

# show controllers cbus

To display all information under the cBus controller card, use the **show controllers cbus** command in privileged EXEC mode on the Cisco 7500 series routers. This command also shows the capabilities of the card and reports controller-related failures.

## show controllers cbus

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Examples** The following is a partial output display from the **show controllers cbus** command on a Cisco 7500 series router with one VIP2 interface processor. This example does not show output from additional interface processors that are usually installed in a Cisco 7500 series router.

```
Router# show controllers cbus

MEMD at 40000000, 2097152 bytes (unused 2752, recarves 1, lost 0)
  RawQ 48000100, ReturnQ 48000108, EventQ 48000110
  BufhdrQ 48000138 (2849 items), LovltrQ 48000150 (42 items, 1632 bytes)
  IpcbufQ 48000158 (32 items, 4096 bytes)
  3570 buffer headers (48002000 - 4800FF10)
  pool0: 15 buffers, 256 bytes, queue 48000140
  pool1: 368 buffers, 1536 bytes, queue 48000148
  pool2: 260 buffers, 4544 bytes, queue 48000160
  pool3: 4 buffers, 4576 bytes, queue 48000168

slot1: VIP2, hw 2.2, sw 200.50, ccb 5800FF30, cmdq 48000088, vps 8192
  software loaded from system
  FLASH ROM version 255.255
  Fast Ethernet1/0/0, addr 0000.0c41.6c20 (bia 0000.0c41.6c20)
    gfreeq 48000148, lfreeq 480001D0 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A00, txacc 48001A02 (value 0), txlimit 20
  Ethernet1/1/0, addr 0000.0c41.6c28 (bia 0000.0c41.6c28)
    gfreeq 48000148, lfreeq 480001D8 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A08, txacc 48001A0A (value 0), txlimit 20
  Ethernet1/1/1, addr 0000.0c41.6c29 (bia 0000.0c41.6c29)
    gfreeq 48000148, lfreeq 480001E0 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A10, txacc 48001A12 (value 0), txlimit 20
  Ethernet1/1/2, addr 0000.0c41.6c2a (bia 0000.0c41.6c2a)
    gfreeq 48000148, lfreeq 480001E8 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A18, txacc 48001A1A (value 0), txlimit 20
  Ethernet1/1/3, addr 0000.0c41.6c2b (bia 0000.0c41.6c2b)
    gfreeq 48000148, lfreeq 480001F0 (1536 bytes), throttled 0
```

```

    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A20, txacc 48001A22 (value 0), txlimit 20
Ethernet1/1/4, addr 0000.0c41.6c2c (bia 0000.0c41.6c2c)
    gfreeq 48000148, lfreeq 480001F8 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A28, txacc 48001A2A (value 0), txlimit 20
Ethernet1/1/5, addr 0000.0c41.6c2d (bia 0000.0c41.6c2d)
    gfreeq 48000148, lfreeq 48000200 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A30, txacc 48001A32 (value 0), txlimit 20
Ethernet1/1/6, addr 0000.0c41.6c2e (bia 0000.0c41.6c2e)
    gfreeq 48000148, lfreeq 48000208 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A38, txacc 48001A3A (value 0), txlimit 20
Ethernet1/1/7, addr 0000.0c41.6c2f (bia 0000.0c41.6c2f)
    gfreeq 48000148, lfreeq 48000210 (1536 bytes), throttled 0
    rxlo 4, rxhi 30, rxcurr 0, maxrxcurr 0
    txq 48001A40, txacc 48001A42 (value 0), txlimit 20

```

The following is a partial output display of the **show controllers cbus** command for a Packet-over-SONET Interface Processor (POSIP) in slot 0; its single Packet OC-3 interface is Posi0/0:

```

Router# show controllers cbus

slot0: POSIP, hw 2.1, sw 200.01, ccb 5800FF30, cmdq 48000080, vps 8192
software loaded from flash slot0:rsp_posip.new
FLASH ROM version 160.4, VPLD version 2.2
Posi0/0, applique is SONET
    gfreeq 48000148, lfreeq 48000158 (4480 bytes), throttled 0
    rxlo 4, rxhi 226, rxcurr 0, maxrxcurr 186
    txq 48000160, txacc 48000082 (value 150), txlimit 150

```

The following is partial output display from the **show controllers cbus** command for a Multichannel Interface Processor (MIP). Not all of the 23 channels defined on serial interface 1/0 are shown.

```

Router# show controllers cbus

slot1: MIP, hw 1.1, sw 205.03, ccb 5800FF40, cmdq 48000088, vps 8192
software loaded from system
T1 1/0, applique is Channelized T1
    gfreeq 48000130, lfreeq 480001B0 (1536 bytes), throttled 0
    rxlo 4, rxhi 360, rxcurr 0, maxrxcurr 3
    Serial1/0:0, txq 480001B8, txacc 48000082 (value 3), txlimit 3
    Serial1/0:1, txq 480001B8, txacc 4800008A (value 3), txlimit 3
    Serial1/0:2, txq 480001B8, txacc 48000092 (value 3), txlimit 3
    Serial1/0:3, txq 480001B8, txacc 4800009A (value 3), txlimit 3
    Serial1/0:4, txq 480001B8, txacc 480000A2 (value 3), txlimit 3
    Serial1/0:5, txq 480001B8, txacc 480000AA (value 3), txlimit 3
    Serial1/0:6, txq 480001B8, txacc 480000B2 (value 3), txlimit 3
    Serial1/0:7, txq 480001B8, txacc 480000BA (value 3), txlimit 3

```

[Table 54](#) describes significant fields in the per-slot part of these displays.

**Table 54** *show controllers cbus Command—Per-Slot Field Descriptions*

Field	Description
slot1:	Slot location of the specific interface processor (in this case Packet-over-SONET Interface Processor).
hw	Version number of the card.
sw	Version number of the card's internal software (in ROM).

**Table 54** *show controllers cbus Command—Per-Slot Field Descriptions (continued)*

Field	Description
software loaded from	Source device and file name from which the router software was loaded.
FLASH ROM version VPLD version	Version of Flash ROM.
Pos1/0, applique is SONET	Location of the specific interface and the hardware applique type (in this case a Packet OC-3 interface).
gfreeq	Location of the global free queue that is shared among similar interfaces.
lfreeq	Location of the local free queue, which is a private queue of MEMD buffers.
throttled	Number of times input packet processing has been throttled on this interface.
rxlo	Minimum number of MEMD buffers held on local free queue. When idle, the interface returns buffers from its local queue to the global free queue until only this number of buffers remain in the local queue.
rxhi	Maximum number of MEMD buffers that the interface can remove from the global free queue in order to populate its local queue.
rxcurr	Number of MEMD buffers currently on the local free queue.
maxrxcurr	Maximum number of MEMD buffers that were enqueued on the local free queue.
txq	Address of the transmit queue.
txacc	Address of the transmit queue accumulator.
txlimit	Maximum number of buffers allowed in the transmit queue.

The following is a sample output display from the **show controllers cbus** command on a Cisco 7500 series router:

```
Router# show controllers cbus

cBus 1, controller type 3.0, microcode version 2.0
 128 Kbytes of main memory, 32 Kbytes cache memory
 40 1520 byte buffers, 14 4484 byte buffers
Restarts: 0 line down, 0 hung output, 0 controller error
HSCI 1, controller type 10.0, microcode version 129.3
  Interface 6 - Hssi0, electrical interface is Hssi DTE
    5 buffer RX queue threshold, 7 buffer TX queue limit, buffer size 1520
    ift 0004, rql 2, tq 0000 0000, tq1 7
    Transmitter delay is 0 microseconds
MEC 3, controller type 5.1, microcode version 130.6
  Interface 18 - Ethernet2, station address 0000.0c02.a03c (bia 0000.0c02.a03c)
    10 buffer RX queue threshold, 7 buffer TX queue limit, buffer size 1520
    ift 0000, rql 10, tq 0000 0000, tq1 7
    Transmitter delay is 0 microseconds
  Interface 19 - Ethernet3, station address 0000.0c02.a03d (bia 0000.0c02.a03d)
    10 buffer RX queue threshold, 7 buffer TX queue limit, buffer size 1520
    ift 0000, rql 10, tq 0000 0000, tq1 7
    Transmitter delay is 0 microseconds
```

**Table 55** describes the fields shown in the following lines of output from the display.

```
cBus 1, controller type 3.0, microcode version 2.0
 128 Kbytes of main memory, 32 Kbytes cache memory
 40 1520 byte buffers, 14 4484 byte buffers
Restarts: 0 line down, 0 hung output, 0 controller error
```

**Table 55** *show controllers cbus Field Descriptions—Part 1*

Field	Description
cBus 1	Card type and number (varies depending on card).
controller type 3.0	Version number of the card.
microcode version 2.0	Version number of the card's internal software (in ROM).
128 Kbytes of main memory	Amount of main memory on the card.
32 Kbytes cache memory	Amount of cache memory on the card.
40 1520 byte buffers	Number of buffers of this size on the card.
14 4484 byte buffers	Number of buffers of this size on the card.
Restarts	Count of restarts for the following conditions:
<ul style="list-style-type: none"> <li>• 0 line down</li> <li>• 0 hung output</li> <li>• 0 controller error</li> </ul>	<ul style="list-style-type: none"> <li>• Communication line down</li> <li>• Output unable to transmit</li> <li>• Internal error</li> </ul>

[Table 56](#) describes the fields shown in the following lines of output from the display:

```
HSCI 1, controller type 10.0, microcode version 129.3
  Interface 6 - Hssi0, electrical interface is Hssi DTE
    5 buffer RX queue threshold, 7 buffer TX queue limit, buffer size 1520
    ift 0004, rql 2, tq 0000 0000, tql 7
    Transmitter delay is 0 microseconds
```

**Table 56** *show controllers cbus Field Descriptions—Part 2*

Field	Description
HSCI 1	Card type and number (varies depending on card).
controller type 10.0	Version number of the card.
microcode version 129.3	Version number of the card's internal software (in ROM).
Interface 6	Physical interface number.
Hssi 0	Logical name for this interface.
electrical interface is Hssi DTE	Self-explanatory.
5 buffer RX queue threshold	Maximum number of buffers allowed in the receive queue.
7 buffer TX queue limit	Maximum number of buffers allowed in the transmit queue.
buffer size 1520	Size of the buffers on this card (in bytes).
ift 0004	Interface type code: <ul style="list-style-type: none"> <li>• 0 = EIP</li> <li>• 1 = FSIP</li> <li>• 4 = HIP</li> <li>• 5 = TRIP</li> <li>• 6 = FIP</li> <li>• 7 = AIP</li> </ul>

**Table 56** show controllers cbus Field Descriptions—Part 2 (continued)

Field	Description
rql 2	Receive queue limit. Current number of buffers allowed for the receive queue. It is used to limit the number of buffers used by a particular inbound interface. When equal to 0, all of that interface's receive buffers are in use.
tq 0000 0000	Transmit queue head and tail pointers.
tql 7	Transmit queue limit. Current number of buffers allowed for transmit queue. It limits the maximum cBus buffers allowed to sit on a particular interface's transmit queue.
Transmitter delay is 0 microseconds	Transmitter delay between the packets.

The following is a sample output display from the **show controllers cbus** command for an AIP installed in IP slot 4. The running AIP microcode is Version 170.30, the PLIM type is 4B/5B, and the available bandwidth is 100 Mbps:

```
Router# show controllers cbus

Switch Processor 5, hardware version 11.1, microcode version 170.46
  Microcode loaded from system
  512 Kbytes of main memory, 128 Kbytes cache memory
  60 1520 byte buffers, 91 4496 byte buffers
  Restarts: 0 line down, 0 hung output, 0 controller error
AIP 4, hardware version 1.0, microcode version 170.30
  Microcode loaded from system
  Interface 32 - ATM4/0, PLIM is 4B5B(100Mbps)
    15 buffer RX queue threshold, 36 buffer TX queue limit, buffer size 4496
    ift 0007, rql 12, tq 0000 0620, tql 36
    Transmitter delay is 0 microseconds
```

The following is a sample output display from the **show controllers cbus** command for SMIP:

```
Router# show controllers cbus

SMIP 2, hardware version 1.0, microcode version 10.0
  Microcode loaded from system
  Interface 16 - T1 2/0, electrical interface is Channelized T1
    10 buffer RX queue threshold, 14 buffer TX queue limit, buffer size 1580 ift 0001, rql
    7, tq 0000 05B0, tql 14
    Transmitter delay is 0 microseconds
```

# show controllers content-engine

To display controller information for content engine (CE) network modules, use the **show controllers content-engine** command in privileged EXEC mode.

**show controllers content-engine** *slot/unit*

## Syntax Description

<i>slot</i>	Number of the router chassis slot for the network module.
<i>unit</i>	Number of the daughter card on the network module. For CE network modules, always use 0.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.2(11)YT	This command was introduced.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

## Examples

The following example displays controller information for the CE network module in router slot 1:

```
Router# show controllers content-engine 1/0

Interface Content-Engine1/0
Hardware is Intel 82559 FastEthernet
IDB: 82A92DC4, FASTSEND: 8021B488, MCI_INDEX: 0

INSTANCE=0x82A94534
Rx Ring entries = 64
Rx Shadow = 0x82A947A0
Rx Ring = 0x 3CB5160
Rx Ring Head = 14
Rx Ring Last = 13
Rx Buffer Descr = 0x 3CB55A0
Rx Buffer Descr Head = 14
Rx Buffer Descr Last = 13
Rx Shadow (malloc) = 0x82A947A0
Rx Ring (malloc) = 0x 3CB5160
Rx Buffer Descr (malloc) = 0x 3CB55A0
Tx Ring entries = 128
Tx Shadow = 0x82A948D0
Tx Shadow Head = 79
Tx Shadow Tail = 79
Tx Shadow Free = 128
Tx Ring = 0x 3CB59E0
Tx Head = 81
Tx Last = 80
Tx Tail = 81
Tx Count = 0
Tx Buffer Descr = 0x 3CB6A20
Tx Buffer Descr Head = 0
Tx Buffer Descr Tail = 0
Tx Shadow (malloc) = 0x82A948D0
```

```

Tx Ring (malloc) = 0x 3CB59E0
Tx Buffer Descr (malloc) = 0x 3CB6A20

CONTROL AND STATUS REGISTERS (CSR)=0x40800000
SCB Intr Mask = 00
SCB CU/RU Cmd = 00
SCB Intr Status = 00
SCB CU/RU Status = 50
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 = 05
General Control = 00

PHY REGISTERS
Register 0x00: 1000 782D 02A8 0154 0441 45E1 0001 0000
Register 0x08: 0000 0000 0000 0000 0000 0000 0000 0000
Register 0x10: 0401 0000 0001 0000 0000 0000 0000 0000
Register 0x18: 0000 0000 8000 0000 0000 0000 0000 0000

HARDWARE STATISTICS
Rx good frames: 14
Rx CRC: 0
Rx alignment: 0
Rx resource: 0
Rx overrun: 0
Rx collision detects: 0
Rx short: 0
Tx good frames: 79
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

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

```

Table 57 describes the significant fields shown in the display.

**Table 57** *show controllers content-engine 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.

**Table 57** *show controllers content-engine Field Descriptions (continued)*

Field	Description
INSTANCE	Device-specific data stored in router memory that lists the memory locations and current indices 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 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.

**Related Commands**

Command	Description
<a href="#">interface content-engine</a>	Configures an interface for a CE network module and enters interface configuration mode.
<a href="#">show interfaces content-engine</a>	Displays basic interface configuration information for a CE network module.

# show controllers e1

To display information about E1 links, use the **show controllers e1** command in privileged EXEC mode.

## Cisco 4000 Series Routers

```
show controllers e1 controller-number
```

## Cisco 7500 Series Routers

```
show controllers e1 [slot/port]
```

## Cisco AS5000 Series Access Servers

```
show controllers e1 {controller-number | clock | firmware-status | monitor | timeslots
timeslot-range}
```

### Syntax Description

<i>controller-number</i>	Controller number.
<i>slot/port</i>	(Optional) Backplane slot number and port number on the interface. See the hardware manuals for your controller type to determine specific slot and port numbers.
<b>clock</b>	Displays primary clock change history.
<b>firmware-status</b>	Displays system crash history.
<b>monitor</b>	Displays primary monitor change history.
<b>timeslots</b> <i>timeslot-range</i>	Displays DS0 information. Time slot range is 1 through 31 for the E1 controller.

### Command Modes

Privileged EXEC

### Command History

Release	Modification
10.0	This command was introduced.
11.2	This command was implemented on additional router platforms.
12.1(3)T	This command was implemented on additional access server platforms.

### 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 only.

The Network Processor Module (NPM) on the Cisco 4000 series router or MultiChannel Interface Processor (MIP) on a Cisco 7500 series router can query the port adapters to determine their current status. Issue a **show controllers e1** command to display statistics about the E1 link.

On a Cisco 7500 series router, if you specify a slot and port number each 15-minute period will be displayed.

On the Cisco 5000 series access servers use the **show controllers e1 timeslots** command to display the CAS and ISDN PRI channel state in detail. This command shows whether the DS-0 channels of a controller are in idle, in-service, maintenance, or busyout states. Enter the commands to display statistics about the E1 links.

## Examples

The following is sample output from the **show controllers e1** command on the Cisco 7500 series router:

```
Router# show controllers e1

e1 0/0 is up.
  Applique type is Channelized E1 - unbalanced
  Framing is CRC4, Line Code is HDB3
  No alarms detected.
  Data in current interval (725 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 24 hours)
    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 following is sample output of the **show controllers e1** command including the board identifier type:

```
Router# show controllers e1

E1 4/1 is up.
  No alarms detected.
  Framing is CRC4, Line Code is hdb3
  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
  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
```

[Table 58](#) describes the significant fields shown in the display.

**Table 58** *show controllers e1 Field Descriptions*

Field	Description
e1 0/0 is up.	The E1 controller 0 in slot 0 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	The applique type is shown and will indicate balanced or unbalanced.
Framing is	Displays the current framing type.
Linecode is	Displays the current linecode type.

**Table 58** *show controllers e1 Field Descriptions (continued)*

Field	Description
No alarms detected.	Any alarms detected by the controller are displayed here. Possible alarms are as follows: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending AIS.</li> <li>• Receiver has loss of signal.</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame.</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
Data in current interval (725 seconds elapsed)	Displays 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 might 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 (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 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 SF and E1 no-CRC links, the presence of Bipolar Violations also triggers an Errored Second.
Bursty Err Secs	A 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.

**Table 58** *show controllers e1 Field Descriptions (continued)*

Field	Description
Severely Err Secs	<p>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.</p> <p>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.</p> <p>For E1-nonCRC signals, a second with 2048 Line Code Violations or more.</p> <p>For D4 signals, a count of 1-second intervals with Framing Errors, or an Out of Frame defect, or 1544 Line Code Violations.</p>
Unavail Secs	A count of the total number of seconds on the interface.

The following is sample output from the **show controllers e1 timeslots** command on a Cisco access server. The information displayed is self-explanatory.

```
Router# show controllers e1 timeslots 1

SERVICE STATES
insvc      = In Service
outofsvc   = Out of Service
maint      = Maintenance

CAS CHANNEL STATES
down       = Down
idle       = Idle
connected  = Call Connected
signaling  = Signaling
static-bo  = Static Busyout
dynamic-bo = Dynamic Busyout

ISDN CHANNEL STATES
idle       = Available
proposed   = Negotiating
busy       = Unavailable
reserved   = Reserved
restart    = Restart Pending
maint_pend = Maintenance Pending
reassigned = Reassigned
prop'd_1tr6= Net may change channel #
```

# show controllers e3

To display information about an E3 controller, use the **show controllers e3** command in user EXEC or privileged EXEC mode.

**show controllers e3** *slot/port* [**brief** | **tabular**]

Syntax Description		
<i>slot/port</i>		Number of the slot and port being configured. Refer to the appropriate hardware manual for slot and port information. The slash mark is required.
<b>brief</b>		(Optional) Displays a list of configurations only.
<b>tabular</b>		(Optional) Displays a list of configurations and MIB information in a tabular format.

Command Modes	
	User EXEC Privileged EXEC

Command History	Release	Modification
	11.1 CC	This command was introduced on the E3 controller.
	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.

## Examples

The following are samples of output from the **show controllers e3** command:

```
Router# show controllers e3 2/0

E3 2/0 is down.
Applique type is Subrate E3
Transmitter is sending remote alarm.
Receiver has loss of signal.
Framing is G751, Clock Source is Internal.
Data in current interval (450 seconds elapsed):
  0 C-bit Coding Violation
  0 P-bit Err Secs, 0 P-bit Severely Err Secs
  0 Severely Err Framing Secs, 450 Unavailable Secs
  0 Line Errored Secs, 0-C-bit Errored Secs, 0 C-bit Severely Errored Secs
Data in Interval 1:
  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
Total Data (last 1 15 minute intervals):
  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

Router# show controllers e3 2/0 brief
```

```
E3 2/0 is down.
  Applique type is Subrate E3
  Transmitter is sending remote alarm.
  Receiver has loss of signal.
  Framing is G571, Clock Source is Internal.
```

```
Router# show controllers e3 2/0 tabular
```

```
E3 2/0 is down.
  Applique type is Subrate E3
  Transmitter is sending remote alarm.
  Receiver has loss of signal.
  Framing is G571, Clock Source is Internal.
INTERNAL  LCV PCV CCV PES PSES SEFS UAS LES CES CSES
18:10-18:21 0  0  0  0  0  0  0  680 0  0  0
17:55-18:10 0  0  0  0  0  0  0  900 0  0  0
Total      0  0  0  0  0  0  0  900 0  0  0
```

Table 59 describes the significant fields shown in the display.

**Table 59** *show controllers e3 Field Descriptions*

Field	Description
E3 2/0 is down.	The E3 controller in slot 0 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.
Description	User-specified information about the E3 controller.
No alarms detected (not shown in display)	Any alarms detected by the controller are displayed here. Possible alarms are as follows: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending AIS.</li> <li>• Receiver has loss of signal.</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame.</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
Linecode is (not shown in display)	Line coding format on the E3.
Framing	Framing type.
Clock Source	User-specified clock source (Line or Internal).
Data in current interval (450 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.
PCV	Path coding violation (PCV) error event is a frame synchronization bit error in the E1-no-CRC formats or a CRC error in the E1-CRC formats.

**Table 59** *show controllers e3 Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
CCV	C-bit coding violation (CCV) error event for C-bit parity. This is the count of coding violations reported via the C-bits occurring in the accumulation interval.
PES	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.
PSES	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.
SEFS	Severely errored framing seconds (SEFS) is a second with one or more out-of-frame defects or a detected incoming AIS.
UAS	Unavailable seconds (UAS) are calculated by counting the number of seconds for which the interface is unavailable. For more information, refer to RFC 1407.
LES	Line errored seconds (LES) is a second in which one or more code violations or one or more LOS defects occurred.
CES	C-bit errored seconds (CES) is a second with one or more out-of-frame defects or a detected incoming AIS. This gauge is not incremented when UASs are counted.
CSES	C-bit severely errored seconds (CSES) is a second with one or more out-of-frame defects or a detected incoming AIS. This gauge is not incremented when UASs are counted.
Total	Displays the last 15-minute accumulation period.

# show controllers ethernet

To display information on the Cisco 2500, Cisco 3000, or Cisco 4000 series routers, use the **show controllers ethernet** command in user EXEC or privileged EXEC mode.

**show controllers ethernet** *number*

## Syntax Description

<i>number</i>	Interface number of the Ethernet interface.
---------------	---

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
10.0	This command was introduced.

## Examples

The following is a sample output display from the **show controllers ethernet** command on Cisco 4000 series routers:

```
Router# show controllers ethernet 0

LANCE unit 0, NIM slot 1, NIM type code 4, NIM version 1
Media Type is 10BaseT, Link State is Up, Squelch is Normal
idb 0x4060, ds 0x5C80, regaddr = 0x8100000
IB at 0x600D7AC: mode=0x0000, mcfilter 0000/0001/0000/0040
station address 0000.0c03.a14f default station address 0000.0c03.a14f
buffer size 1524
RX ring with 32 entries at 0xD7E8
Rxhead = 0x600D8A0 (12582935), Rxp = 0x5CF0(23)
00 pak=0x60336D0 ds=0x6033822 status=0x80 max_size=1524 pak_size=98
01 pak=0x60327C0 ds=0x6032912 status=0x80 max_size=1524 pak_size=98
02 pak=0x6036B88 ds=0x6036CDA status=0x80 max_size=1524 pak_size=98
03 pak=0x6041138 ds=0x604128A status=0x80 max_size=1524 pak_size=98
04 pak=0x603FAA0 ds=0x603FBF2 status=0x80 max_size=1524 pak_size=98
05 pak=0x600DC50 ds=0x600DDA2 status=0x80 max_size=1524 pak_size=98
06 pak=0x6023E48 ds=0x6023F9A status=0x80 max_size=1524 pak_size=1506
07 pak=0x600E3D8 ds=0x600E52A status=0x80 max_size=1524 pak_size=1506
08 pak=0x6020990 ds=0x6020AE2 status=0x80 max_size=1524 pak_size=386
09 pak=0x602D4E8 ds=0x602D63A status=0x80 max_size=1524 pak_size=98
10 pak=0x603A7C8 ds=0x603A91A status=0x80 max_size=1524 pak_size=98
11 pak=0x601D4D8 ds=0x601D62A status=0x80 max_size=1524 pak_size=98
12 pak=0x603BE60 ds=0x603BFB2 status=0x80 max_size=1524 pak_size=98
13 pak=0x60318B0 ds=0x6031A02 status=0x80 max_size=1524 pak_size=98
14 pak=0x601CD50 ds=0x601CEA2 status=0x80 max_size=1524 pak_size=98
15 pak=0x602C5D8 ds=0x602C72A status=0x80 max_size=1524 pak_size=98
16 pak=0x60245D0 ds=0x6024722 status=0x80 max_size=1524 pak_size=98
17 pak=0x6008328 ds=0x600847A status=0x80 max_size=1524 pak_size=98
18 pak=0x601EB70 ds=0x601ECC2 status=0x80 max_size=1524 pak_size=98
19 pak=0x602DC70 ds=0x602DDC2 status=0x80 max_size=1524 pak_size=98
20 pak=0x60163E0 ds=0x6016532 status=0x80 max_size=1524 pak_size=98
21 pak=0x602CD60 ds=0x602CEB2 status=0x80 max_size=1524 pak_size=98
22 pak=0x6037A98 ds=0x6037BEA status=0x80 max_size=1524 pak_size=98
```

```
23 pak=0x602BE50 ds=0x602BFA2 status=0x80 max_size=1524 pak_size=98
24 pak=0x6018988 ds=0x6018ADA status=0x80 max_size=1524 pak_size=98
25 pak=0x6033E58 ds=0x6033FAA status=0x80 max_size=1524 pak_size=98
26 pak=0x601BE40 ds=0x601BF92 status=0x80 max_size=1524 pak_size=98
27 pak=0x6026B78 ds=0x6026CCA status=0x80 max_size=1524 pak_size=98
28 pak=0x6024D58 ds=0x6024EAA status=0x80 max_size=1524 pak_size=74
29 pak=0x602AF40 ds=0x602B092 status=0x80 max_size=1524 pak_size=98
30 pak=0x601FA80 ds=0x601FBD2 status=0x80 max_size=1524 pak_size=98
31 pak=0x6038220 ds=0x6038372 status=0x80 max_size=1524 pak_size=98
TX ring with 8 entries at 0xDA20, tx_count = 0
tx_head = 0x600DA58 (12582919), head_txp = 0x5DC4 (7)
tx_tail = 0x600DA58 (12582919), tail_txp = 0x5DC4 (7)
00 pak=0x000000 ds=0x600CF12 status=0x03 status2=0x0000 pak_size=118
01 pak=0x000000 ds=0x602126A status=0x03 status2=0x0000 pak_size=60
02 pak=0x000000 ds=0x600CF12 status=0x03 status2=0x0000 pak_size=118
03 pak=0x000000 ds=0x600CF12 status=0x03 status2=0x0000 pak_size=118
04 pak=0x000000 ds=0x600CF12 status=0x03 status2=0x0000 pak_size=118
05 pak=0x000000 ds=0x600CF12 status=0x03 status2=0x0000 pak_size=118
06 pak=0x000000 ds=0x600CF12 status=0x03 status2=0x0000 pak_size=118
07 pak=0x000000 ds=0x6003ED2 status=0x03 status2=0x0000 pak_size=126
0 missed datagrams, 0 overruns, 2 late collisions, 2 lost carrier events
0 transmitter underruns, 0 excessive collisions, 0 tdr, 0 babbles
0 memory errors, 0 spurious initialization done interrupts
0 no enp status, 0 buffer errors, 0 overflow errors
10 one_col, 10 more_col, 22 deferred, 0 tx_buff
0 throttled, 0 enabled
Lance csr0 = 0x73
```

# show controllers fastethernet

To display information about initialization block, transmit ring, receive ring and errors for the Fast Ethernet controller chip on the Cisco 4500, Cisco 7200 series, or Cisco 7500 series routers, use the **show controllers fastethernet** command in user EXEC or privileged EXEC mode.

## Cisco 4500 Series

**show controllers fastethernet** *number*

## Cisco 7200 Series

**show controllers fastethernet** *slot/port*

## Cisco 7500 Series

**show controllers fastethernet** *slot/port-adapter/port*

Syntax Description		
<i>number</i>		Port, connector, or interface card number. On a Cisco 4500 or Cisco 4700 router, specifies the network processor module (NPM) number. The numbers are assigned at the factory at the time of installation or when added to a system.
<i>slot</i>		Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
<i>port</i>		Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
<i>port-adapter</i>		Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
11.2	This command was introduced.

## Usage Guidelines

The output from this command is generally useful for diagnostic tasks performed by technical support only.

## Examples

The following is a sample output display from the **show controllers fastethernet** command on a Cisco 4500 router:

```
Router# show controllers fastethernet 0

DEC21140 Slot 0, Subunit 0
dec21140_ds=0x60001234, registers=0x3c001000, ib=0x42301563, ring entries=256
```

```

rxring=0x40235878, rxr shadow=0x64528745, rx_head=0, rx_tail=10
txring=0x43562188, txr shadow=0x65438721, tx_head=17, tx_tail=34, tx_count=17
DEC21140 Registers
CSR0=0x23457667, CSR3=0x12349878, CSR4=0x34528745, CSR5=0x76674565
CSR6=0x76453676, CSR7=0x76456574, CSR8=0x25367648, CSR9=0x87253674
CSR11=0x23456454, CSR12=0x76564787, CSR15=0x98273465
DEC21140 PCI registers
bus_no=0, device_no=0
CFID=0x12341234, CFCS=0x76547654, CFRV=0x87658765, CFLT=0x98769876
CBIO=0x12344321, CBMA=0x23454321, CFIT=0x34567654, CFDA=0x76544567
MII registers
Register 0x00: 0x1234 0x1234 0x2345 0x3456 0x4567 0x5678 0x6789 0x7890
Register 0x08: 0x9876 0x8765 0x7654 0x6543 0x5432 0x4321 0x3210 0x2109
Register 0x10: 0x1234 0x2345 0x3456 0x4567 0x5678 0x6789 0x7890
Register 0x18: 0x9876 0x8765 0x7654 0x6543 0x5432 0x4321
DEC21140 statistics
filtered_in_sw=1000, throttled=10, enabled=10
rx_fifo_overflow=10, rx_no_enp=12, rx_late_collision=18
rx_watchdog=15, rx_process_stopped=15, rx_buffer_unavailable=1500
tx_jabber_timeout=10, tx_carrier_loss=2, tx_deferred=15
tx_no_carrier=1, tx_late_collision=10, tx_excess_coll=10
tx_process_stopped=1, fata_tx_err=0

```

The following is a sample output display from the **show controllers fastethernet** command on a Cisco AS5300 router:

```

Router# show controllers fastethernet 0

DEC21140
Setup Frame
(0 ) 00e0.1e3e.c179
(1 ) 0100.0ccc.cccc
(2 ) 0900.2b00.000f
(3 ) 0900.2b02.0104
(4 ) 0300.0000.0001
dec21140_ds=0x60BD33B8, registers=0x3C210000, ib=0x4002F75C, ring entries=32
rxring=0x4002F844, rxr shadow=0x60F14B58, rx_head=6, rx_tail=6
txring=0x4002FA6C, txr shadow=0x60F14BF8, tx_head=10, tx_tail=10, tx_count=0
tx_size=32, rx_size=32
PHY link up
DEC21140 Registers:
CSR0=0xFE024480, CSR3=0x4002F844, CSR4=0x4002FA6C, CSR5=0xFC660000
CSR6=0x322C2002, CSR7=0xFFFFA241, CSR8=0xE0000000, CSR9=0xFFFD33FF
CSR11=0xFFFFE0000, CSR12=0xFFFFF09, CSR15=0xFFFFFEC8
DEC21140 PCI registers:
bus_no=2, device_no=0
CFID=0x00091011, CFCS=0x82800005, CFRV=0x02000021, CFLT=0x0000FF00
CBIO=0x3C210001, CBMA=0x00000000, CFIT=0x28140100, CFDA=0x00000000

MII registers:
Register 0x00: 0000 784D 2000 5C01 0001 0000 0000 0000
Register 0x08: 0000 0000 0000 0000 0000 0000 0000 0000
Register 0x10: 0000 0000 0000 0000 0000 0000 0001 8060
Register 0x18: 8020 0840 0000 3000 A3B9

throttled=7, enabled=7
rx_fifo_overflow=0, rx_no_enp=0, late_collision=0
rx_watchdog=0, rx_process_stopped=0, rx_buffer_unavailable=0
tx_jabber_timeout=0, tx_carrier_loss=1, tx_deferred=0
tx_no_carrier=1, tx_late_collision=0, tx_excess_coll=0
tx_process_stopped=0, fatal_tx_err=0
overflow_resets=0
0 missed datagrams, 0 overruns
0 transmitter underruns, 0 excessive collisions

```

## show controllers fastethernet

```
0 single collisions, 0 multiple collisions
0 dma memory errors, 0 CRC errors
```

```
0 alignment errors, 0 runts, 0 giants
```

The following is a sample output display from the **show controllers fastethernet** command on a Cisco 7200 series router:

```
Router# show controllers fastethernet 0/0

Interface Fast Ethernet0/0
Hardware is DEC21140
dec21140_ds=0x60895888, registers=0x3C018000, ib=0x4B019500
rx ring entries=128, tx ring entries=128
rxring=0x4B019640, rxr shadow=0x60895970, rx_head=0, rx_tail=0
txring=0x4B019EC0, txr shadow=0x60895B98, tx_head=77, tx_tail=77, tx_count=0
CSR0=0xFFFFA4882, CSR3=0x4B019640, CSR4=0x4B019EC0, CSR5=0xFC660000
CSR6=0xE20CA202, CSR7=0xFFFFA241, CSR8=0xFFFE0000, CSR9=0xFFDD7FF
CSR11=0xFFFE0000, CSR12=0xFFFFF98, CSR15=0xFFFFFEC8
DEC21140 PCI registers:
  bus_no=0, device_no=6
  CFID=0x00091011, CFCS=0x02800006, CFRV=0x02000012, CFLT=0x0000FF00
  CBIO=0x7C5AFF81, CBMA=0x48018000, CFIT=0x0000018F, CFDA=0x0000AF00
MII registers:
  Register 0x00:  2000  780B  2000  5C00  01E1  0000  0000  0000
  Register 0x08:  0000  0000  0000  0000  0000  0000  0000  0000
  Register 0x10:  0000  0000  0000  0000  0000  0000  0000  8040
  Register 0x18:  8000  0000  0000  3800  A3B9
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=1
tx_no_carrier=1, tx_late_collision=0, tx_excess_coll=0
tx_collision_cnt=0, tx_deferred=0, fatal_tx_err=0, mult_ovfl=0
HW addr filter: 0x60895FC0, ISL Enabled
  Entry= 0: Addr=0100.0CCC.CCCC
  Entry= 1: Addr=0300.0000.0001
  Entry= 2: Addr=0100.0C00.0000
  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=0060.3E28.6E00
```

### Related Commands

Command	Description
<a href="#">show interfaces fastethernet</a>	Displays information about the Fast Ethernet interfaces.

# show controllers fddi

To display all information under the FDDI Interface Processor (FIP) on the Cisco 7200 series and Cisco 7500 series routers, use the **show controllers fddi** command in user EXEC or privileged EXEC mode.

## show controllers fddi

### Syntax Description

This command has no arguments or keywords.

### Command Modes

User EXEC  
Privileged EXEC

### Command History

Release	Modification
10.0	This command was introduced.

### Usage Guidelines

This command reflects the internal state of the chips and information the system uses for bridging and routing that is specific to the interface hardware. The information displayed is generally useful for diagnostic tasks performed by technical support personnel only.

### Examples

The following is a sample output display from the **show controllers fddi** command:

```
Router# show controllers fddi

Fddi2/0 - hardware version 2.2, microcode version 1.2
  Phy-A registers:
    cr0 4, cr1 0, cr2 0, status 3, cr3 0
  Phy-B registers:
    cr0 4, cr1 4, cr2 0, status 3, cr3 0
  FORMAC registers:
    irdtlb 71C2, irdtneg F85E, irdthtt F5D5, irdmir FFFF0BDC
    irdtrth F85F, irdtmax FBC5, irdtvxt 5959, irdstmc 0810
    irdmode 6A20, irdimsk 0000, irdstat 8060, irdtpri 0000
  FIP registers
    ccb: 002C cmd: 0006 fr: 000F mdptr: 0000 mema: 0000
    icb: 00C0 arg: 0003 app: 0004 mdpg: 0000 af: 0603
    clm: E002 bcn: E016 clbn: 0198 rxoff: 002A en: 0001
    clmbc: 8011 bcnbc: 8011 robn: 0004 park: 0000 fop: 8004

    txchn: 0000 pend: 0000 act: 0000 tail: 0000 cnt: 0000
    state: 0003 check: 0000 eof: 0000 tail: 0000 cnt: 0000
    rxchn: 0000 buf0: 0534 nxt0: 0570 eof: 0000 tail: 0000
    eofch: 0000 buf1: 051C nxt1: 0528 pool: 0050 err: 005C
```

## ■ show controllers fddi

```
head: 0984 cur: 0000 t0: 0030 t1: 0027 t2: 000F
tail: 0984 cnt: 0001 t3: 0000 rxlft: 000B used: 0000
txq_s: 0018 txq_f: 0018 Aarm: 0000 Barm: 1388 fint: 8004
```

Total LEM: phy-a 6, phy-b 13

The last line of output indicates how many times the specific PHY encountered an “UNKNOWN LINE STATE” event on the fiber.

# show controllers gigabitethernet

To display initialization block information, transmit ring, receive ring, and errors for the Gigabit Ethernet interface controllers of the Cisco 7200-I/O-GE+E, use the **show controllers gigabitethernet** command in privileged EXEC mode.

**show controllers gigabitethernet** *slot/port*

## Syntax Description

<i>slot</i>	Slot number on the interface.
<i>port</i>	Port number on the interface.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
11.1 CC	This command was introduced.
12.1(3a)E	Support for the Cisco 7200-I/O-GE+E controller was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

## Usage Guidelines

This command is used on the Cisco 7200-I/O-GE+E to display hardware and software information about the Gigabit Ethernet interface. The I/O controller is always found in slot 0.

## Examples

The following is sample output from the **show controllers gigabitethernet** command:

```
Router# show controllers gigabitethernet 0/0

Interface GigabitEthernet0/0 (idb 0x627D8344)
Hardware is i82543 (Livengood) A1
network connection mode is AUTO
network link is up
loopback type is none
SERDES is enabled (TBI mode), GBIC is enabled
GBIC type is 1000BaseSX
idb->lc_ip_turbo_fs=0x604A82B0, ip_routecache=0x1(dfs=0/mdfs=0), max_mtu=1524
i82543_ds=0x627DA094, registers=0x3C100000, curr_intr=0
rx cache size=2000, rx cache end=1744, rx_nobuffer=0
i82543 MAC registers:
CTRL =0x0ACC0004, STATUS=0x00000FAB, CTRL_X=0x000048E0, IMS =0x00000096
RCTL =0x0042803A, RDBAL =0x2000E000, RDBAH =0x00000000, RDLEN =0x00001000
RDH =0x000000CB, RDT =0x000000CA, RDTR =0x00000000
TCTL =0x000400FA, TDBAL =0x20010000, TDBAH =0x00000000, TDLEN =0x00001000
TDH =0x00000057, TDT =0x00000057, TIPG =0x00600806
ETT =0x00000000, TXDMAC=0x00000001
TXCW =0xC00001A0, RXCW =0xDC004120, FCRTH =0x0000AFF0, FCRTL =0x80001200
FCAH =0x00000100, FCAL =0x00C28001, FCT =0x00008808, FCTTV =0x00000080
RDFH =0x00000BFA, RDFT =0x00000BFA, RDFPC =0x00000000
TDFH =0x00001EBA, TDFT =0x00001EBA, TDFPC =0x00000000
RX is normal, enabled TX is normal, enabled
Device status = full-duplex, link up
```

## show controllers gigabitethernet

```

AN status = done(RF:0 , PAUSE:2 ), bit sync OK, rx idle stream, rx invalid
symbols, rx idle char
GBIC registers:
Register 0x00: 01 00 01 00 00 00 01 00
Register 0x08: 00 00 00 00 0D 00 00 00
Register 0x10: 32 1E 00 00 4D 65 74 68
Register 0x18: 6F 64 65 20 45 6C 65 63
Register 0x20: 2E 20 20 20 00 00 00 00
Register 0x28: 4D 47 42 43 2D 32 30 2D
Register 0x30: 34 2D 31 2D 53 20 20 20
Register 0x38: 31 30 30 30 00 00 00 55
Register 0x40: 00 0A 00 00 41 4A 42 48
Register 0x48: 47 30 36 30 20 20 20 20
Register 0x50: 20 20 20 20 30 30 30 33
Register 0x58: 32 30 20 20 00 00 00 61
PartNumber:MGBC-20-4-1-S
PartRev:G
SerialNo:AJBHG060
Options: 0
Length(9um/50um/62.5um):000/500/300
Date Code:000320
Gigabit Ethernet Codes: 1
PCI configuration registers:
bus_no=0, device_no=8
DeviceID=0x1001, VendorID=0x8086, Command=0x0156, Status=0x0230
Class=0x02/0x00/0x00, Revision=0x01, LatencyTimer=0xFC, CacheLineSize=0x20
BaseAddr0=0x48100000, BaseAddr1=0x00000000, MaxLat=0x00, MinGnt=0xFF
SubsysDeviceID=0x1001, SubsysVendorID=0x8086
Cap_Ptr=0x000000DC Retry/TRDY Timeout=0x00000000
PMC=0x00220001 PMCSR=0x00000000
I82543 Internal Driver Variables:
rxring(256)=0x2000E000, shadow=0x627DA3F0, head=203, rx_buf_size=512
txring(256)=0x20010000, shadow=0x627DA81C, head=87, tail=87
chip_state=2, pci_rev=1
tx_count=0, tx_limited=0
rx_overshoot=0, rx_seq=0, rx_no_enp=0, rx_discard=0
throttled=0, enabled=0, disabled=0
reset=17(init=1, check=0, restart=3, pci=0), auto_restart=18
link_reset=0, tx_carrier_loss=1, fatal_tx_err=0
isl_err=0, wait_for_last_tdt=0
HW addr filter:0x627DB048, ISL disabled, Promiscuous mode on
Entry= 0: Addr=0000.C000.4000
(All other entries are empty)
i82543 Statistics
CRC error 0 Symbol error 7
Missed Packets 0 Single Collision 0
Excessive Coll 0 Multiple Coll 0
Late Coll 0 Collision 0
Defer 0 Receive Length 0
Sequence Error 0 XON RX 0
XON TX 0 XOFF RX 0
OFF TX 0 FC RX Unsupport 0
Packet RX (64) 11510 Packet RX (127) 17488
Packet RX (255) 1176 Packet RX (511) 7941
Packet RX (1023) 738 Packet RX (1522) 18
Good Packet RX 38871 Broadcast RX 0
Multicast RX 0 Good Packet TX 5208
Good Octets RX.H 0 Good Octets RX.L 5579526
Good Octets TX.H 0 Good Octets TX.L 513145
RX No Buff 0 RX Undersize 0
RX Fragment 0 RX Oversize 0
RX Octets High 0 RX Octets Low 5579526
TX Octets High 0 TX Octets Low 513145
TX Packet 5208 RX Packet 38871

```

TX Broadcast	1796	TX Multicast	330
Packet TX (64)	1795	Packet TX (127)	3110
Packet TX (255)	0	Packet TX (511)	300
Packet TX (1023)	3	Packet TX (1522)	0
TX Underruns	0	TX No CSR	0
RX Error Count	0	RX DMA Underruns	0
RX Carrier Ext	0		
TCP Segmentation	0	TCP Seg Failed	0

**Related Commands**

Command	Description
<a href="#">loopback remote (interface)</a>	Displays software and hardware information about an Ethernet interface.
<a href="#">show controllers fastethernet</a>	Displays software and hardware information about a Fast Ethernet interface.

# show controllers j1

To display statistics about the J1 link use the **show controllers j1** command in privileged EXEC mode.

**show controllers j1 slot/port**

<b>Syntax Description</b>	<i>slot/port</i>	Backplane slot and port number on the controller.
<b>Defaults</b>	No default behavior or values.	
<b>Command Modes</b>	Privileged EXEC	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.2(8)T	The command was introduced on the J1 controller for the Cisco 2600 and Cisco 3600 series.

## Examples

The following example is sample output from the **show controllers j1** command on the Cisco 3660:

```
Router# show controllers j1 3/0

J1 3/0 is up.
  Applique type is Channelized J1 - TTC2M
  No alarms detected.
Version info Firmware: 20010530, FPGA: 1
Framing is J1-TTC2M MF, Line Code is CMI, Clock Source is Line.
Data in current interval (344 seconds elapsed):
  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 24 hours)
  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
```

[Table 60](#) describes the fields shown in the display.

**Table 60** *show controllers j1 Field Descriptions*

Field	Description
j1 3/0 is up.	The J1 controller 3 in slot 0 is operating. The controller's state can be up, down, or administratively down.
Applique type	The applique type is shown and is always Channelized.

**Table 60** show controllers j1 Field Descriptions (continued)

Field	Description
No alarms detected	Any alarms detected by the controller are displayed here. Possible alarms are as follows: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending AIS.</li> <li>• Receiver has loss of signal.</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame.</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
Version	Indicates date of compilation.
Framing is	Shows the current framing type which is always J1-TTC2M MF.
Linecode is	Shows the current line encoding type which is always CMI.
Clock Source	Shows the current clock source type.
Data in current interval (344 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.
Slip Secs	Indicates the replication or deletion of the payload bits of a DS1 frame. A slip might 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 (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	An errored second is a second in which one of the following are detected: <ul style="list-style-type: none"> <li>• One or more path code violations.</li> <li>• One or more out of rame defects.</li> <li>• One or more controlled slip events.</li> <li>• A detected alarm indication signal (AIS) defect.</li> </ul>
Bursty Err Secs	A 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.

**Table 60** *show controllers j1 Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Severely Err Secs	A severely err sec is 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.
Unavail Secs	A count of the total number of seconds where the controller did not get a clock.

# show controllers mci

To display all information under the Multiport Communications Interface (MCI) card or the SCI, use the **show controllers mci** command in privileged EXEC mode.

**show controllers mci**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Usage Guidelines** This command displays information the system uses for bridging and routing that is specific to the interface hardware. The information displayed is generally useful for diagnostic tasks performed by technical support personnel only.

**Examples** The following is a sample output from the **show controllers mci** command:

```
Router# show controllers mci

MCI 0, controller type 1.1, microcode version 1.8
  128 Kbytes of main memory, 4 Kbytes cache memory
22 system TX buffers, largest buffer size 1520
  Restarts: 0 line down, 0 hung output, 0 controller error
Interface 0 is Ethernet0, station address 0000.0c00.d4a6
  15 total RX buffers, 11 buffer TX queue limit, buffer size 1520
  Transmitter delay is 0 microseconds
Interface 1 is Serial0, electrical interface is V.35 DTE
  15 total RX buffers, 11 buffer TX queue limit, buffer size 1520
  Transmitter delay is 0 microseconds
  High speed synchronous serial interface
Interface 2 is Ethernet1, station address aa00.0400.3be4
  15 total RX buffers, 11 buffer TX queue limit, buffer size 1520
  Transmitter delay is 0 microseconds
Interface 3 is Serial1, electrical interface is V.35 DCE
  15 total RX buffers, 11 buffer TX queue limit, buffer size 1520
  Transmitter delay is 0 microseconds
  High speed synchronous serial interface
```

[Table 61](#) describes significant fields shown in the display.

**Table 61** *show controllers mci Field Descriptions*

Field	Description
MCI 0	Card type and unit number (varies depending on card).
controller type 1.1	Version number of the card.

**Table 61** show controllers mci Field Descriptions (continued)

Field	Description
microcode version 1.8	Version number of the card's internal software (in ROM).
128 Kbytes of main memory	Amount of main memory on the card.
4 Kbytes cache memory	Amount of cache memory on the card.
22 system TX buffers	Number of buffers that hold packets to be transmitted.
largest buffer size 1520	Largest size of these buffers (in bytes).
Restarts <ul style="list-style-type: none"> <li>• 0 line down</li> <li>• 0 hung output</li> <li>• 0 controller error</li> </ul>	Count of restarts for the following conditions: <ul style="list-style-type: none"> <li>• Communication line down</li> <li>• Output unable to transmit</li> <li>• Internal error</li> </ul>
Interface 0 is Ethernet0	Names of interfaces, by number.
electrical interface is V.35 DTE	Line interface type for serial connections.
15 total RX buffers	Number of buffers for received packets.
11 buffer TX queue limit	Maximum number of buffers in transmit queue.
Transmitter delay is 0 microseconds	Delay between outgoing frames.
Station address 0000.0c00.d4a6	Hardware address of the interface.

**Note**

The interface type is only queried at startup. If the hardware changes *subsequent* to initial startup, the wrong type is reported. This has *no* adverse effect on the operation of the software. For instance, if a DCE cable is connected to a dual-mode V.35 applique after the unit has been booted, the display presented for the **show interfaces** command incorrectly reports attachment to a DTE device although the software recognizes the DCE interface and behaves accordingly.

**Related Commands**

Command	Description
<a href="#">tx-queue-limit</a>	Controls the number of transmit buffers available to a specified interface on the MCI and SCI cards.

# show controllers pibus

To display all information about the bus interface, use the **show controllers pibus** command in privileged EXEC mode.

## show controllers pibus

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** This command is valid on LanOptics Branchcard or Stacknet 2000 products only.

**Examples** The following is a sample output from the **show controllers pibus** command:

```
Router# show controllers pibus

PCbus unit 0, Name = PCbus0 Hardware is ISA PCbus shared RAM
IDB at 0x3719B0, Interface driver data structure at 0x3735F8
Control/status register at 0x2110008, Shared memory at 0xC000000
Shared memory is initialized

Shared memory interface control block :
Magic no = 0x41435A56 (valid) Version = 1.0
Shared memory size = 64K bytes, Interface is NOT shutdown
Interface state is up, line protocol is up

Tx buffer : (control block at 0xC000010)
Start offset = 0x30, Size = 0x7FE8, Overflows = 1
GET_ptr = 0x4F6C, PUT_ptr = 0x4F6C, WRAP_ptr = 0x3BB0

Rx buffer : (control block at 0xC000020)
Start offset = 0x8018, Size 0x7FE8, Overflows = 22250698
GET_ptr = 0x60, PUT_ptr = 0x60, WRAP_ptr = 0x7FD0

Interrupts received = 567
```

# show controllers pos

To display information about the Packet-over-SONET (POS) controllers, use the **show controllers pos** command in privileged EXEC mode.

```
show controllers pos [slot-number] [details | pm [time-interval]]
```

Syntax Description	
<i>slot-number</i>	(Optional) Number of the chassis slot that contains the POS interface. If you do not specify a slot number, information for all the installed POS controllers is displayed.  <b>Cisco 7500 Series Routers</b> Use <i>slotport-adapter/port</i> (for example, 2/0/0).  <b>Cisco 12000 Series Routers</b> Use <i>slotport</i> (for example, 4/0).
<b>details</b>	(Optional) In addition to the normal information displayed by the <b>show controllers pos</b> command, the <b>details</b> keyword provides a hexadecimal and ASCII “dump” of the path trace buffer.
<b>pm</b>	(Optional) Displays SONET performance monitoring statistics accumulated for a 24-hour period in 15-minute intervals.
<i>time-interval</i>	(Optional) Number of the SONET MIB 15-minute time interval in the range from 1 to 96. If the <i>time-interval</i> argument is not specified, the performance monitoring statistics for the current time interval are displayed.

Command Modes	
	Privileged EXEC

Command History	Release	Modification
	11.1 CC	This command was introduced.

**Usage Guidelines**

The **show controllers pos** command with the **pm** keyword displays SONET performance monitoring statistics accumulated at 15-minute intervals, and these statistics can be queried using Simple Network Management Protocol (SNMP) tools. The performance monitoring statistics are collected according to the RFC 1595 specification.

The information that this command displays is generally useful only for diagnostic tasks performed by technical support personnel.

**Examples**

The following is sample output from the **show controllers pos** command on a Cisco 7500 series router:

```
Router# show controllers pos

POS2/0/0
SECTION
  LOF = 0          LOS = 2335          BIP(B1) = 77937133
LINE
  AIS = 2335      RDI = 20          FEBE = 3387950089 BIP(B2) = 1622825387
PATH
  AIS = 2340      RDI = 66090       FEBE = 248886263  BIP(B3) = 103862953
  LOP = 246806    NEWPTR = 11428072  PSE = 5067357    NSE = 4645

Active Defects: B2-TCA B3-TCA
Active Alarms:  None
Alarm reporting enabled for: B1-TCA

APS
  COAPS = 12612784  PSBF = 8339
  State: PSBF_state = False
  Rx(K1/K2): 00/CC  Tx(K1/K2): 00/00
  S1S0 = 03, C2 = 96
CLOCK RECOVERY
  RDOOL = 64322060
  State: RDOOL_state = True
PATH TRACE BUFFER: UNSTABLE
  Remote hostname :
  Remote interface:
  Remote IP addr  :
  Remote Rx(K1/K2): ../..  Tx(K1/K2): ../..
BER thresholds:  SF = 10e-3  SD = 10e-8
TCA thresholds:  B1 = 10e-7  B2 = 10e-3  B3 = 10e-6
```

Table 62 describes the fields shown in the display.

**Table 62** *show controllers pos Field Descriptions*

Field	Description
POS2/0/0	Slot number of the POS interface.
LOF	Section loss of frame is detected when a severely error framing (SEF) defect on the incoming SONET signal persist for 3 milliseconds.
LOS	Section loss of signal is detected when an all-zeros pattern on the incoming SONET signal lasts 19 plus or minus 3 microseconds or longer. This defect might also be reported if the received signal level drops below the specified threshold.
BIP(B1)/BIP(B2)/BIP(B3)	Bit interleaved parity (BIP). For B1, the BIP error report is calculated by comparing the BIP-8 code with the BIP-8 code extracted from the B1 byte of the following frame. Differences indicate that section-level bit errors have occurred. For B2, the BIP error report is calculated by comparing the BIP-8/24 code with the BIP-8 code extracted from the B2 byte of the following frame. Differences indicate that line-level bit errors have occurred. For B3, the BIP error report is calculated by comparing the BIP-8 code with the BIP-8 code extracted from the B3 byte of the following frame. Differences indicate that path-level bit errors have occurred.

Table 62 show controllers pos Field Descriptions (continued)

Field	Description
AIS	Alarm indication signal. A line alarm indication signal is sent by the section terminating equipment (STE) to alert the downstream line terminating equipment (LTE) that a loss of signal (LOS) or loss of frame (LOF) defect has been detected on the incoming SONET section. A path alarm indication signal is sent by the LTE to alert the downstream path terminating equipment (PTE) that it has detected a defect on its incoming line signal.
RDI	Remote defect indication. A line remote defect indication is reported by the downstream LTE when it detects LOF, LOS, or AIS. A path remote defect indication is reported by the downstream PTE when it detects a defect on the incoming signal.
FEBE	Far end block errors. Line FEBE (accumulated from the M0 or M1 byte) is reported when the downstream LTE detects BIP(B2) errors. Path FEBE (accumulated from the G1 byte) is reported when the downstream PTE detects BIP(B3) errors.
LOP	Path loss of pointer is reported as a result of an invalid pointer (H1, H2) or an excess number of new data flag (NDF) enabled indications.
NEWPTR	Inexact count of the number of times that the SONET framer has validated a new SONET pointer value (H1, H2).
PSE	Inexact count of the number of times that the SONET framer has detected a positive stuff event in the received pointer (H1, H2).
NSE	Inexact count of the number of times that the SONET framer has detected a negative stuff event in the received pointer (H1, H2).
Active Defects	List of all currently active SONET defects.
Active Alarms	List of current alarms as enforced by Sonet Alarm Hierarchy.
Alarm reporting enabled for	List of alarms for which you enabled reporting with the <b>pos report</b> interface command.
APS	Automatic protection switching.
COAPS	An inexact count of the number of times that a new APS value has been detected in the K1, K2 bytes.
PSBF	An inexact count of the number of times that a protection switching byte failure has been detected (no three consecutive SONET frames contain identical K1 bytes).
PSBF_state	Protection switching byte failure state.
Rx(K1/K2)/Tx(K1/K2)	Contents of the received and transmitted K1 and K2 bytes.
S1S0	The two S bits received in the last H1 byte.
C2	The value extracted from the SONET path signal label byte (C2).

**Table 62** *show controllers pos Field Descriptions (continued)*

Field	Description
CLOCK RECOVERY	The SONET clock is recovered using information in the SONET overhead. RDOOL is an inexact count of the number of times that Receive Data Out Of Lock has been detected, which indicates that the clock recovery phased lock loop is unable to lock to the receive stream.
PATH TRACE BUFFER	SONET path trace buffer is used to communicate information regarding the remote host name, interface name/number, and IP address. This is a Cisco-proprietary use of the J1 (path trace) byte.
BER thresholds	List of the bit error rate (BER) thresholds that you configured with the <b>pos threshold</b> interface command.
TCA thresholds	List of threshold crossing alarms (TCAs) that you configured with the <b>pos threshold</b> interface command.

The following is sample output from the **show controllers pos pm** command that displays performance monitoring statistics on a Cisco 12000 series router:

```
Router# show controllers pos 1/0 pm

POS1/0
Medium is SONET
Line coding is RZ, Line type is LONG SM
Data in current interval (516 seconds elapsed)
SECTION ( NO DEFECT )
    515 Errored Secs, 515 Severely Err Secs
    0 Coding Violations, 515 Sev Err Framing Secs
LINE ( NO DEFECT )
    0 Errored Secs, 0 Severely Err Secs
    0 Coding Violations, 0 Unavailable Secs
FAR END LINE
    0 Errored Secs, 0 Severely Err Secs
    0 Coding Violations, 0 Unavail a be Secs
PATH ( NO DEFECT )
    0 Errored Secs, 0 Severely Err Secs
    0 Coding Violations, 0 Unavail a be Secs
FAR END PATH
    0 Errored Secs, 0 Severely Err Secs
    0 Coding Violations, 0 Unavail a be Secs
```

[Table 63](#) describes the fields shown in the display.

**Table 63** *show controllers pos pm Field Descriptions*

Field	Description
POS1/0	Slot number of the POS interface.
Line coding	Shows the current line encoding type, either return to zero (RZ) or nonreturn 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).

**Table 63** *show controllers pos pm Field Descriptions (continued)*

Field	Description
Data in current interval	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.
Errored Secs	An errored second is a second in which one of the following is detected: <ul style="list-style-type: none"> <li>• One or more coding violations.</li> <li>• One or more incoming defects (for example, a severely errored frame (SEF) defect, an LOS defect, an AIS defect, or an LOP defect).</li> </ul>
Severely Err Secs	A severely errored second (SES) is a second with one of the following errors: <ul style="list-style-type: none"> <li>• A certain number of coding violations. The number is dependent on the line rate and the BER.</li> <li>• A certain number of incoming defects.</li> </ul>
Coding Violations	Number of coding violations for the current interval. Coding violations are defined as BIP errors that are detected in the incoming signal. The coding violations counter is incremented for each BIP error detected.
Sev Err Framing Secs	Severely errored framing seconds (SEFS) are seconds with one or more SEF defects.
Unavailable Secs	Total number of seconds for which the interface is unavailable. The interface is considered to be unavailable after a series of ten consecutive SESs.

**Related Commands**

Command	Description
<b>pos report</b>	Permits selected SONET alarms to be logged to the console for a POS interface.
<b>pos threshold</b>	Sets the BER threshold values of specified alarms for a POS interface.

# show controllers serial

To display information that is specific to the interface hardware, use the **show controllers serial** command in privileged EXEC mode.

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

## Cisco 7500 Series and Cisco 7000 Series with the RSP7000 and RSP7000CI

**show controllers serial** [*slot/port-adapter/port*]

Syntax Description	slot	(Optional) Slot number of the interface.
	port	(Optional) Port number on the interface. The port value is always 0.
	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 VIP. The value can be 0 or 1.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	11.1 CA	This command was modified to include support for the PA-E3 and PA-T3 port adapters.

**Usage Guidelines** The information displayed is generally useful for diagnostic tasks performed by technical support personnel only. For the PA-E3 or PA-T3 port adapters, the **show controllers serial** 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 is the performance statistics for the current interval and last 15-minute interval and whether any alarms exist.

**Examples** The following is a sample output display from the **show controllers serial** 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
```

## show controllers serial

```

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 0xFFFFF, status=0x30, max_buffer_size=0, packet_size=0
XID/Test RX desc at 0xFFFFF, 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

```

The following is a sample output display from the **show controllers serial** command for a PA-E3 serial port 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_ouerrun_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.
```

```
PIO A: 639, PIO B: 303, Gapper register: 50DE
Framer register information:
reg 0: E0      reg 1: 0      reg 2: 0      reg 3: 0
reg 4: 0      reg 5: 8      reg 6: 0      reg 7: 0
```

The following is a sample output display from the **show controllers serial** 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.
```

## show controllers sonet

To display information about SONET controllers, use the **show controllers sonet** command in user EXEC or privileged EXEC mode with the appropriate parameters for the operating mode of the channelized line.

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

Syntax Description		
<i>slot/port.sts1-number/</i> <i>t1-number</i>		Slot and port number of a T1 line under SONET framing in CT3 mode.
<i>slot/port.vtg1-number/</i> <i>sts1-number/t1-number</i>		Slot and port number of a T1 line under SONET framing in VT-15 mode.
<i>slot/port.au-3-number/</i> <i>tug-2-number/t1-number</i>		Slot and port number of a T1 line under SDH framing with AU-3 AUG mapping.
<i>slot/port.au-4-number/</i> <i>tug-3-number/tug-2-number/</i> <i>e1-line-number</i>		Slot and port number of an E1 line under SDH framing with AU-4 AUG mapping.
<i>slot/port.au-4-number/</i> <i>vc3-number</i>		Slot and port number of a DS3/E3 interface under SDH framing with AU-4 mapping.
<i>slot/port:interface-number</i>		Slot and port number of a DS3/E3 interface under SONET framing or SDH framing with AU-3 mapping.
<b>t3</b> <i>slot/port:t1-line-number</i>		Displays information for a T1 line under SF or ESF format framing.
<b>bert</b>		Displays bit error rate (BER) information.
<b>brief</b>		Displays summary information.
<b>tabular</b>		Displays 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.

**Usage Guidelines** You can enter the **show controllers sonet** command at any time during a BER test.

**Examples**

The following example shows sample output from the **show controllers sonet** command on a T1 line under SONET framing in VT-15 mode. (Table 64 describes the lines in the BERT test 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 64** *show controllers sonet Line Descriptions*

Output Line	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.
Test Pattern : 2^20-QRSS, Status : Sync, Sync Detected : 1	Indicates the test pattern you selected for the test (2^20-QRSS), the current synchronization state (Sync), and the number of times 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 BER test 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 start): 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 next example shows sample output from the **show controllers** command for an E1 line under SDH framing with AU-4 AUG mapping.

```
Router# show controllers sonet 3/0.1/3/5

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 example shows sample output from the **show controllers sonet** command when AUG mapping is AU-3 and the tabular keyword is specified.

```
Router# show controllers sonet 2/0/0.1/1/1 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
```

### Related Commands

Command	Description
<b>show version</b>	Displays information about the hardware and software on a router.

# show controllers t1

To display information about the T1 links or to display the hardware and software driver information for the T1 controller, use the **show controllers t1** command in privileged EXEC mode.

## Cisco 4000 Series

```
show controllers t1 number
```

## Cisco 7500 Series

```
show controllers t1 [slot/port]
```

## Cisco AS5800 Access Servers

```
show controller t1 dial-shelf/slot/t3-port:t1-num
```

Syntax Description		
<i>number</i>	Network processor number (NPM) number, in the range 0 through 2.	
<i>slot/port</i>	(Optional) Backplane slot number and port number on the interface. Refer to your hardware installation manual for the specific slot and port numbers.	
<i>dial-shelf</i>	Dial shelf chassis in the Cisco AS5800 access server containing the CT3 interface card.	
<i>slot</i>	Location of the CT3 interface card in the dial shelf chassis.	
<i>t3-port</i>	T3 port number. The only valid value is 0.	
<i>:t1-num</i>	T1 time slot in the T3 line. The value can be from 1 to 28.	

Command Modes	
	Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.
	12.0(3)T	This command was modified to include support for the Cisco AS5800 access server.

## Usage Guidelines

### Cisco 4000 Series and 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.

The NPM or MIP can query the port adapters to determine their current status. Issue a **show controllers t1** command to display statistics about the T1 link.

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

**Examples****Cisco 4000 Series and Cisco 7500 Series Routers**

The following is a sample output display from the **show controllers t1** 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 (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
  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
```

Table 65 describes the fields shown in the display.

**Table 65** *show controllers t1 Field Descriptions—Cisco 7500 Series*

Field	Description
T1 0/0 is up.	The T1 controller 0 in slot 0 is operating. The controller's state can be up, down, or administratively down. Loopback conditions are shown by (Locally Looped) or (Remotely Looped).
No alarms detected.	Any alarms detected by the controller are displayed here. Possible alarms are as follows: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending AIS.</li> <li>• Receiver has loss of signal.</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame.</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
Data in current interval (725 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.

**Table 65** show controllers t1 Field Descriptions—Cisco 7500 Series (continued)

Field	Description
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.
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
Router#
```

Table 66 describes the fields shown in the display.

**Table 66** *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).
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.

## show controllers t1 bert

To get the results of the bit-error rate testing (BERT) run for all ports, use the **show controllers t1 bert** command in privileged EXEC mode.

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

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

**Defaults** 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.

**Usage Guidelines** Use the **show controllers** command to display the results of the BERT feature.

**Examples** The following example shows how the **show controllers** 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 t3

To display information about the T3 links or to display the hardware and software driver information for the T3 controller, use the **show controllers t3** command in privileged EXEC mode.

**Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3660 Series, Cisco 3725, Cisco 3745 Routers**

```
show controllers t3 slot/port [brief | tabular]
```

**Cisco 7200 and Cisco 7500 Series Routers**

```
show controllers t3 [slot/port-adapter/port [:t1-channel]] [brief | tabular | remote performance
[brief | tabular]]
```

**Cisco AS5800 Access Servers**

```
show controllers t3 dial-shelf/slot/t3-port
```

Syntax	Description
<i>slot</i>	Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
<i>port</i>	Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
<b>brief</b>	(Optional) Displays a subset of information.
<b>tabular</b>	(Optional) Displays information in a tabular format.
<i>port-adapter</i>	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.
<i>:t1-channel</i>	(Optional) Number between 1 and 28 representing the T1 channel for the Channelized T3 Interface Processor (CT3IP or equivalent) on Cisco 7200 and Cisco 7500 series routers.
<b>remote performance</b>	(Optional) Displays the far-end ANSI performance monitor information when enabled on the T1 channel with the <b>t1 fdl ansi</b> controller configuration command.
<i>dial-shelf</i>	Dial shelf chassis in the Cisco AS5800 access server that contains the CT3 interface card.
<i>slot</i>	Location of the CT3 interface card in the dial shelf chassis.
<i>t3-port</i>	T3 port number. The only valid value is 0.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.3	This command was introduced.
	12.0(3)T	This command was modified to include support for the Cisco AS5800 access server.

Release	Modification
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.

### Usage Guidelines

#### Cisco 7200 and 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.



#### 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 **show controllers t3** command also displays Maintenance Data Link (MDL) information (received strings) if MDL is configured and framing is set to C-bit.

### Examples

#### Cisco 7200 and Cisco 7500 Series Routers

The following is partial output from the **show controllers t3** 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 **show controllers t3 brief** 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 **show controllers t3 tabular** 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    0
```

The following is partial output from the **show controllers t3 remote performance** command. This information is available if the **t1 fdl ansi** 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
.
.
.
```

Table 67 describes the fields shown in the display.

**Table 67** *show controllers t3 Field Descriptions—Cisco 7200 and 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.

**Table 67** *show controllers t3 Field Descriptions—Cisco 7200 and Cisco 7500 Series (continued)*

Field	Description
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: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending AIS.</li> <li>• Receiver has loss of signal.</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame.</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
MDL transmission	Status of the Maintenance Data Link (either enabled or disabled).
FEAC code received	Whether or not a far-end alarm code request is being received. Possible values are as follows: <ul style="list-style-type: none"> <li>• DS3 Eqpt. Failure (SA)</li> <li>• DS3 LOS/HBER</li> <li>• DS3 Out-of-Frame</li> <li>• DS3 AIS Received</li> <li>• DS3 IDLE Received</li> <li>• DS3 Eqpt. Failure (NSA)</li> <li>• Common Eqpt. Failure (NSA)</li> <li>• Multiple DS1 LOS/HBER</li> <li>• DS1 Eqpt. Failure</li> <li>• Single DS1 LOS/HBER</li> <li>• DS1 Eqpts Failure (NSA)</li> <li>• No code is being received</li> </ul>
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 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 one-second periodic process checks for throttled interfaces and unthrottles them back.

**Table 67** *show controllers t3 Field Descriptions—Cisco 7200 and Cisco 7500 Series (continued)*

Field	Description
BERT test result	<p>BERT test information is available if the <b>t1 bert</b> controller configuration command is enabled for the T1 channel on the CT3IP. The BERT results include the following information:</p> <ul style="list-style-type: none"> <li>• Test Pattern—Type of test pattern selected.</li> <li>• Status—Status of the test.</li> <li>• Sync Detected—Number of times the pattern synch is detected (that is, the number of times the pattern goes from No Sync to Sync).</li> <li>• Interval—Duration selected.</li> <li>• Tim Remain—Time remaining on the BERT test.</li> <li>• Bit Errors (Sync BERT Started)—Number of bit errors during the BERT test.</li> <li>• Bit Errors (Sync last Sync)—Number of bit errors since the last patter sync was detected.</li> <li>• Bits Received—Total bits received.</li> </ul> <p>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.</p>
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 (PVC) 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.
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.

**Table 67** *show controllers t3 Field Descriptions—Cisco 7200 and Cisco 7500 Series (continued)*

Field	Description
Unavailable Secs	Unavailable seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable. For more information, refer to RFC 1407, <i>DS3 MIB Variables</i> .
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 spec number 54016.
No alarms detected	Any alarms detected by the T1 controller are displayed here. Possible alarms are as follows: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending AIS.</li> <li>• Receiver has loss of signal.</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame.</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
Framing	Type of framing used on the T1 channel. Values are ESF or SF.
LineCode	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 an out-of-frame error is detected.

**Table 67** show controllers t3 Field Descriptions—Cisco 7200 and Cisco 7500 Series (continued)

Field	Description
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, <i>Definitions of Managed Objects for DS1 and E1 Interface Types</i> .
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
```

```
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
```

Table 68 describes the fields shown in the display.

**Table 68** *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: <ul style="list-style-type: none"> <li>• Transmitter is sending remote alarm.</li> <li>• Transmitter is sending alarm indication signal (AIS).</li> <li>• Receiver has loss of signal (LOS).</li> <li>• Receiver is getting AIS.</li> <li>• Receiver has loss of frame (LOF).</li> <li>• Receiver has remote alarm.</li> <li>• Receiver has no alarms.</li> </ul>
MDL transmission	Maintenance Data Link status (either enabled or disabled). Used for carrying performance information and control signals across the network towards the far end T3 unit. It is the counterpart of Facility Data Link (FDL) in a T1 link.
FEAC code received	Whether or not a far-end alarm code request is being received. Possible values are as follows: <ul style="list-style-type: none"> <li>• DS3 Eqpt. Failure (SA)</li> <li>• DS3 LOS/HBER</li> <li>• DS3 Out-of-Frame</li> <li>• DS3 AIS Received</li> <li>• DS3 IDLE Received</li> <li>• DS3 Eqpt. Failure (NSA)</li> <li>• Common Eqpt. Failure (NSA)</li> <li>• Multiple DS1 LOS/HBER</li> <li>• DS1 Eqpt. Failure</li> <li>• Single DS1 LOS/HBER</li> <li>• DS1 Eqpt. Failure (NSA)</li> <li>• No code is being received</li> </ul>
Framing	Standard T3 framing type: M23, C-Bit, or Auto-detect.
Line Code is	Standard T3 line-coding format. In this example, the line-coding format is bipolar 3-zero substitution (B3ZS).
Clock Source is	The source of the synchronization signal (clock): line or internal. In this example, the line is providing the clock signal.

**Table 68** *show controllers t3 Field Descriptions—Cisco AS5800 (continued)*

Field	Description
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.
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.

# show controllers token

To display information about memory management and error counters on the Token Ring Interface Processor (exTRIP) for the Cisco 7500 series routers, use the **show controllers token** 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.

### 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 **show controllers token** command displays is of primary use to Cisco technical personnel. Information that is useful to users can be obtained with the **show interfaces tokenring** command, which is described later in this chapter.

### Examples

The following is sample output from the **show controllers token** command on the Cisco 7500:

```
Router# show controllers token

Tokenring4/0: state administratively down
  current address: 0000.3040.8b4a, burned in address: 0000.3040.8b4a
  Last Ring Status: none
    Stats: soft: 0/0, hard: 0/0, sig loss: 0/0
          tx beacon: 0/0, wire fault 0/0, recovery: 0/0
          only station: 0/0, remote removal: 0/0
  Monitor state: (active), chip f/w: '000000.....', [bridge capable]
  ring mode: 0"
  internal functional: 00000000 (00000000), group: 00000000 (00000000)
  internal addr: SRB: 0000, ARB: 0000, EXB 0000, MFB: 0000
                Rev: 0000, Adapter: 0000, Parm: 0000
  Microcode counters:
    MAC giants 0/0, MAC ignored 0/0
    Input runts 0/0, giants 0/0, overrun 0/0
    Input ignored 0/0, parity 0/0, RFED 0/0
    Input REDI 0/0, null rcp 0/0, recovered rcp 0/0
    Input implicit abort 0/0, explicit abort 0/0
    Output underrun 0/0, tx parity 0/0, null tcp 0/0
    Output SFED 0/0, SEDI 0/0, abort 0/0
    Output False Token 0/0, PTT Expired 0/0
```

```

Internal controller counts:
  line errors: 0/0, internal errors: 0/0
  burst errors: 0/0, ari/fci errors: 0/0
  abort errors: 0/0, lost frame: 0/0
  copy errors: 0/0, rcvr congestion: 0/0
  token errors: 0/0, frequency errors: 0/0
Internal controller smt state:
  Adapter MAC: 0000.0000.0000, Physical drop: 00000000
  NAUN Address: 0000.0000.0000, NAUN drop: 00000000
  Last source: 0000.0000.0000, Last poll: 0000.0000.0000
  Last MVID: 0000, Last attn code: 0000
  Txmit priority: 0000, Auth Class: 0000
  Monitor Error: 0000, Interface Errors: 0000
  Correlator: 0000, Soft Error Timer: 0000
  Local Ring: 0000, Ring Status: 0000
  Beacon rcv type: 0000, Beacon txmit type: 0000
  Beacon type: 0000, Beacon NAUN: 0000.0000.0000
  Beacon drop: 00000000, Reserved: 0000
  Reserved2: 0000

```

Table 69 describes the significant fields shown in the display.

**Table 69** show controllers token Field Descriptions for the Cisco 7500 Series

Field	Description
Tokenring4/0	Interface processor type, slot, and port.
Last Ring Status	Last abnormal ring condition. Can be any of the following: <ul style="list-style-type: none"> <li>• Signal Loss</li> <li>• HW Removal</li> <li>• Remote Removal</li> <li>• Counter Overflow</li> <li>• Only station</li> <li>• Ring Recovery</li> </ul>

The following is an example on the PA-4R-DTR from the **show controllers token** command:

```

Router# show controllers token 4/0

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

```

The current 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), and DTR concentrator (concentrator port). In this case, the current operating mode is classic Token Ring station:

```

Current operating mode:
Classic token ring station

```

The MAC state indicates the state of the Token Ring MAC layer protocol. The state can be not inserted (not connected to any ring), inserting (currently entering a ring), and inserted (connected to an active Token Ring):

```
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: 0000
Ctrl ring state: 0001, Protocol join state: 0000
Reserved:       0000, Protocol mon state: 0000
```

The following is sample output from the **show controllers token** command for a Token Ring interface in a full-duplex port mode:

```
Router# show controllers token

Interface TokenRing4/1 state: up
Data from IDB:
  Current MAC address: 0008.2a36.1a84, Burned in MAC address: 0008.2a36.1a84
  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:
  DTR concentrator
  MAC state: port open, station connected
  Mode: port
  Duplex: full
  Access protocol: TXI
  Ring speed: 16 Mbps
  Ring monitor role: Standby monitor

Internal controller data:
  MAC microcode version: 0.240
  Hawkeye ASIC revision: 0
  Node address: 0008.2a36.1a84
  Functional address: 08000000, Group address: 80000000
  Hawkeye ASIC registers:
    last hisr: 0008h, himr: 00002ABFh, inpace: 0000h
    utility: 6316h, txphtre: 1010h, rtxxdmathre: 2828h
    dmactrl: 0000E004h, earlyrxthre: 0000h, llcstop: 0000h
    reset: 0000h
    txhidescstart: 4B0A5A40h, txlodescstart: 00000000h
    rxdescstart: 4B0A5600h, 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: 5   Tail pointer: 5
    Receive ring:
      Ring size: 64 descriptors
      Head pointer: 2

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:      0008.2a36.1a84, Physical drop:      00000000
  NAUN address:    0008.2a36.1a44, NAUN drop:           00000000
```

```

Last beacon src: 0000.0000.0000, Last poll:          0000.0000.0000
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:    0001
Access prot req: 0002, Access prot resp:        0000
Policy flags:   0590, Protocol event state:000D
Ctrl ring state: 0001, Protocol join state: 0007
Reserved:      0000, Protocol mon state: 0002

```

**Related Commands**

Command	Description
<a href="#">show interfaces tokenring</a>	Displays information about the Token Ring interface and the state of source-route bridging.
<a href="#">show source-bridge</a>	Displays the current source bridge configuration and miscellaneous statistics.

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■ show controllers token