor Engine 720.
12.2(17a)SX1	This command was modified. The output of the **showetherchannelload-balance** command was changed to include IPv6 information. The display was changed to include Multiprotocol Label Switching (MPLS) information.

Release	Modification
12.2(17d)SXB	This command was modified to support the Supervisor Engine 2.
12.2(8)T	This command was modified to support switchport creation.
12.2(33)SXH	This command was modified. The output of the **showetherchannelport-channel** and the **showetherchanneldetail**commands was changed to include Link Aggregation Control Protocol (LACP) fast switchover status. The number of valid values for the *channel -group* argument was changed.
12.2(33)SRC	This command was modified. The output of the **showetherchannelport-channel** and the **showetherchanneldetail**commands was changed to show the status of the LACP Single Fault Direct Load Balance Swap feature, to show the last applied hash distribution algorithm, and to include LACP fast switchover status.
12.2(33)SXI3	This command was modified. The output of the **showetherchannelsummary**, **showetherchannelport-channel**, and **showetherchanneldetail** commands was changed to show the standalone disable option.

Usage Guidelines

Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers

The *channel-group* argument supports six EtherChannels and eight ports in each channel.

If you do not specify a value for the *channel-group* argument, all channel groups are displayed.

Cisco Catalyst Switches

The number of valid values for the *channel-group* argument depends on the software release. For software releases prior to Cisco IOS Release 12.1(3a)E3, valid values are from 1 to 256; for Cisco IOS Release 12.1(3a)E3, 12.1(3a)E4, and 12.1(4)E1, valid values are from 1 to 64. Cisco IOS Release 12.1(5c)EX and later support a maximum of 64 values ranging from 1 to 256. Cisco IOS Release 12.2(33)SXH supports a maximum of 64 values ranging fro m 1 to 282.

If you do not specify a value for the *channel-group* argument, all channel groups are displayed.

In the output, the Passive port list field is displayed for Layer 3 port channels only. This field means that the physical interface, which is still not up, is configured to be in the channel group (and indirectly in the only port channel in the channel group).

The *channel-group*values from 257 to 282 are supported on the Catalyst 6500 series Cisco Services Module (CSM) and the Catalyst 6500 series Firewall Services Module (FWSM) only.

In the output, the Passive port list field is displayed for Layer 3 port channels only. This field means that the physical interface, which is still not up, is configured to be in the channel group (and indirectly is the only port channel in the channel group).

If the interface is configured as part of the channel in ON mode, the**showetherchannelprotocol** command displays Protocol: - (Mode ON).

In the output of the **showetherchannelsummary** command, the following conventions apply:

- In the column that displays the protocol that is used for the channel, if the channel mode is ON, a hyphen (-) is displayed.
- For LACP, multiple aggregators are supported. For example, if two different bundles are created, Po1 indicates the primary aggregator, and Po1A and Po1B indicates the secondary aggregators.

In the output of the **showetherchannelload-balance** command, the following conventions apply:

- For EtherChannel load balancing of IPv6 traffic, if the traffic is bridged onto an EtherChannel (for example, it is a Layer 2 channel and traffic in the same VLAN is bridged across it), the traffic is always load balanced by the IPv6 addresses or src, dest, or src-dest, depending on the configuration. For this reason, the switch ignores the MAC/IP/ports for bridged IPv6 traffic. If you configure src-dst-mac, the src-dst-ip(v6) address is displayed. If you configure src-mac, the src-ip(v6) address is displayed.
- IPv6 traffic that is routed over a Layer 2 or a Layer 3 channel is load balanced based on MAC addresses or IPv6 addresses, depending on the configuration. The MAC/IP and the src/dst/src-dst are supported, but load balancing that is based on Layer 4 ports is not supported. If you use the **port** keyword, the IPv6 addresses or either src, dst, or src-dst, is displayed.

Examples

Protocol Information

The following example shows how to display the enabled protocol:

```
Router# show etherchannel protocol
Channel-group listing:
                -----------------------
Group: 12
----------
Protocol:  PAgP
Group: 24
----------
Protocol:   -  (Mode ON)
Router#
```

Port Channel Information for a Specific Group

The following example shows how to display port channel information for a specific group:

```
Router# show etherchannel 12 port-channel
Group: 12
----------
                Port-channels in the group:
                ----------------------
Port-channel: Po1
------------
Age of the Port-channel   = 143h:01m:12s
Logical slot/port   = 14/1          Number of ports = 2
GC                  = -             HotStandBy port = null
Port state          = Port-channel Ag-Inuse
Protocol            = LACP
Fast-switchover     = enabled
Ports in the Port-channel:
Index   Load   Port    EC state
------+------+------+------------
  0     55     Fa4/1   active
  1     AA     Fa4/2   active
Time since last port bundled:    16h:28m:58s    Fa4/1
Time since last port Un-bundled: 16h:29m:00s    Fa4/4
```

The following example shows that direct load swapping is enabled.

```
Router# show etherchannel 15 port-channel
                Port-channels in the group:
Port-channel: Po15    (Primary Aggregator)
Age of the Port-channel   = 0d:18h:16m:49s
Logical slot/port   = 14/7          Number of ports = 1
HotStandBy port = null
Port state              = Port-channel Ag-Inuse
Protocol                =   LACP
! The following line of output is added with support
of the LACP Single Fault Direct Load Swapping feature. !
Direct Load Swap = enabled
Ports in the Port-channel:
Index   Load   Port     EC state        No of bits
------+------+------+------------------+-----------
  0     FF     Fa4/1    Active    8
Time since last port bundled:    0d:00h:06m:12s    Fa4/1
```

Load Balancing

The following examples show how to display load-balancing information:

```
Router#
 show etherchannel load-balance
Source XOR Destination mac address
Router#
 show etherchannel load-balance
EtherChannel Load-Balancing Configuration:
        dst-mac
        mpls label-ip
EtherChannel Load-Balancing Addresses Used Per-Protocol:
Non-IP: Destination MAC address
  IPv4: Destination MAC address
  IPv6: Destination MAC address (routed packets)
        Destination IP address (bridged packets)
  MPLS: Label or IP
```

Summary Information for a Specific Group

The following example shows how to display a summary of information for a specific group:

```
Router#
show etherchannel 1 brief
Group state = L3
Ports: 2   Maxports = 8
port-channels: 1 Max port-channels = 1
Partner's information:
```

The following example shows the hash distribution algorithm that was last applied:

```
Router# show etherchannel
 10 summary
Flags:  D - down        P - bundled in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3      S - Layer2
        U - in use      N - not in use, no aggregation
        f - failed to allocate aggregator
```

```
<snip>
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
10     Po10(RU)        LACP      Gi3/7(P)       Gi3/9(P)
! The following line of output is added with support
of the EtherChannel Load Distribution feature. !
Last applied Hash Distribution Algorithm: Fixed
Router#
```

Detailed Information for a Specific Group

The following example shows how to display detailed information for a specific group:

```
Router#
show etherchannel 12 detail
Group state = L2
Ports: 1   Maxports = 8
Port-channels: 1 Max Port-channels = 1
Protocol:   PAgP
Fast-switchover = enabled
               Ports in the group:
               -------------------
Port: Fa5/2
------------
Port state    = Down Not-in-Bndl
Channel group = 12          Mode = Desirable-Sl     Gcchange = 0
Port-channel  = null        GC   = 0x00000000          Pseudo port-channel = Po1
2
Port index    = 0           Load = 0x00        Protocol =   PAgP
Flags:  S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs
        A - Device is in active mode       P - Device is in passive mode
Local information:
                           LACP Port    Admin     Oper    Port     Port
Port      Flags   State    Priority      Key      Key     Number   State
Fa4/1     SA      bndl     32768         100      100     0xc1     0x75
Partner's information:
         Partner               Partner               Partner
Port     System ID             Port Number    Age    Flags
Fa4/1    8000,00b0.c23e.d861   0x81            14s    SP
         LACP Partner    Partner     Partner
         Port Priority   Oper Key    Port State
         32768            128         0x81
Age of the port in the current state: 16h:27m:42s
               Port-channels in the group:
               ----------------------
Port-channel: Po12
------------
Age of the Port-channel   = 04d:02h:52m:26s
Logical slot/port   = 14/1          Number of ports = 0
GC                  = 0x00000000      HotStandBy port = null
Port state          = Port-channel Ag-Not-Inuse
Protocol            =   PAgP
```

Note When LACP 1:1 redundancy is configured, the **showetherchanneldetail** command also displays fast-switchover status information.

One-Line Summary per Channel Group

The following example shows how to display a one-line summary per channel group:

```
Router#
show etherchannel summary
U-in use  I-in port-channel   S-suspended   D-down  i-stand-alone  d-default
Group Port-channel  Ports
----- ------------  ----------------------------------------------------------
1     Po1(U)        Fa5/4(I)  Fa5/5(I)
2     Po2(U)        Fa5/6(I)  Fa5/7(I)
255                 Fa5/9(i)
256                 Fa5/8(i)
```

Port Information for All Groups

The following example shows how to display EtherChannel port information for all ports and all groups:

```
Router#
show etherchannel port
                Channel-group listing:
                ----------------------
Group: 1
----------
                Ports in the group:
                -------------------
Port: Fa5/4
------------
Port state    = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1           Mode = Desirable     Gcchange = 0
Port-channel  = null        GC   = 0x00000000    Psudo-agport = Po1
Port indx     = 0           Load = 0x00
Flags:  S - Device is sending Slow hello.  C - Device is in Consistent state.
        A - Device is in Auto mode.        P - Device learns on physical port.
Timers: H - Hello timer is running.        Q - Quit timer is running.
        S - Switching timer is running.    I - Interface timer is running.
Local information:
                              Hello    Partner  PAgP     Learning  Group
Port      Flags State   Timers  Interval Count   Priority   Method  Ifindex
Fa5/4     d     U1/S1           1s       0        128        Any      0

Age of the port in the current state: 02h:40m:35s
Port: Fa5/5
------------
Port state    = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1           Mode = Desirable     Gcchange = 0
Port-channel  = null        GC   = 0x00000000    Psudo-agport = Po1
Port indx     = 0           Load = 0x00
Flags:  S - Device is sending Slow hello.  C - Device is in Consistent state.
        A - Device is in Auto mode.        P - Device learns on physical port.
Timers: H - Hello timer is running.        Q - Quit timer is running.
        S - Switching timer is running.    I - Interface timer is running.
```

Port Information for a Specific Group

The following example shows how to display the information about the EtherChannel port for a specific group:

```
Router#
show etherchannel 1 port
                Channel-group listing:
                ----------------------
Group: 1
----------
                Ports in the group:
                -------------------
Port: Fa5/4
------------
Port state    = EC-Enbld Down Not-in-Bndl Usr-Config
Channel group = 1           Mode = Desirable     Gcchange = 0
Port-channel  = null        GC   = 0x00000000    Psudo-agport = Po1
Port index    = 0           Load = 0x00        Protocol =   LACP
Flags:  S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs
        A - Device is in active mode       P - Device is in passive mode
Local information:
                            LACP Port    Admin     Oper    Port     Port
Port      Flags   State     Priority      Key      Key     Number   State
Fa5/4     SA      bndl      32768         100      100     0xc1     0x75
Partner's information:
         Partner               Partner               Partner
Port     System ID             Port Number    Age    Flags
Fa5/4    8000,00b0.c23e.d861    0x81            14s    SP
         LACP Partner    Partner     Partner
         Port Priority   Oper Key    Port State
         32768            128         0x81
Age of the port in the current state: 04d:02h:57m:38s
```

Port Channel Information for the Standalone Disabled Option

The following example shows the **showetherchannelsummary** command output with a port in suspended state:

```
Router# show etherchannel 42 summary
Flags:  D - down        P - bundled in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3      S - Layer2
        U - in use      f - failed to allocate aggregator
        M - not in use, minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
Number of channel-groups in use: 8
Number of aggregators:           8
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
2      Po42(SU)        LACP      Fa1/17(s)  Fa1/18(P)  Fa1/19(P)  Fa1/20(P)
```

The following example shows the **showetherchannelport-channel** command output with the status of Standalone Disable option:

```
Router# show etherchannel 42 port-channel
```

```
               Port-channels in the group:
               ----------------------
Port-channel: Po42    (Primary Aggregator)
------------
Age of the Port-channel   = 0d:21h:28m:22s
Logical slot/port   = 14/42          Number of ports = 3
HotStandBy port = null
Port state          = Port-channel Ag-Inuse
Protocol            =   LACP
Fast-switchover     = disabled
Load share deferral = disabled
Standalone Disable  = enabled
Ports in the Port-channel:
Index   Load      Port          EC state       No of bits
------+------+------------+------------------+-----------
 2      49         Fa1/18             Active   3
 1      92         Fa1/19             Active   3
 3      24         Fa1/20             Active   2
Time since last port bundled:    0d:03h:37m:07s    Fa1/18
Time since last port Un-bundled: 0d:03h:34m:27s    Fa1/17
Last applied Hash Distribution Algorithm: Fixed
```

The following example shows the **showetherchanneldetail** command output with the status of Standalone Disable option:

```
Router# show etherchannel 42 detail

Group state = L2
Ports: 4   Maxports = 16
Port-channels: 1 Max Port-channels = 16
Protocol:   LACP
Minimum Links: 2
Standalone Disable: enabled
               Ports in the group:
               -------------------
Port: Fa1/17
------------
Port state    = Up Cnt-bndl Suspend Not-in-Bndl
Channel group = 42           Mode = Active      Gcchange = -
Port-channel  = null        GC   =   -         Pseudo port-channel = Po2
Port index    = 0           Load = 0x00        Protocol =   LACP
Flags:  S - Device is sending Slow LACPDUs   F - Device is sending fast LACPDUs.
        A - Device is in active mode.        P - Device is in passive mode.
Local information:
                         LACP port     Admin     Oper    Port        Port
Port      Flags   State     Priority      Key       Key     Number      State
Fa1/17    FP      susp      1             0x2       0x2     0x112       0x82
Partner's information:
          Partner Partner   LACP Partner  Partner   Partner  Partner     Partner
Port      Flags   State     Port Priority Admin Key Oper Key Port Number Port State
Fa1/17    FP      susp      1             0x0       0x2      0x312       0x36
Age of the port in the current state: 0d:03h:44m:04s
Port: Fa1/18
------------
Port state    = Up Mstr In-Bndl
Channel group = 42           Mode = Active      Gcchange = -
Port-channel  = Po2         GC   =   -         Pseudo port-channel = Po2
Port index    = 2           Load = 0x49        Protocol =   LACP
Flags:  S - Device is sending Slow LACPDUs   F - Device is sending fast LACPDUs.
        A - Device is in active mode.        P - Device is in passive mode.
Local information:
                         LACP port     Admin     Oper    Port        Port
Port      Flags   State     Priority      Key       Key     Number      State
```

```
Fa1/18    SA      bndl      2             0x2       0x2     0x113       0x3D
Partner's information:
          Partner Partner   LACP Partner  Partner   Partner  Partner     Partner
Port      Flags   State     Port Priority Admin Key Oper Key Port Number Port State
Fa1/18    SA      bndl      2             0x0       0x2      0x313       0x3D
Age of the port in the current state: 0d:03h:43m:24s
Port-channels in the group:
Port-channel: Po42    (Primary Aggregator)
Age of the Port-channel   = 0d:21h:34m:45s
Logical slot/port   = 14/42          Number of ports = 3
HotStandBy port = null
Port state          = Port-channel Ag-Inuse
Protocol            =   LACP
Fast-switchover     = disabled
Load share deferral = disabled
Standalone Disable  = enabled
Ports in the Port-channel:
Index   Load      Port          EC state       No of bits
------+------+------------+-----------------+-----------
 2      49         Fa1/18             Active   3
 1      92         Fa1/19             Active   3
 3      24         Fa1/20             Active   2
Time since last port bundled:    0d:03h:43m:30s    Fa1/18
Time since last port Un-bundled: 0d:03h:40m:50s    Fa1/17
Last applied Hash Distribution Algorithm: Fixed
```

Related Commands

Command	Description
channel-group	Assigns and configures an EtherChannel interface to an EtherChannel group.
channel-protocol	Sets the protocol that is used on an interface to manage channeling.
interface port-channel	Accesses or creates the IDB port channel.

show etherchannel load-balancing

To display the load-balancing method applied to Gigabit EtherChannel (GEC) interfaces, use the **showetherchannelload-balancing** command in user EXEC or privileged EXEC mode.

show etherchannel load-balancing

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced.
Cisco IOS XE Release 2.5	This command was modified. Information about the port-channel configuration and flow-based load balancing was added to the output.

Usage Guidelines

The **showetherchannelload-balancing** command shows which load-balancing method is applied to the port channels of a GEC interface, both at the global level and for each port channel.

There are two methods of load balancing on a GEC interface:

- VLAN-manual--All packets forwarded over the same VLAN subinterface are considered part of the same flow and are mapped to the member link specified in the configuration.
- Flow-based--Traffic flows are mapped to different member links based on the packet header.

Examples

The following example shows output from this command for a port channel configured with VLAN-manual load balancing:

```
Router# show etherchannel load-balancing

EtherChannel Load-Balancing Method:
Global LB Method: vlan-manual

  Port-Channel:                       LB Method
    Port-channel1                   :  vlan-manual
```

The table below describes the significant fields shown in the display.

Table 33: show etherchannel load-balancing Field Descriptions

Field	Description
Global LB Method	Load balancing method set globally for all port channels with the **port-channelload-balancingvlan-manual** command.
Port Channel LB Method	Load balancing method set for the specific port channels with the **load-balancing**command. This configuration takes precedence over the global configuration.

Related Commands

Command	Description
load-balancing	Applies a load-balancing method to a GEC interface.
port-channel load-balancing vlan-manual	Applies the VLAN-manual load-balancing method globally to all GEC interfaces.
show interfaces port-channel etherchannel	Displays the load-balancing bucket distribution currently in use for a GEC interface.

show fabric

To display the information about the crossbar fabric, use the **showfabric** command in EXEC mode.

show fabric [**active**]
show fabric {**channel-counters** | **errors** | **status**} [*slot* | **all**]
show fabric switching-mode [**module** {*slot* | **all**}]
show fabric utilization [*slot* | **all**]

Syntax Description

active	(Optional) Displays the redundancy status for the Switch Fabric Module.
channel-counters	Displays the fabric channel-counter information.
errors	Displays the errors that are associated with the crossbar fabric; see the "Usage Guidelines" section for additional information.
status	Displays the current status of the fabric channel.
slot	(Optional) Number of the slot.
all	(Optional) Displays the information for all modules using the crossbar fabric.
switching-mode	Displays the module switching mode; see the "Usage Guidelines" section for additional information.
module *slot*	(Optional) Displays the switching mode for the specified slot.
module all	(Optional) Displays the switching mode for all installed modules.
utilization	Displays the percentage utilization for each fabric channel.

Command Default

This command has no default settings.

Command Modes

EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command is not supported on Cisco 7600 series routers that are configured with a Supervisor Engine 32.

If you specify *slot*, the information is displayed for the specified slot. If you specify **all**, the information for all slots using the crossbar fabric is displayed. If you do not specify *slot* or **all**, the display is the same as if you entered **all**.

To display all the related crossbar fabric information, enter the **showfabric** command without keywords.

A fabric channel is each connection between a module and the crossbar fabric module. Each module can have zero, one, or two fabric channels. The more fabric channels that a module has, the more overall bandwidth is available to the module.

The following errors are associated with the crossbar fabrics:

- Synchronization errors--General errors are the most common types of errors.
- Heartbeat errors--The supervisor engine sends out periodic heartbeat packets to each module using the crossbar fabric. If any of these modules or the crossbar fabric fail to detect heartbeat packets for a period of time, this error is reported.
- CRC errors--All packets crossing the crossbar fabric are CRC protected. If any of the ASICs between a module and the crossbar fabric module detect a CRC error, this error is reported.

The three types of fabric switching modes are as follows:

- Bus--Packets that travel across the traditional backplane and that are shared by all modules to be switched by the supervisor engine. Modules without the crossbar fabric connectors are restricted to this mode. The 48-port 10/100TX RJ-45 module is an example of this module type.
- Crossbar--Packets with headers only that travel across the traditional backplane to be switched by the supervisor engine and that travel across the crossbar fabric. The 16-port Gigabit Ethernet GBIC switching module is an example of this module type.
- dCEF--Packets that are switched by the module and that travel across the crossbar fabric. The 16-port Gigabit Ethernet GBIC switching module and the 16-port Gigabit Ethernet module are examples of this module type. The 16-port Gigabit Ethernet GBIC switching module can be in any of these three modes, but the 16-port Gigabit Ethernet module can only be in dCEF mode.

The threshold information is shown only when you enter the **nofabricswitching-modeallowtruncated** command.

In the **showfabricswitching-mode** command output, the possible global switching modes are as follows:

- Flow-through (Bus)--Mode that the switch uses for traffic between nonfabric-enabled modules and for traffic between a nonfabric-enabled module and a fabric-enabled module. In this mode, all traffic passes between the local bus and the supervisor engine bus.
- Truncated--Mode that the switch uses for traffic between fabric-enabled modules when both fabric-enabled and nonfabric-enabled modules are installed. In this mode, the switch sends a truncated version of the traffic (the first 64 bytes of the frame) over the switch fabric channel.
- Compact--Mode that the switch uses for all traffic when only fabric-enabled modules are installed. In this mode, a compact version of the DBus header is forwarded over the switch fabric channel, which provides the best possible performance.

In the **showfabricswitching-mode** command output , depending on the supervisor engine installed, the following messages appear:

- With a Supervisor Engine 2, this message is included in the output:

```
An enabled Switch Fabric is not required for the system to operate
```

- With a Supervisor Engine 720, this message is included in the output:

```
Fabric module is not required for system to operate
```

Examples

This example shows how to display the redundancy status of the Switch Fabric Module:

```
Router# show fabric active
Active fabric card in slot 5
No backup fabric card in the system
Router#
```

This example shows how to display the channel-counter information:

```
Router# show fabric channel-counters
slot channel   rxErrors   txErrors  txDropped
    1       0          0          0          0
Router#
```

This example shows how to display the errors that are associated with the crossbar fabric:

```
Router# show fabric errors
Module errors:
slot     channel        crc      hbeat       sync      DDR sync
   1           0          0          0          0             0
   8           0          0          0          0             0
   8           0          0          0          0             0
   9           0          0          0          0             0
Fabric errors:
slot     channel       sync     buffer    timeout
   1           0          0          0          0
   8           0          0          0          0
   8           0          0          0          0
   9           0          0          0          0
Router#
```

This example shows how to display the module switching mode:

```
Router# show fabric switching-mode
Global switching mode is Truncated
An enabled Switch Fabric is not required for the system to operate
Modules are allowed to operate in bus mode
Truncated mode is not allowed unless threshold is met
Threshold for truncated mode operation is 2 SFM-capable cards
 Module Slot     Switching Mode
     1           Bus
     2           Crossbar
     3           Crossbar
     4           Bus
     5           No Interfaces
     7           DCEF
     9           DCEF
Router#
```

This example shows how to display the fabric-channel status:

```
Router# show fabric status
slot    channel      speed           module            fabric
                                      status            status
    1          0          8G              OK                OK
    5          0          8G              OK       Up- Timeout
    6          0         20G              OK      Up- BufError
```

```
    8           0           8G                OK                OK
    8           1           8G                OK                OK
    9           0           8G    Down- DDRsync                 OK
Router#
```

This example shows how to display the percentage utilizations for all fabric-enabled channels:

```
Router# show fabric utilization all
slot    channel  Ingress %   Egress %
    1           0           0           0
crc       hbeat       sync        sync
    1           0           0           0          0          0
Router#
```

show fm features

To display the information about the feature manager, use the **showfmfeatures** command in user EXEC or privileged EXEC mode.

show fm features

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the information about the feature manager:

```
Router>
show fm features
Designated MSFC:1 Non-designated MSFC:1
Redundancy Status:designated
Interface:FastEthernet2/10 IP is enabled
  hw[EGRESS] = 1, hw[INGRESS] = 1
  hw_force_default[EGRESS] = 0, hw_force_default[INGRESS] = 0
  mcast = 0
  priority = 2
  reflexive = 0
  inbound label:1
        protocol:ip
          feature #:1
          feature id:FM_IP_ACCESS
          ACL:106
  outbound label:2
        protocol:ip
          feature #:1
          feature id:FM_IP_ACCESS
          ACL:106
Interface:FastEthernet2/26 IP is enabled
  hw[EGRESS] = 1, hw[INGRESS] = 0
  hw_force_default[EGRESS] = 0, hw_force_default[INGRESS] = 1
  mcast = 0
  priority = 2
  reflexive = 0
  inbound label:24
        protocol:ip
          feature #:1
          feature id:FM_IP_ACCESS
          ACL:113
  outbound label:3
```

```
        protocol:ip
          feature #:1                                                  feature
id:FM_IP_WCCP
          Service ID:0
          Service Type:0
Interface:Vlan55 IP is enabled
  hw[EGRESS] = 1, hw[INGRESS] = 1
  hw_force_default[EGRESS] = 0, hw_force_default[INGRESS] = 0
  mcast = 0
  priority = 2
  reflexive = 0
  inbound label:4
        protocol:ip
          feature #:1
          feature id:FM_IP_ACCESS
          ACL:111
Interface:Vlan101 IP is enabled
  hw[EGRESS] = 1, hw[INGRESS] = 1
  hw_force_default[EGRESS] = 0, hw_force_default[INGRESS] = 0
  mcast = 0
  priority = 2
  reflexive = 0
  inbound label:5
        protocol:ip
          feature #:1
          feature id:FM_IP_ACCESS
          ACL:101
  outbound label:6
        protocol:ip
          feature #:1
          feature id:FM_IP_ACCESS
          ACL:101
Router>
```

This example shows how to display the lines of feature manager information starting with the line that begins with Redundancy:

```
Router>
show fm features | begin Redundancy
Redundancy Status: designated
Router>
```

Related Commands

Command	Description
show fm summary	Displays a summary of FM Information.

show fm inband-counters

To display the number of inband packets that are sent by the Multilayer Switching Feature Card (MSFC) for server load balancing (SLB) and Web Cache Coprocessor Protocol (WCCP), use the **showfminband-counters** command in privileged EXEC mode.

show fm inband-counters

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The output display for the **showfminband-counters** command includes the number of SLB inband packets that are sent by the MSFC and the number of WCCP inband packets that are sent by the MSFC.

If CBAC is configured, the command output displays the number of packets that are sent for CBAC by the MSFC.

Examples

This example shows how to display the number of SLB and WCCP inband packets that are sent by the MSFC:

```
Router# show fm inband-counters
Inband Packets Sent
 Slot  WCCP         SLB
 1     0            0
 2     0            0
 3     0            0
 4     0            0
 5     0            0
 6     0            0
 7     0            0
 8     0            0
 9     0            0
 10    0            0
 11    0            0
 12    0            0
 13    0            0
Router#
```

show gnss

To display the output of the GNSS configuration, use the **show gnss** command in privileged EXEC mode.

show gnss [**location** | **satellite** | **status** | **time** | **device**]

Syntax Description

location	(Optional) Displays the location of the GNSS module.
satellite	(Optional) Displays the satellites configured or detected by the GNSS module.
status	(Optional) Displays the status of the GNSS module.
time	(Optional) Displays the time on the GNSS module.
device	(Optional) Displays the hardware information of the active GNSS module.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.17	This command was introduced.

Usage Guidelines

Use this command to verify the GNSS configuration.

Examples

The following examples show the output generated by this command:

```
Router# show gnss

Current GNSS Location:

LOC: 12:56.183600 N 77:41.768000 E 819.10 m

Router# show gnss satellite all

All Satellites Info:

SV PRN No   Channel No       Acq Flg    Ephemeris Flg     SV Type     Sig Strength
-------------------------------------------------------------------------------
21          0                1          1                 0           47
14          1                1          1                 0           48
18          2                1          1                 0           49
22          3                1          1                 0           46
27          4                1          1                 0           44
24          5                1          1                 0           44
31          6                1          1                 0           47

Router# show gnss status

GNSS status:

GNSS device: detected
Lock status: Power-up
Receiver Status: Auto
Clock Progress: Phase Locking
```

```
Survey progress: 100
Satellite count: 7
Holdover Duration: 0
PDOP: 1.01 TDOP: 1.00
HDOP: 0.71 VDOP: 0.72
Minor Alarm: ANTENNA_OPEN NOT_DISCIPLINING_OSC
Major Alarm: None

Router# show gnss time

Current GNSS Time:

Time: 2015/11/30 10:20:33 UTC Offset: 17

Router# show gnss device
GNSS device:

  Serial number: FOC2130ND5X
  Firmware version: 1.4
  Firmware update progress: NA
  Authentication: Passed
```

In the **show gnss device** command output, serial number and authentication information is shown only for pluggable GNSS module like Cisco ASR 903. It is not shown for Cisco ASR 920.

show gtp

To display information related to Enhanced Wireless Access Gateway (EWAG) General Packet Radio Service (GPRS) Tunneling Protocol (GTP), use the **show gtp** command in privileged EXEC mode.

show gtp {**apn** [**statistics**] {*apn-index* | **all**} | **mcsa statistics** | **parameters** | **path** {**all** | [**statistics**] **remote-address** *path-address* [**vrf** *vrf-name*]} | **pdp-context** {**all** | **apn** *apn-index* | **imsi** *imsi-value* [**detail**] | **ms-address** *end-user-address* [**vrf** *vrf-name*] [**detail**] | **msisdn** *msisdn-value* [**detail**] | **teid-u** *user-teid* [**detail**]} | **statistics** | **tunnel** *interface type*}

Syntax Description

apn	Displays Access Point Name (APN) information.
apn-index	Index of the APN.
all	Displays information about all APNs.
statistics	(Optional) Displays information about APN counters.
mcsa statistics	Displays statistical information about Mobile Client Service Abstraction (MCSA) counters.
parameters	Displays information about GTP parameters.
path	Displays information about GTP path.
all	Displays information about all GTP paths.
statistics	Displays statistics related to a path.
remote-address *path-address*	Displays GTP path for a specified path address.
vrf *vrf-name*	Specifies the virtual routing and forwarding (VRF) containing the IP address.
pdp-context	Displays information about GTP Packet Data Protocol (PDP) data structures.
all	Displays information about all PDPs.
apn *apn_index*	Displays information about PDPs for the specified APN.

imsi *imsi_value*	Displays information about PDPs for the specified International Mobile Subscriber Identity (IMSI) value.
detail	Displays information about PDPs for the specified IMSI value in detail.
ms-address *end-user-address*	Displays information about PDPs for a specified end-user IPv4 address.
teid-u *user-teid*	Displays information about PDPs for a specified Tunnel Endpoint Identifier (TEID) user.
statistics	Displays information about GTP counters.
tunnel *interface type*	Displays information about GTP tunnels.

Command Default

This command has no defaults.

Command Modes

Previliged EXEC (#)

Command History

Release	Modification
Cisco IOS Release XE 3.8S	This command was introduced.

Usage Guidelines

Examples

The following is sample output of **show gtp apn** command:

```
Device# show gtp apn 1

apn_index   : 1            apn_name = starent.com
GGSN Addr   : 10.1.2.1
Primary DNS : 10.1.2.1
DHCP Addr   : 10.10.197.1     DHCP Lease: 6000
Tunnel MTU  : 1500
Number of active PDPs in this APN : 0

Default GW      Prefix Length Name              MAC Address     PDP Count
```

The table below describes the significant fields shown in the display.

Table 34: show gtp apn Field Descriptions

Field	Description
apn_index	Index of the APN.
apn_name	Name of the APN.
GGSN Addr	Gateway GPRS Support Node (GGSN) IP address of the APN.
Primary DNS	Primary Domain Name System (DNS) Address of the APN.
DHCP Addr	DHCP Address of the APN
Tunnel MTU	Maximum Transmission unit of a tunnel.
DHCP Lease	DHCP lease time in seconds.
Number of active PDPs in this APN	Number of active PDPs in the APN.

Related Commands

Command	Description
debug gtp	Debugs EWAG GTP.
gtp	Enables EWAG GTP.

show hspw-aps-icrm

To view information about hot standby pseudowires (HSPW), use the **showhspw-aps-icrm** command in privileged EXEC mode.

show hspw-aps-icrm {**group** *group-id* | **all**}

Syntax Description

group	Specifies the HSPW Automatic Protection Switching (APS) group.
group-id	HSPW APS group identifier.
all	Displays all the HSPW APS and inter chassis redundancy manager (ICRM) groups.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS 15.2(1)S	This command was introduced.
Cisco IOS XE 3.11S	This command was integrated into Cisco IOS XE Release 3.11S.

Usage Guidelines

Use this command to display information about a particular HSPW APS group or all HSPW APS and ICRM groups.

The following is sample output from the **show hspw-aps-icrm** command when **group** *group-id* is used to display information about a particular HSPW APS group:

```
Router# show hspw-aps-icrm group 100

ICRM group id 100, Flags : My core isolated No,Peer core isolated No,
State Connect
APS Group id 1 hw_if_index 33 APS valid:Yes
Total aps grp attached to ICRM group 100 is 1
```

Displaying Information About All HSPW APS and ICRM Groups

The following is sample output from the **show hspw-aps-icrm** command when **all** is used to display information about all the HSPW APS and ICRM groups:

```
Router# show hspw-aps-icrm all

ICRM group id 100, Flags : My core isolated No,Peer core isolated No,
State Connect
APS Group id 1 hw_if_index 33 APS valid:Yes
Total aps grp attached to ICRM group 100 is 1 ICRM group count
attached to MR-APS HSPW feature is 1
```

Related Commands

Command	Description
show aps	Displays information about the current APS feature on the router.

show hub

To display information about the hub (repeater) on an Ethernet interface of a Cisco 2505 or Cisco 2507 router, use the **showhub** command in user EXEC or privileged EXEC mode.

show hub commandshow hub [**ethernet** *number* [*port* [*end-port*]]]

Syntax Description

ethernet	(Optional) Indicates that this is an Ethernet hub.
number	(Optional) Hub number, starting with 0. Because there is currently only one hub, this number is 0.
port	(Optional) Port number on the hub. On the Cisco 2505 router, port numbers range from 1 to 8. On the Cisco 2507 router, port numbers range from 1 to 16. If a second port number follows, this port number indicates the beginning of a port range.
end-port	(Optional) Ending port number of a range.

Command Modes

User EXEC Privileged EXEC

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If you do not specify a port or port range for the **showhub** command, the command displays all ports (for example, ports 1 through 16 on a Cisco 2507 router) by default. Therefore, the **showhub**, **showhubethernet0**, and **showhubethernet0116** commands produce the same result.

If no ports are specified, the command displays some additional data about the internal port. The internal port is the hub's connection to Ethernet interface 0 inside the box. Ethernet interface 0 still exists; physical access to the interface is via the hub.

Examples

Information for a Specific Port

The following is sample output from the **showhub** command for hub 0, port 2 only:

```
Router# show hub ethernet 0 2
Port 2 of 16 is administratively down, link state is down
  0 packets input, 0 bytes
  0 errors with 0 collisions
     (0 FCS, 0 alignment, 0 too long,
      0 short, 0 runts, 0 late,
      0 very long, 0 rate mismatches)
  0 auto partitions, last source address (none)
  Last clearing of "show hub" counters never
```

```
Repeater information (Connected to Ethernet0)
  2792429 bytes seen with 18 collisions, 1 hub resets
  Version/device ID 0/1 (0/1)
  Last clearing of "show hub" counters never
```

Information for All Ports

The following is sample output from the **showhub** command for hub 0, all ports:

```
Router# show hub ethernet 0
Port 1 of 16 is administratively down, link state is up
  2458 packets input, 181443 bytes
  3 errors with 18 collisions
     (0 FCS, 0 alignment, 0 too long,
      0 short, 3 runts, 0 late,
      0 very long, 0 rate mismatches)
  0 auto partitions, last source address was 0000.0cff.e257
  Last clearing of "show hub" counters never
.
.
.
Port 16 of 16 is down, link state is down
  0 packets input, 0 bytes
  0 errors with 0 collisions
     (0 FCS, 0 alignment, 0 too long,
      0 short, 0 runts, 0 late,
      0 very long, 0 rate mismatches)
  0 auto partitions, last source address (none)
  Last clearing of "show hub" counters never

Repeater information (Connected to Ethernet0)
  2792429 bytes seen with 18 collisions, 1 hub resets
  Version/device ID 0/1 (0/1)
  Last clearing of "show hub" counters never

Internal Port (Connected to Ethernet0)
  36792 packets input, 4349525 bytes
  0 errors with 14 collisions
     (0 FCS, 0 alignment, 0 too long,
      0 short, 0 runts, 0 late,
      0 very long, 0 rate mismatches)
  0 auto partitions, last source address (none)
  Last clearing of "show hub" counters never
```

The table below describes significant fields shown in the display.

*Table 35: **show hub** Field Descriptions*

Field	Description
Port ... of ... is administratively down	Port number out of total ports; indicates whether the interface hardware is currently active or down because of the following: • The link-state test failed. • The MAC address mismatched when source address configured. • It has been taken down by an administrator.

Field	Description
link state is up	Indicates whether port has been disabled by the link-test function. If the link-test function is disabled by the user, nothing will be shown here.
packets input	Total number of error-free packets received by the system.
bytes	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
errors	Sum of FCS, alignment, too long, short, runts, very long, and rate mismatches.
collisions	Number of messages retransmitted due to Ethernet collisions.
FCS	Counter for the number of frames detected on the port with an invalid frame check sequence.
alignment	Counter for the number of frames of valid length (64 to 1518 bytes) that have been detected on the port with an FCS error and a framing error.
too long	Counter for the number of frames that exceed the maximum valid packet length of 1518 bytes.
short	Counter for the number of instances when activity is detected with duration less than 74 to 82 bit times.
runts	Number of packets that are discarded because they are smaller than the medium's minimum packet size. For example, any Ethernet packet that is less than 64 bytes is considered a runt.
late	Counter for the number of instances when a collision is detected after 480 to 565 bit times in the frame.
very longs	Counter for the number of times the transmitter is active in excess of 4 to 7.5 milliseconds.
rate mismatches	Counter for the number of occurrences when the frequency, or data rate of incoming signal is noticeably different from the local transmit frequency.
auto partitions	Counter for the number of instances where the repeater has partitioned the port from the network.
last source address	Source address of last packet received by this port. Indicates "none" if no packets have been received since power on or a hub reset.
Last clearing of "show hub" counters	Elapsed time since the **clearhubcounters** command was entered. Indicates "never" if counters have never been cleared.
Repeater information (Connected to Ethernet0)	Indicates that the following information is about the hub connected to the Ethernet interface shown.
... bytes seen with ... collisions, ... hub resets	Hub resets is the number of times the hub has been reset by network management software or by the **clearhub** command.

Field	Description
Version/device ID 0/1 (0/1)	Hub hardware version. IMR+ version device of daughter board.
Internal Port (Connected to Ethernet0)	Set of counters for the internal AUI port connected to the Ethernet interface.

Related Commands

Command	Description
hub	Enables and configures a port on an Ethernet hub of a Cisco 2505 or Cisco 2507 router.

show hw-module all fpd

To display the current versions of all field-programmable devices (FPDs) for all of the supported card types on a router, enter the **showhw-moduleallfpd** command in privileged EXEC mode.

show hw-module all fpd

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(18)SXE	This command was introduced.
12.0(31)S	This command was integrated into Cisco IOS Release 12.0(31)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(4)XD	This command was integrated into Cisco IOS Release 12.4(4)XD.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.4(15)T	Added an example for the PA-MC-T3-EC port adapter.
12.2(33)SCB	This command was integrated into Cisco IOS Release 12.2(33)SCB.
Cisco IOS XE Release 3.9S	This command was implemented on Cisco 4400 Series ISRs in Cisco IOS XE Release 3.9S

Usage Guidelines

Other than the FPD version information, the output for this command can also contain useful FPD-related notes.

For more information about FPD upgrades on SPA interface processors (SIPs) and shared port adapters (SPAs), see the Cisco 7600 Series Router SIP, SSC, and SPA Software Configuration Guide.

In Cisco IOS Release 12.2(33)SCB, the FPD image upgrade is supported only for the SPAs inserted in the SIP-600 jacket card on a Cisco uBR10012 router.

Examples

Cisco 7200 VXR

The following example shows an FPD image file version that requires an upgrade (indicated by the asterisk) for the NPE-G2 network processing engine in the Cisco 7200 VXR router:

```
Router# show hw-module all fpd
==== ====================== ====== ===========================================
                            H/W   Field Programmable   Current   Min. Required
```

```
Slot Card Type                Ver.  Device: ID-Name    Version      Version
==== ====================== ====== ================== =========== ==============
 npe NPE-G2                 1.5   1-NPEG2 I/O FPGA       0.18         0.20 *
---- ---------------------- ------ ------------------ ----------- --------------
   0 VSA                    0.0   1-VSA                  0.10         0.10
==== ====================== ====== ================================================
NOTES:
       - FPD images that are required to be upgraded are indicated with a '*'
         character in the Minimal Required Version field.
       - The following FPD image package file is required for the upgrade:
         c7200-fpd-pkg.124-4.XD.pkg
```

The following example shows that all FPDs for the port adapter have the minimum required version. For the NPE-400, the "###" characters in the ID-Name, Current Version, and Min, Required Version fields indicate that FPD does not apply to the NPE-400.

```
Router# show hw-module all fpd
==== ====================== ====== ================================================
                            H/W   Field Programmable   Current   Min. Required
Slot Card Type              Ver.  Device: ''ID-Name''  Version      Version
==== ====================== ====== ================== =========== ==============
 npe NPE-400                1.1   ############           #.#         #.#
---- ---------------------- ------ ------------------ ----------- --------------
   1 PA-MC-1T3-EC           1.0   1-ToySurprise FPGA     1.2         1.1
                                  2-Subrate FPGA         1.4         1.4
                                  3-Rommon/IPL           2.0         2.0
==== ====================== ====== ================================================
```

Cisco 7600 Series

The following example shows FPD image file versions for all SIPs and SPAs in the Cisco 7600 series router:

```
Router# show hw-module all fpd
==== ====================== ====== ================================================
                            H/W   Field Programmable   Current   Min. Required
Slot Card Type              Ver.  Device: ID-Name    Version      Version
==== ====================== ====== ================== =========== ==============
   4 7600-SIP-200           0.132 1-I/O FPGA             0.19        0.18
                                  2-EOS FPGA             0.22        0.22
                                  3-PEGASUS TX FPGA      0.121       0.121
                                  4-PEGASUS RX FPGA      0.13        0.13
                                  5-ROMMON               1.1         1.1
---- ---------------------- ------ ------------------ ----------- --------------
 4/0 SPA-4XOC3-ATM          1.0   1-I/O FPGA             0.121       0.121
---- ---------------------- ------ ------------------ ----------- --------------
 4/1 SPA-8XCHT1/E1          0.117 1-ROMMON               2.12        2.12
                                  2-I/O FPGA             0.22        0.22
---- ---------------------- ------ ------------------ ----------- --------------
 4/3 SPA-4XCT3/DS0          0.253 1-ROMMON               2.12        2.12
                                  2-I/O FPGA             0.21        0.21
                                  3-T3 SUBRATE FPGA      0.15        0.15
==== ====================== ====== ================================================
```

The following example shows FPD image file versions that require an upgrade (indicated by the asterisk) for two SIPs in the Cisco 7600 series router. The SIPs are disabled due to the version mismatch.

```
Router# show hw-module all fpd
```

```
==== ====================== ====== ============================================
                            H/W   Field Programmable   Current   Min. Required
Slot Card Type              Ver.  Device: ID-Name    Version      Version
==== ====================== ====== ================== =========== ==============
   1 7600-SIP... <DISABLED>  0.550 1-I/O FPGA             1.1         1.1
                                   2-EOS FPGA             1.211       1.211
                                   3-PEGASUS TX FPGA      1.129       1.129
                                   4-PEGASUS RX FPGA      1.3         1.3
                                   5-ROMMON               1.1         1.2     *
---- ---------------------- ------ ------------------ ----------- --------------
   4 7600-SIP... <DISABLED>  0.550 1-I/O FPGA             1.1         1.1
                                   2-EOS FPGA             1.211       1.211
                                   3-PEGASUS TX FPGA      1.129       1.129
                                   4-PEGASUS RX FPGA      1.3         1.3
                                   5-ROMMON               1.1         1.2     *
==== ====================== ====== ============================================
 NOTES:
       - FPD images that are required to be upgraded are indicated with a '*'
         character in the Minimal Required Version field.
       - The following FPD image package file is required for the upgrade:
         c7600-fpd-pkg.122-18.SXE.pkg
```

Cisco uBR10012 Universal Broadband Router

The following example shows the FPD versions on SPAs that meet the minimum requirements in the Cisco uBR10012 router:

```
Router# show hw-module all fpd
==== ====================== ====== ============================================
                            H/W   Field Programmable   Current   Min. Required
Slot Card Type              Ver.  Device: ID-Name    Version      Version
==== ====================== ====== ================== =========== ==============
 1/0 SPA-24XDS-SFP           1.0   1-Modena BLAZE FPG  1285.1444   1285.1444
---- ---------------------- ------ ------------------ ----------- --------------
 1/1 SPA-24XDS-SFP           1.0   1-Modena BLAZE FPG  1285.1444   1285.1444
---- ---------------------- ------ ------------------ ----------- --------------
 1/2 SPA-24XDS-SFP           1.0   1-Modena BLAZE FPG  1285.1444   1285.1444
---- ---------------------- ------ ------------------ ----------- --------------
 1/3 SPA-5X1GE-V2            1.2   1-5xGE V2 I/O FPGA     1.10        1.10
---- ---------------------- ------ ------------------ ----------- --------------
 3/0 SPA-24XDS-SFP           1.0   1-Modena BLAZE FPG  1285.1444   1285.1444
---- ---------------------- ------ ------------------ ----------- --------------
 3/1 SPA-24XDS-SFP           1.0   1-Modena BLAZE FPG  1285.1444   1285.1444
---- ---------------------- ------ ------------------ ----------- --------------
 3/2 SPA-24XDS-SFP           1.0   1-Modena BLAZE FPG  1285.1444   1285.1444
---- ---------------------- ------ ------------------ ----------- --------------
 3/3 SPA-1X10GE-L-V2         1.2   1-10GE V2 I/O FPGA     1.9         1.9
==== ====================== ====== ============================================
```

Example: Cisco 4400 Series ISRs

will be added later

Related Commands

Command	Description
show hw-module slot fpd	Displays the current versions of all FPDs for a SIP in the specified slot location and for all of the SPAs installed in that SIP or any FPD-capable cards.
show hw-module subslot fpd	Displays the current versions of all FPDs for a particular SPA or all of the active SPAs on a router.

show hw-module slot (6500)

To display information for a SPA interface processor (SIP) or a module, use the **showhw-moduleslot** command in privileged EXEC configuration mode.

show hw-module slot *slot* {**clear-block** | **oversubscription** | **port-group-mapping**}

Syntax Description

slot	Specifies the chassis slot number. See the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
clear-block	Displays the clearing of the head-of-line blocking status.
oversubscription	Displays the oversubscription mode of each port-group.
port-group-mapping	Displays the port group mapping.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXF5	Support for this command was introduced (Catalyst 6500 series switch).
12.(33)SXH1	This command was changed to add the **oversubscription** and the **port-group-mapping** keywords (Catalyst 6500 series switch).
12.2(33)SXH2	This command was changed to support the following modules: • WS-X6716-10G-3C • WS-X6716-10G-3CXL

Usage Guidelines

This command is supported on the following modules:

- WS-X6708-10G-3C--The port-group**mapping** and the clear-block keywords are not supported.
- WS-X6708-10G-3CXL--The port-group *num* and the clear-block keywords and argument are not supported.
- WS-X6716-10G-3C
- WS-X6716-10G-3CXL

The port-group mappings for the WS-X6716-10G-3C and the WS-X6716-10G-3CXL modules are as follows:

- Group 1--Ports 1 to 4. Port 1 is enabled in transparent mode.
- Group 2--Ports 5 to 8. Port 5 is enabled in transparent mode.
- Group 3--Ports 9 to 12. Port 9 is enabled in transparent mode.

- Group 4--Ports 13 to 16. Port 13 is enabled in transparent mode.

For the WS-X6716-10G-3C and the WS-X6716-10G-3CXL modules in transparent mode, ports 2, 3, 4, 6, 7, 8, 10, 11, 12, 14, 15, 16 are disabled.

Examples

This example shows how to display the current configuration status for the four port-groups:

```
Router# show hw-module slot 2 clear-block
Port-group Clear-block
1          Enabled
2          Disabled
3          Disabled
4          Enabled
Router#
```

This example shows how to display the port group mapping of each port group:

```
Router# show hw-module slot 2 port-group-mapping
Port-group Ports
1          1, 2, 3, 4
2          5, 6, 7, 8
3          9, 10, 11, 12
4          13, 14, 15, 16
```

This example shows how to display the oversubscription mode of each port group:

```
Router# show hw-module slot 3 oversubscription
Port-group oversubscription mode
1          Enabled
2          Disabled
3          Enabled
4          Disabled
Router#
```

Related Commands

Command	Description
hw-module oversubscription	Administratively enables or disables the oversubscribed ports on a module.

show hw-module slot align

To display alignment data for a SPA interface processor (SIP) or other module, use the **showhw-moduleslotalign** command in privileged EXEC configuration mode.

show hw-module slot *slot* **align** [**cpu** {**0** | **1**}]

Syntax Description

slot	Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
cpu 0 |1	(Optional) Number of the CPU (0 or 1) for which you want to display data.

Command Default

No default behavior or values

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXE	Thiscommand was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The number of CPUs available varies by the type of SIP. Although the Cisco 7600 SIP-200 has two CPUs, you can display alignment data for the first CPU (CPU 0) only.

Examples

The following example shows that there has not been any alignment data for the SIP installed in slot 2 of the router:

```
Router# show hw-module slot 2 align
No alignment data has been recorded.
No spurious memory references have been recorded.
```

show hw-module slot fpd

To display the current versions of all field-programmable devices (FPDs) for a SIP in the specified slot location and for all of the SPAs installed in that SIP, or to display the current versions of any FPD-capable cards, enter the **showhw-moduleslotfpd** command in privileged EXEC mode.

Cisco 7200 VXR
show hw-module slot {*slot* | **npe**} **fpd**

Cisco 7304, Cisco 7600 Series, Cisco 12000 Series
show hw-module slot *slot* **fpd**

Syntax Description

slot	Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide. For slot numbering in the Cisco 7200 VXR router, refer to the Cisco 7200 VXR Installation and Configuration Guide .
npe	NPE-G2 network processing engine in the Cisco 7200 VXR router.

Command Default

No default behavior or values

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(18)SXE	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.4(4)XD	This command was integrated into Cisco IOS Release 12.4(4)XD, and the npe keyword was added.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.

Usage Guidelines

Use the **showhw-moduleslotfpd** command to show the FPD image version information for a particular SIP and all of its installed SPAs, or to display the current versions of FPD-capable cards in the Cisco 7200 VXR router. To display FPD information for all of the supported card types on a router, use the **showhw-moduleallfpd** command.

Other than the FPD version information, the output for this command can also contain useful FPD-related notes.

For more information about FPD upgrades on SPA interface processors (SIPs) and shared port adapters (SPAs), see the Cisco 7600 Series Router SIP, SSC, and SPA Software Configuration Guide.

Examples

Cisco 7200 VXR

The following example shows that the FPD version on the NPE-G2 meets the minimum FPD version requirements:

```
Router# show hw-module slot npe fpd
==== ================== ====== ========================================
                         H/W   Field Programmable   Current   Min. Required
Slot Card Type           Ver.  Device: "ID-Name"    Version      Version
==== ================== ====== ================== =========== ==============
 npe NPE-G2              1.3   1-NPEG2 I/O FPGA       0.19        0.1
==== ================== ====== ========================================
```

The following example shows FPD information for the VPN Services Adapter (VSA) in slot 0:

```
Router# show hw-module slot 0 fpd
==== ================== ====== ========================================
                         H/W   Field Programmable   Current   Min. Required
Slot Card Type           Ver.  Device: "ID-Name"    Version      Version
==== ================== ====== ================== =========== ==============
   0 VSA                 0.0   1-VSA                  0.9         0.8
==== ================== ====== ========================================
```

Cisco 7600 Series

The following example shows that the FPD versions on the SIP installed in chassis slot 4, and each of its installed SPAs, meet the minimum FPD version requirements:

```
Router# show hw-module slot 4 fpd
==== ===================== ====== ========================================
                           H/W   Field Programmable   Current   Min. Required
Slot Card Type             Ver.  Device: "ID-Name"    Version      Version
==== ===================== ====== ================== =========== ==============
   4 7600-SIP-200          0.550 1-I/O FPGA             1.1         1.1
                                 2-EOS FPGA             1.211       1.211
                                 3-PEGASUS TX FPGA      1.129       1.129
                                 4-PEGASUS RX FPGA      1.3         1.3
                                 5-ROMMON               1.2         1.2
---- --------------------- ------ ------------------ ----------- --------------
 4/0 SPA-2XT3/E3           1.0   1-ROMMON               2.12        2.12
                                 2-I/O FPGA             0.24        0.24
                                 3-E3 FPGA              0.6         0.6
                                 4-T3 FPGA              0.14        0.14
---- --------------------- ------ ------------------ ----------- --------------
 4/1 SPA-4XOC3-POS         0.209 1-I/O FPGA             3.4         3.4
---- --------------------- ------ ------------------ ----------- --------------
 4/2 SPA-8XCHT1/E1         0.117 1-ROMMON               2.12        2.12
                                 2-I/O FPGA             1.2         1.2
==== ===================== ====== ========================================
```

Related Commands

Command	Description
show hw-module all fpd	Displays the current versions of all FPDs for all of the supported card types on a router.

Command	Description
show hw-module subslot fpd	Displays the current versions of all FPDs for a particular SPA or all of the active SPAs on a router.

show hw-module slot logging

To display logging information for a SPA interface processor (SIP) or other module, use the **showhw-moduleslotlogging** command in privileged EXEC configuration mode.

show hw-module slot slot logging [**cpu** {**0** | **1**}]

Syntax Description

slot	Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
cpu 0 |1	(Optional) Number of the CPU (0 or 1) for which you want to display data.

Command Default

No default behavior or values

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXE	Thiscommand was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The number of CPUs available varies by the type of SIP. Although the Cisco 7600 SIP-200 has two CPUs, you can display alignment data for the first CPU (CPU 0) only.

Examples

The following example shows logging information and messages for the SIP installed in slot 2 of the router:

```
Router# show hw-module slot 2 logging
Syslog logging: enabled (0 messages dropped, 2 messages rate-limited, 0 flushes,
 0 overruns)
    Console logging: level debugging, 90 messages logged
    Monitor logging: level debugging, 0 messages logged
    Buffer logging: level debugging, 92 messages logged
    Exception Logging: size (4096 bytes)
    Count and timestamp logging messages: disabled
Log Buffer (8192 bytes):
00:00:01:  hyp_dev_attach
00:00:01:  hyp_dev_init
00:00:01:  hyp_init
00:00:01:  hyp_dev_disable_intr
00:00:01:  hyp_mx_sub_core_reset
00:00:01:  hyp_mx_sub_core_unreset
00:00:01:  hyp_mx_slv_reset
00:00:01:  hyp_mx_slv_unreset
00:00:01:  hyp_reg_config
00:00:01:  hyp_fi_fr_reg_config
00:00:01:  hyp_set_oper_mode
00:00:01:  hyp_dev_enable_intr
00:00:03:  Initializing rate limit function ===!!!
```

```
00:00:04: Currently running ROMMON from ROM F2
SLOT 2/0: 00:00:04: %SYS-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) cwlc Software (sip1-DW-M), Experimental Version 12.2(20040824:180829) [
dperez-pikespeak_3 174]
Copyright (c) 1986-2004 by cisco Systems, Inc.
Compiled Wed 01-Sep-04 13:54 by dperez
00:00:05:  hyp_init
00:00:05:  hyp_dev_disable_intr
00:00:05:  hyp_mx_sub_core_reset
00:00:05:  hyp_mx_sub_core_unreset
00:00:05:  hyp_mx_slv_reset
00:00:05:  hyp_mx_slv_unreset
00:00:05:  hyp_reg_config
00:00:05:  hyp_fi_fr_reg_config
00:00:05:  hyp_set_oper_mode
00:00:05:  hyp_dev_enable_intr
SLOT 2/0: 00:00:05: %HYPERION-5-BUS_MODE_CHANGE: The System Switching Bus Mode c
hanged to Compact mode
00:00:05:
00:00:05:  hyp_fabric_intf_cnfg
00:00:05: Fabric Information
00:00:05: ==================
00:00:05:  Speed        = 8G
00:00:05:  Channel mode = Mode2-SSA/SSO
00:00:05:  Channel      = Secondary
00:00:05:  hyp_rbh_reg_clear
00:00:05:  Serial Secondary Channel SYNC SUCCESS!
SLOT 2/0: 00:00:05: %SCP-5-ENABLE: Module enabled
00:00:05:  hyp_fabric_intf_cnfg
00:00:05:  hyp_fpoe_chan_init
00:00:05: sip_hyp_check_sync_100ms:Opened SSA DDR
00:00:05: sip_hyp_check_sync_100ms:Opened n/w DDR
SLOT 2/0: 00:00:08: %SCP-5-ONLINE: Module online
00:00:09: % FPD_MGMT[65535]: Sending FPD version check request
00:00:09: % FPD_MGMT[65535]: Change FPD upgrade state to FPD_STATE_UPGRADE_IN_PR
OGRESS
00:00:09: % FPD_MGMT[65535]: Change FPD upgrade state to FPD_STATE_NO_UPGRADE_NE
EDED
SLOT 2/0: 00:00:09: %SIPSPA-6-OIR: Bay 3 SPA Power changed to On
SLOT 2/0: 00:00:10: %SIPSPA-6-OIR: Bay 3 SPA OK changed to On
00:00:10: % FPD_MGMT[3]: Sending FPD version check request
00:00:10: % FPD_MGMT[3]: Change FPD upgrade state to FPD_STATE_UPGRADE_IN_PROGRE
SS
00:00:10: % FPD_MGMT[3]: Change FPD upgrade state to FPD_STATE_NO_UPGRADE_NEEDED
SLOT 2/0: 00:00:13: %SCC-2-PROTO_HW: Module (2/3) is a registered proto-type for
 Cisco Lab use only, and not certified for live network operation.
SLOT 2/0: 00:00:15: %LINK-3-UPDOWN: Interface POS2/3/0, changed state to down
```

show hw-module slot proc cpu

To display CPU utilization for each process on a SPA interface processor (SIP) or other module, use the **showhw-moduleslotproccpu**command in privileged EXEC configuration mode.

show hw-module slot slot proc cpu [cpu {0 | 1}]

Syntax Description

slot	Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
cpu 0 |1	(Optional) Number of the CPU (0 or 1) for which you want to display data.

Command Default

No default behavior or values

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXE	Thiscommand was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The number of CPUs available varies by the type of SIP. Although the Cisco 7600 SIP-200 has two CPUs, you can display alignment data for the first CPU (CPU 0) only.

Examples

The following example shows CPU utilization per process for the SIP installed in slot 2 of the router:

```
Router# show hw-module slot 2 proc cpu
CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%
 PID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min TTY Process
   1           0         1          0  0.00%  0.00%  0.00%   0 Chunk Manager
   2           0    255569          0  0.00%  0.00%  0.00%   0 Load Meter
   3           4   1884015          0  0.00%  0.00%  0.00%   0 CEF process
   4       86532    129737        666  0.08%  0.00%  0.00%   0 Check heaps
   5           0       743          0  0.00%  0.00%  0.00%   0 Pool Manager
   6           0         2          0  0.00%  0.00%  0.00%   0 Timers
   7           0         1          0  0.00%  0.00%  0.00%   0 AAA_SERVER_DEADT
   8           0         2          0  0.00%  0.00%  0.00%   0 AAA high-capacit
   9           0         2          0  0.00%  0.00%  0.00%   0 Serial Backgroun
  10           0    255598          0  0.00%  0.00%  0.00%   0 ENVM Background
  11           0     21298          0  0.00%  0.00%  0.00%   0 IPC Dynamic Cach
  12          56     21300          2  0.00%  0.00%  0.00%   0 PROCMIB LC Proce
  13           0         1          0  0.00%  0.00%  0.00%   0 IPC BackPressure
  14           0   1277836          0  0.00%  0.00%  0.00%   0 IPC Periodic Tim
  15           0   1277836          0  0.00%  0.00%  0.00%   0 IPC Deferred Por
  16           0        13          0  0.00%  0.00%  0.00%   0 IPC Seat Manager
  17           0         1          0  0.00%  0.00%  0.00%   0 SERIAL A'detect
  18        2820        39      72307  0.00%  0.00%  0.00%   0 SMART
  19           0         1          0  0.00%  0.00%  0.00%   0 Critical Bkgnd
  20           4    383354          0  0.00%  0.00%  0.00%   0 Net Background
```

```
 21           0        36           0  0.00%  0.00%  0.00%   0 Logger
 22           8   1277832           0  0.00%  0.00%  0.00%   0 TTY Background
 23           0   1277846           0  0.00%  0.00%  0.00%   0 Per-Second Jobs
 24           0     22041           0  0.00%  0.00%  0.00%   0 Per-minute Jobs
 25           0         2           0  0.00%  0.00%  0.00%   0 SCP Multicast
 26           0         1           0  0.00%  0.00%  0.00%   0 Inode Table Dest
 27           0         4           0  0.00%  0.00%  0.00%   0 LC to RP  defere
 28           8       428          18  0.00%  0.00%  0.00%   0 CWLC IFCOM Proce
 29           0         1           0  0.00%  0.00%  0.00%   0 IPC RTTYC Messag
 30           0         2           0  0.00%  0.00%  0.00%   0 INTR MGR PROCESS
 31           0         2           0  0.00%  0.00%  0.00%   0 EFC queue monito
 32           0         1           0  0.00%  0.00%  0.00%   0 LC interrupt, J1
 33           0         1           0  0.00%  0.00%  0.00%   0 SIP interrupt, P
 34           0         2           0  0.00%  0.00%  0.00%   0 SDCC Input
 35           0         1           0  0.00%  0.00%  0.00%   0 CWAN LTL manager
 36           0         8           0  0.00%  0.00%  0.00%   0 SIP SWBus Sync P
 37           0         1           0  0.00%  0.00%  0.00%   0 CWSLC Bus Stall
 38           0         1           0  0.00%  0.00%  0.00%   0 VIP Encap IPC Ba
 39           0         1           0  0.00%  0.00%  0.00%   0 CWPA Bridging Ra
 40           0    255568           0  0.00%  0.00%  0.00%   0 CPU Monitor
 41           0         1           0  0.00%  0.00%  0.00%   0 MLP Input
 42         592     42648          13  0.00%  0.00%  0.00%   0 SPA OIR 2/0
 43         644     42644          15  0.00%  0.00%  0.00%   0 SPA OIR 2/1
 44         572     42644          13  0.00%  0.00%  0.00%   0 SPA OIR 2/2
 45        1088     42697          25  0.00%  0.00%  0.00%   0 SPA OIR 2/3
 46           0         1           0  0.00%  0.00%  0.00%   0 LC FPD Upgrade P
 47           0         2           0  0.00%  0.00%  0.00%   0 AAA Dictionary R
 48           0         2           0  0.00%  0.00%  0.00%   0 AAA Server
 49           0         1           0  0.00%  0.00%  0.00%   0 AAA ACCT Proc
 50           0         1           0  0.00%  0.00%  0.00%   0 ACCT Periodic Pr
 51           0         2           0  0.00%  0.00%  0.00%   0 ATMLS task
 52           0    127785           0  0.00%  0.00%  0.00%   0 LC Process for u
 53           0         3           0  0.00%  0.00%  0.00%   0 IP Hdr Comp Proc
 54         140  12778349           0  0.00%  0.00%  0.00%   0 SSA FABLINK Proc
 55           0    255568           0  0.00%  0.00%  0.00%   0 HYP ACCU FAB COU
 56           0         1           0  0.00%  0.00%  0.00%   0 SCP async: CWAN-
 57           0         2           0  0.00%  0.00%  0.00%   0 CWTLC SSO Proces
 58        3272     85294          38  0.00%  0.00%  0.00%   0 SCP Hybrid proce
 59        1004  12717003           0  0.00%  0.00%  0.00%   0 CEF LC IPC Backg
 60           8   1653487           0  0.00%  0.00%  0.00%   0 CEF LC Stats
 61           0         1           0  0.00%  0.00%  0.00%   0 CEF MQC IPC Back
 62           0         1           0  0.00%  0.00%  0.00%   0 TFIB LC cleanup
 63           0         3           0  0.00%  0.00%  0.00%   0 Any Transport ov
 64           0         7           0  0.00%  0.00%  0.00%   0 HQF Shaper Backg
 65           8 319458609           0  0.00%  0.00%  0.00%   0 HQF Input Shaper
 66           0         2           0  0.00%  0.00%  0.00%   0 LOCAL AAA
 67           0         2           0  0.00%  0.00%  0.00%   0 AAA Cached Serve
 68           0     90366           0  0.00%  0.00%  0.00%   0 CEF Scanner
 69           0         3           0  0.00%  0.00%  0.00%   0 RADIUS TEST CMD
 70           0         2           0  0.00%  0.00%  0.00%   0 AAA SEND STOP EV
 71           0         4           0  0.00%  0.00%  0.00%   0 IPv6 CEF process
 72           0         1           0  0.00%  0.00%  0.00%   0 SONET alarm time
 73           0         1           0  0.00%  0.00%  0.00%   0 Net Input
 74           0    255571           0  0.00%  0.00%  0.00%   0 Compute load avg
 75          16        80         200  0.08%  0.00%  0.00%   1 console_rpc_serv
```