CHAPTER 18

Show Commands

The commands shown in this chapter apply to the Catalyst 8540 MSR, Catalyst 8510 MSR, and LightStream 1010 ATM switch routers. Where an entire command or certain attributes of a command have values specific to a particular switch or switch router, an exception is indicated by the following callouts:

- Catalyst 8540 MSR
- Catalyst 8510 MSR and LightStream 1010

Note Commands that are identical to those documented in the Cisco IOS software documentation have been removed from this chapter.

Note Commands that no longer function as expected in ATM environments have also been removed from this chapter.

Refer to Appendix D of this command reference for a detailed list of commands that have been removed, changed or replaced.

show access-lists

To display information about the access list, use the **show access-lists** EXEC command.

show access-lists [*aclnumber* | *aclname*]

Syntax Description

aclnumber	Number from 1 through 1299 that identifies the access list.
aclname	Character string that identifies the access list.

Defaults

The system displays all access lists.

Command Modes

EXEC

Command History

Release	Modification
11.3.(3a)	New command

Examples

The following example is sample output from the **show access-lists** command when access list 101 is specified.

```
Switch# show access-lists 101
Extended IP access list 101
    permit tcp host 198.92.32.130 any established (4304 matches)
    permit udp host 198.92.32.130 any eq domain (129 matches)
    permit icmp host 198.92.32.130 any
    permit tcp host 198.92.32.130 host 171.69.2.141 gt 1023
    permit tcp host 198.92.32.130 host 171.69.2.135 eq smtp (2 matches)
    permit tcp host 198.92.32.130 host 198.92.30.32 eq smtp
    permit tcp host 198.92.32.130 host 171.69.108.33 eq smtp
    permit udp host 198.92.32.130 host 171.68.225.190 eq syslog
    permit udp host 198.92.32.130 host 171.68.225.126 eq syslog
    deny   ip 150.136.0.0 0.0.255.255 224.0.0.0 15.255.255.255
    deny   ip 171.68.0.0 0.1.255.255 224.0.0.0 15.255.255.255 (2 matches)
    deny   ip 172.24.24.0 0.0.1.255 224.0.0.0 15.255.255.255
    deny   ip 192.82.152.0 0.0.0.255 224.0.0.0 15.255.255.255
    deny   ip 192.122.173.0 0.0.0.255 224.0.0.0 15.255.255.255
    deny   ip 192.122.174.0 0.0.0.255 224.0.0.0 15.255.255.255
    deny   ip 192.135.239.0 0.0.0.255 224.0.0.0 15.255.255.255
    deny   ip 192.135.240.0 0.0.7.255 224.0.0.0 15.255.255.255
    deny   ip 192.135.248.0 0.0.3.255 224.0.0.0 15.255.255.255
    deny   ip 192.150.42.0 0.0.0.255 224.0.0.0 15.255.255.255
```

An access list counter counts how many packets are allowed by each line of the access list. This number is displayed as the number of matches.

For information on how to configure access lists, refer to the *ATM Switch Router Software Configuration Guide*.

Related Commands

Command	Description
access-list (extended)	Used to define an extended IP access list. Currently, this command only supports the IP host.
access-list (standard)	Cisco IOS command removed from this manual. See Appendix D.
clear access-list counters	Cisco IOS command removed from this manual. See Appendix D.
clear access-template	Cisco IOS command removed from this manual. See Appendix D.

show accounting

To step through all active sessions and to print all the accounting records for actively accounted functions, use the **show accounting** EXEC command. To disable this function, use the **no** form of the command.

show accounting

no show accounting

Syntax Description

This command has no keywords or arguments.

Defaults

Disabled

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

The **show accounting** command allows you to display the active accountable events on the system. It provides systems administrators with a quick look at what is going on, and can also help collect information in the event of a data loss on the accounting server. The **show accounting** command displays additional data on the internal state of AAA if **debug aaa accounting** is turned on.

Examples

The following example is sample output from the **show accounting** command.

```
Switch# show accounting
Active Accounted actions on tty0, User chard Priv 1
 Task ID 4425, EXEC Accounting record, 0:04:53 Elapsed
 task_id=4425 service=exec port=0
 Task ID 3759, Connection Accounting record, 0:01:06 Elapsed
 task_id=3759 service=exec port=0 protocol=telnet address=171.19.3.78 cmd=grill
Active Accounted actions on tty10, User chard Priv 1
 Task ID 5115, EXEC Accounting record, 0:04:07 Elapsed
 task_id=5115 service=exec port=10
 Task ID 2593, Connection Accounting record, 0:00:56 Elapsed
 task_id=2593 service=exec port=10 protocol=tn3270 address=172.21.14.90
cmd=tn snap
Active Accounted actions on tty11, User mary Priv 1
 Task ID 7390, EXEC Accounting record, 0:00:25 Elapsed
 task_id=7390 service=exec port=11
 Task ID 931, Connection Accounting record, 0:00:20 Elapsed
 task_id=931 service=exec port=11 protocol=telnet address=171.19.6.129 cmd=coal
```

Related Commands

Command	Description
show hosts	Displays the default domain name, the style of the name lookup service, a list of name server hosts, and the cached list of host names and addresses.
show line	Displays terminal line parameters.

show aliases

To display all alias commands or the alias commands in a specified mode, use the **show aliases** EXEC command.

show aliases [*mode*]

Syntax Description

mode	Command mode. You can show the alias commands for the following modes by entering the corresponding **keywords**. • **acctng-file**—ATM accounting file configuration mode • **acctng-sel**—ATM accounting selection configuration mode • **atm-router**—ATM router configuration mode • **atmsig-cug**—Closed user group configuration mode • **atmsig-diag**—Diagnostics configuration mode • **atmsig_e164_table_mode**—ATMSIG E164 table mode • **configure**—Global configuration mode • **exec**—EXEC mode • **interface**—Interface configuration mode • **lane**—ATM LAN Emulation LECS configuration table mode • **line**—Line configuration mode • **map-class**—Map-class configuration mode • **map-list**—Map-list configuration mode • **null-interface**—Null interface configuration mode • **pnni-router-node**—PNNI router node configuration mode • **route-map**—Route map configuration mode • **router**—Router configuration mode • **subinterface**—Subinterface configuration mode

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

All modes except for the null interface mode have their own prompts. For example, the prompt for interface configuration mode is:

```
Switch(config-if)#
```

Examples

The following example is sample output from the **show aliases exec** commands. The default aliases for commands in EXEC mode are displayed.

```
Switch# show aliases exec

Exec mode aliases:
  h                    help
  lo                   logout
  p                    ping
  r                    resume
  s                    show
  w                    where
```

Related Commands

Command	Description
alias	This command or some of its parameters might not function as expected. Refer to Appendix D. Refer also to the *Router Products Command Reference* publication for more information about the **alias** command.

show arp

To display the entries in the ARP table, use the **show arp** EXEC command.

show arp

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example is sample output from the **show arp** command.

```
Switch# show arp
Protocol Address Age (min) Hardware Addr Type nterface
Internet 172.20.42.112 120 0000.a710.4baf ARPAEthernet3
AppleTalk 4028.5 29 0000.0c01.0e56SNAP Ethernet2
Internet 172.20.42.114 105 0000.a710.859b ARPAEthernet3
AppleTalk 4028.9 - 0000.0c02.a03cSNAP Ethernet2
Internet 172.20.42.121 42 0000.a710.68cd ARPAEthernet3
Internet 172.20.36.9 - 0000.3080.6fd4SNAP TokenRing0
AppleTalk 4036.9 - 0000.3080.6fd4SNAP TokenRing0
Internet 172.20.33.9 - c222.2222.2222SMDS Serial0
```

Table 18-1 describes the significant fields shown in the first line of output in the display.

Table 18-1 show arp Field Descriptions

Field	Description
Protocol	Type of network address this entry includes.
Address	Network address that is mapped to the MAC address in this entry.
Age (min)	Interval (in minutes) since this entry was entered in the table, rather than the interval since the entry was last used. (The timeout value is 4 hours.)
Hardware Addr	MAC address mapped to the network address in this entry.
Type	Encapsulation type used for the network address in this entry. Possible values include: • ARPA • SNAP • ETLK (EtherTalk) • SMDS (Interface) Interface associated with this network address.

Related Commands

Command	Description
arp (interface)	Controls the interface-specific handling of IP address resolution into 48-bit Ethernet.

show async bootp

To display the extended BOOTP request parameters that were configured for asynchronous interfaces, use the **show async bootp** EXEC command.

show async bootp

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following is a sample output of the **show async bootp** command.

```
Switch# show async bootp

The following extended data will be sent in BOOTP responses:

bootfile (for address 128.128.1.1) "pcboot"
bootfile (for address 131.108.1.111) "dirtboot"
subnet-mask 255.255.0.0
time-offset -3600
time-server 128.128.1.1
```

If no extended data is defined, you receive the following response.

```
No extended data will be sent in BOOTP responses:
```

Table 18-2 describes the significant fields shown in the display.

Table 18-2 show async bootp Field Descriptions

Field	Description
bootfile... “pcboot”	Boot file for address 128.128.1.1 is named pcboot.
subnet-mask 255.255.0.0	Subnet mask.
time-offset -3600	Local time is one hour (3600 seconds) earlier than UTC time.
time-server 128.128.1.1	Address of the time server for the network.

Related Commands

Command	Description
async-bootp	Cisco IOS command removed from this manual.

show async status (Catalyst 8510 MSR and LightStream 1010)

To list the status of the asynchronous interface 1 associated with the auxiliary port, use the **show async status** user EXEC command.

show async status

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

Shows all SLIP asynchronous sessions.

Examples

The following example is sample output from the **show async status** command.

```
Switch# show async status

Async protocol statistics:
  Rcvd: 5448 packets, 7682760 bytes
        1 format errors, 0 checksum errors, 0 overrun, 0 no buffer
  Sent: 5455 packets, 7682676 bytes, 0 dropped

Int           Local          Remote Qd InPack OutPac Inerr  Drops  MTU Qsz
   1     192.31.7.84         Dynamic  0      0      0     0      0 1500  10
```

Table 18-3 describes the significant fields shown in the display.

Table 18-3 show async status Field Descriptions

Field	Description
Rcvd:	Statistics on packets received.
5548 packets	Packets received.
7682760 bytes	Total number of bytes.
1 format errors	Packets with a bad IP header, even before the checksum is calculated.
0 checksum errors	Count of checksum errors.
0 overrun	Number of giants received.
0 no buffer	Number of packets received when no buffer was available.
Sent:	Statistics on packets sent.
5455 packets	Packets sent.

Table 18-3 show async status Field Descriptions (continued)

Field	Description
7682676 bytes	Total number of bytes.
0 dropped	Number of packets dropped.
Int	Interface number.
*	Line currently in use.
Local	Local IP address on the link.
Remote	Remote IP address on the link. “Dynamic” indicates that a remote address is allowed but has not been specified. “None” indicates that no remote address is assigned or being used.
Qd	Number of packets on hold queue (Qsz is max).
InPack	Number of packets received.
OutPac	Number of packets sent.
Inerr	Number of total input errors; sum of format errors, checksum errors, overruns, and no buffers.
Drops	Number of packets received that would not fit on the hold queue.
MTU	Current maximum transmission unit size.
Qsz	Current output hold queue size.

Related Commands

Command	Description
slip	Used to attach or detach a SLIP interface.

show atm accounting

To show the ATM accounting configuration information, use the **show atm accounting** EXEC command.

show atm accounting

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

Catalyst 8540 MSR

The following example is sample output from the **show atm accounting** EXEC command for a switch router that has remote logging configured.

```
Switch# show atm accounting
ATM Accounting Info:     AdminStatus - UP; OperStatus : UP
Trap Threshold - 90 percent (4500000 bytes)
Interfaces:
     AT1/0/0
     AT2/0/0
File Entry 1 -
     Name: acctng_file1
     Descr: atm accounting data
     Min-age (seconds): 0
     Failed_attempt : soft regular
     Interval (seconds) : 60
     Collect Mode : on-release periodic
     Sizes: Active 68 bytes (#records 0); Ready 74 bytes (#records 0)
     Remote Log and local storage are enabled.
     Primary Log Host: eagle, TCP listen port: 2001, OperStatus: DOWN
     Alternate Log Host: eagle, TCP listen port: 2002, OperStatus: DOWN
Selection Entry 1 -
     Subtree OID : 1.3.6.1.4.1.9.10.18.1.1
     List Bitmap : FF.FE.BF.FC
     Conn Type : svc-in svc-out pvc pvp spvc-originator spvc-target
   Active List Bitmap - FF.FE.BF.FC
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show atm accounting** EXEC command.

```
Switch# show atm accounting
ATM Accounting Info:     AdminStatus - DOWN;    OperStatus : DOWN
Trap Threshold - 90 percent (4500000 bytes)
Interfaces:
File Entry 1: Name acctng_file1
    Descr: atm accounting data
    Min-age (seconds): 3600
    Failed_attempt : 0xC0
    Interval (seconds) : 3600
    Collect Mode : 0x80
No file buffers initialized
selection Entry -
    Selection entry 1, subtree OID - 1.3.6.1.4.1.9.10.18.1.1
    Selection entry 1, list bitmap - FF.FE.BF.FC
    Selection entry 1, connType bitmap - F0.00
Active selection -
    Selection entry 1, subtree OID - 1.3.6.1.4.1.9.10.18.1.1
    Selection entry 1, list bitmap - FF.FE.BF.FC
    Selection entry 1, connType bitmap - F0.00
Debug output:
Active Connection/Leg/Party counters
src_legparties (0), dest_legs (0), dest_parties (0)
Sig API: Err - 0
New_Conn: OK - 0; Err - 0
Rel_Conn: OK - 0; Err - 0
New_Leg: OK - 0; Err - 0
Rel_Leg: OK - 0; Err - 0
New_Party: OK - 0; Err - 0
Rel_Party: OK - 0; Err - 0
Switch#
```

Related Commands

Command	Description
atm accounting collection	Controls the collection of ATM accounting data into a specific file.

show atm addresses

To display the active ATM addresses on a switch router, use the **show atm addresses** EXEC command.

show atm addresses

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

The first switch router address is displayed with the word “active” to indicate the current address of the switch router. The output also includes automatically generated soft VC addresses, switch refix(es) used by ILMI, configured interface-specific ILMI prefixes, and the configured LECS addresses.

Examples

The following example is sample output from the **show atm addresses** command.

```
Switch# show atm addresses

Switch Address(es):
  47.00918100000000000CA79E01.00000CA79E01.00 active
  88.888888880000000000000000.000000005151.00

Soft VC Address(es):
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.8000.00 ATM3/0/0
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.8010.00 ATM3/0/1
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.8020.00 ATM3/0/2
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.8030.00 ATM3/0/3
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.9000.00 ATM3/1/0
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.9010.00 ATM3/1/1
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.9020.00 ATM3/1/2
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.9030.00 ATM3/1/3

ILMI Switch Prefix(es):
  47.0091.8100.0000.0000.0ca7.9e01
  88.8888.8888.0000.0000.0000.0000

ILMI Configured Interface Prefix(es):

LECS Address(es):
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.9030.01
  47.0091.8100.0000.0000.0ca7.9e01.4000.0c81.9030.02
```

Related Commands

Command	Description
atm address	Used to assign a 20-byte ATM address to the switch router.

show atm arp-server

To display the ATM ARP server table, use the **show atm arp-server** command.

show atm arp-server atm *card/subcard/port*[**.***subinterface*]

Syntax Description

card/subcard/port	Specifies the card, subcard, and port numbers for the ATM interface.
subinterface	Specifies the number for the subinterface.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

The command only applies to the CPU interface. Use this command to see the ARP server configured on the subinterface CPU.

Related Commands

Command	Description
atm aesa gateway	Used to configure an AESA gateway address on an ATM switch router interface that connects to a service provider maintaining a separate ATM addressing plan.

show atm connection-traffic-table

To display a table of connection traffic parameters used by network and connection management, use the **show atm connection-traffic-table** EXEC command.

show atm connection-traffic-table [**row** *row-index* | **from-row** *row-index*]

Syntax Description

row	Displays a single row by the *row-index* number.
from-row	Display the entire connection traffic table starting with the *row-index*.
row-index	Index of the single or starting row, in the range of 1 through 2147483647.

Defaults

Display the entire connection traffic table.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

An asterisk (*) is appended to row indexes created by SNMP but not made active. Because these rows are not active, they cannot be used by connections.

Examples

The following example is sample output from the **show atm connection-traffic-table** command.

```
Switch# show atm connection-traffic-table
Row      Service-category    pcr        scr/mcr       mbs         cdvt
1            ubr          7113539        none                      none
2            cbr              424                                  none
3            vbr-rt           424         424          50         none
4            vbr-nrt          424         424          50         none
5            abr              424        none                      none
6            ubr              424        none                      none
64000        cbr             1741                                  none
2147483645*  ubr                0        none                      none
2147483646*  ubr                1        none                      none
2147483647*  ubr          7113539        none                      none
```

Table 18-4 describes the fields shown in the display.

Table 18-4 show atm connection-traffic-table Field Descriptions

Field	Description
Row	Index to the connection traffic table.
Service-category	One of the following: **ubr** **cbr** **vbr-rt** **vbr-nrt** **abr**
pcr	The value of the peak cell rate. The peak cell rate is measured in kbps, and is used to transmit whole cells, including the header.
scr/mcr	The value of the sustained cell rate/maximum cell rate. These values are measured in kbps, and are used to transmit whole cells, including the header.
mbs	The value of the MBS.
cdvt	The value of the cell delay variation tolerance.

Related Commands

Command	Description
atm connection-traffic-table -row	Used to create a table entry.

show atm filter-expr

To display a specific ATM filter expression or a summary ATM filter expression, use the **show atm filter-expr** EXEC command.

show atm filter-expr *name* [**detail**]

Syntax Description

name	Name of the ATM filter expression.
detail	Displays more detailed information; must be the last keyword of the command.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following displays assume filter expressions were defined using the commands shown in the example. The names *fred*, *barney*, *wilma*, and *betty* are all filter sets.

```
Switch# atm filter-expr MEN fred or barney
Switch# atm filter-expr WOMEN wilma or betty
Switch# atm filter-expr ADULTS MEN or WOMEN
```

The **show atm filter-expr** command produces the following output.

```
Switch# show atm filter-expr
MEN = fred or barney
WOMEN = wilma or betty
ADULTS = men or women
```

The **show atm filter-expr** detail command produces the following output.

```
Switch# show atm filter-expr detail
MEN = fred or barney
WOMEN = wilma or betty
ADULTS = (fred or barney) or (wilma or betty)
```

Related Commands

Command	Description
atm filter-expr	Configures an ATM address filter that matches patterns.

show atm filter-set

To display a specific ATM filter set or a summary ATM filter set, use the **show atm filter-set** EXEC command.

show atm filter-set *name*

Syntax Description

name	Name of the ATM filter set.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following display assumes the filter sets were defined with the commands shown in the example.

```
Switch# atm filter-set US-OR-NORDUNET 47.0005...
Switch# atm filter-set US-OR-NORDUNET 47.0023...
Switch# atm filter-set LOCAL 49.0003...
```

The following is a sample output from the **show atm filter-set** command.

```
Switch# show atm filter-set
ATM filter set US-OR-NORDUNET
permit 47.0005...
permit 47.0023...
ATM filter set LOCAL
permit 49.0003...
```

Related Commands

Command	Description
atm filter-set	Creates an ATM address filter set.

show atm ilmi-configuration

To display the switch router configuration, use the **show atm ilmi-configuration** EXEC command.

show atm ilmi-configuration

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

Displays the information and status about the switch configuration.

Examples

The following example is sample output of the **show atm ilmi-configuration** command.

```
Switch# show atm ilmi-configuration

Switch ATM Address (s):
11223344556677889901122334455667788990 00
LECS Address (s):
11223344556677889900112233445566778899 00
```

Table 18-5 describes the fields shown in the display.

Table 18-5 show atm ilmi-configuration Field Descriptions

Field	Description
Switch ATM Address	Displays the current switch router address for the ATM interface.
LECS Address	Displays the current LECS address for the ATM interface.

Related Commands

Command	Description
atm ilmi-enable	Enables the ILMI on a port.

show atm ilmi-status

To display the ILMI-related status information, use the **show atm ilmi-status** EXEC command.

show atm ilmi-status atm *card/subcard/port*

Syntax Description

card/subcard/port	Specifies the card, subcard, and port number for the ATM interface.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output of the **show atm ilmi-status atm** command.

```
Switch# show atm ilmi-status atm 0/1/2

Interface : ATM0/1/2 Interface Type : Private NNI
ILMI VCC : (0, 16) ILMI Keepalive : Disabled
ILMI State:       UpAndNormal
Peer IP Addr:     172.20.41.93    Peer IF Name:     ATM1/0/3
Peer MaxVPIbits:  8               Peer MaxVCIbits:  14
Peer MaxVPCs:     255             Peer MaxVCCs:     16383
Peer MaxSvccVpi:  255
Peer MinSvccVci:  255
Peer MaxSvpcVpi:  33
Configured Prefix(s) :
47.0091.8100.0000.0040.0b0a.2a81
```

Table 18-6 describes the fields shown in the display.

Table 18-6 show atm ilmi-status Field Descriptions

Field	Description
Interface	Displays the card, subcard, and port number of the specified ATM interface.
Interface Type	Displays the type of interface for the specified ATM interface.
ILMI VCC	Displays the number of the current ILMI VCC for the specified ATM interface.
ILMI Keepalive	Displays the status of ILMI keepalive packets.
ILMI State	Displays the status for the ILMI for the specified ATM interface.
Peer IP Addr	Displays the IP address of the peer.
Peer IF Name	Displays the card, subcard, and port of the peer interface.
Peer MaxVPIbits	Displays maximum number of bits allowed for VPIs on the peer interface.
Peer MaxVCIbits	Displays maximum number of bits allowed for VCIs on the peer interface.
Peer MaxVPCs	Displays the maximum number of switched and permanent VPCs supported on the peer IME ATM interface.

Table 18-6 show atm ilmi-status Field Descriptions (continued)

Field	Description
Peer MaxVCCs	Displays the maximum number of switched and permanent VCCs supported on the peer IME ATM interface.
Peer MaxSvpcVpi	Displays the maximum VPI that the signalling stack on the peer IME ATM interface is configured to support for allocation to SVPCs.
Peer MaxSvccVpi	Displays the maximum VPI that the signalling stack on the peer IME ATM interface is configured to support allocation to SVPCs.
Peer MinSvccVci	Displays the minimum VCI value that the signalling stack on the peer IME ATM interface is configured to support for allocation to SVCCs. The same value applies to all SVCC VPI values for which the signalling stack is configured.
Configured Prefix	Displays any prefix for the ATM interface.

Related Commands

Command	Description
atm ilmi-enable	Enables the ILMI on a port.

show atm interface

To display ATM-specific information about an ATM interface, use the **show atm interface** EXEC command.

show atm interface {**atm** | **atm-p**}[*card*/*subcard*/*port*[**.***vpt#*] | [*card*/*subcard*/*imagroup*]] [**bitmap** | **status** | **traffic**]

Syntax Description

atm	Specifies an ATM interface.
atm-p	Specifies an ATM-P interface.
card/subcard/port	Specifies the card, subcard, and port number for the ATM or ATM-P interface.
.*vpt#*	Specifies the virtual path tunnel number.
ima*group*	Specifies the IMA interface group number (0 to 3).
bitmap	Displays the ATM interface bitmap.
status	Displays the ATM interface status.
traffic	Displays the ATM interface cell traffic.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

If you do not specify a specific interface, all interfaces on the switch are displayed.

Examples

The following example is sample output from the **show atm interface** command for ATM interface 3/0/0.

```
Switch# show atm interface atm 3/0/0
Interface:      ATM3/0/0        Port-type:      t1suni
IF Status:      UP              Admin Status:   up
Auto-config:    enabled         AutoCfgState:   completed
IF-Side:        Network         IF-type:        NNI
Uni-type:       not applicable  Uni-version:    not applicable
Max-VPI-bits:   8               Max-VCI-bits:   14
Max-VP:         255             Max-VC:         16383
ConfMaxSvpcVpi: 255             CurrMaxSvpcVpi: 255
ConfMaxSvccVpi: 255             CurrMaxSvccVpi: 255
ConfMinSvccVci: 35              CurrMinSvccVci: 35
Svc Upc Intent: pass            Signalling:     Enabled
```

```
ATM Address for Soft VC: 47.0091.8100.0000.0040.0b0a.2a81.4000.0c81.8000.00
Configured virtual links:
  PVCLs SoftVCLs   SVCLs   TVCLs   PVPLs SoftVPLs   SVPLs Total-Cfgd Inst-Conns
      4        0       0       0       0        0       0          4          4
Logical ports(VP-tunnels):     0
Input cells:    14587           Output cells:   14638
5 minute input rate:             0 bits/sec,       0 cells/sec
5 minute output rate:            0 bits/sec,       0 cells/sec
Input AAL5 pkts: 95092, Output AAL5 pkts: 95109, AAL5 crc errors: 0
```

Table 18-7 describes the fields shown in the display.

Table 18-7 show atm interface Field Descriptions

Field	Description
Interface	Displays the card number, subcard number, port number, and VP tunnel number of the interface.
Port-type	Displays the type of port for the specified ATM interface.
IF status	Displays the operational status of the specified ATM interface.
Admin status	Displays the administrative status of the specified ATM interface.
Auto-config	Displays whether ILMI autoconfiguration is enabled or disabled.
AutoCfgState	Displays the state of ILMI autoconfiguration for the specified ATM interface.
IF-side	Displays the interface side for the specified ATM interface.
IF-type	Displays the type of ATM interface (UNI, NNI, or IISP).
Uni-type	Displays whether a UNI interface type is public or private.
Uni-version	Displays the version of a UNI.
Max-VPI-bits	Displays the maximum number of VPI bits.
Max-VCI-bits	Displays the maximum number of VCI bits.
Max-VP	Displays the maximum number of virtual paths on the specified ATM interface.
Max-VC	Displays the maximum number of virtual channels on the specified ATM interface.
ConfMaxSvpcVpi	Displays the maximum VPI that the signalling stack on the ATM interface is configured to support for allocation to SVPCs.
CurrMaxSvpcVpi	Displays the maximum VPI that the signalling stack on the ATM interface currently supports for allocation to SVPCs.
ConfMaxSvccVpi	Displays the maximum VPI that the signalling stack on the ATM interface is configured to support for allocation to SVCCs.
CurrMaxSvccVpi	Displays the maximum VPI that the signalling stack on the ATM interface currently supports for allocation to SVCCs.
ConfMinSvccVci	Displays the minimum VCI value that the signalling stack is configured to support for allocation to SVCCs.
CurrMinSvccVci	Displays the minimum VCI value that the signalling stack currently supports for allocation to SVCCs.
Svc Upc Intent	Displays the intended UPC mode to use for SVCs on the interface.

Table 18-7 show atm interface Field Descriptions (continued)

Field	Description
Signalling	Displays whether ILMI signalling is enabled.
PVCLs	Displays the number of active PVCs for the specified ATM interface.
PVPLs	Displays the number of active PVPs for the specified ATM interface.
SoftVCLs	Displays the number of active soft VCLs for the specified ATM interface.
SVCLs	Displays the number of active switched VCLs for the specified ATM interface.
SoftVPLs	Displays the number of active soft VPLs for the specified ATM interface.
SVPLs	Displays the number of active switched VPLs for the specified ATM interface.
Total-Cfgd	Displays the total number of configured virtual links.
Inst-Conns	Displays the number of installed connections for the specified ATM interface.
Input cells	Displays the number of cells received.
Logical ports (VP-tunnels)	Displays the number of the logical (subinterface) port.
Output cells	Displays the number of cells sent.
5 minute input rate	Displays the total number of cells received in 5 minutes, measured in bits per second and cells per second.
5 minute output rate	Displays the total number of cells sent in 5 minutes, measured in bits per second and cells per second.
Input, output, and CRC errors	Displays the number of AAL5 packets that were input, output, and had CRC errors for the specified ATM interface.

The following is sample output from the **show atm interface** command for the subinterface.

```
Switch# show atm interface atm 0/1/0.2

Interface:ATM0/1/0.2Port-type:vp tunnel
IF Status:UPAdmin Status:up
Auto-config:enabledAutoConfigState:waiting for response from peer
IF-SideNetworkInterface-type:UNI
Uni-type:PrivateUni-version:V3.1
Max-VPI-bits:0Max-VCI-bits:10
Max-VP:0Max-VC:16383
ConfMaxSvpcVpi: 255             CurrMaxSvpcVpi: 255
ConfMaxSvccVpi: 255             CurrMaxSvccVpi: 255
ConfMinSvccVci: 33              CurrMinSvccVci: 33
Signalling:     Enabled
ATM Address for Soft VC: 47.0091.8100.0000.0041.0b0a.1581.4000.0c80.1000.02
Configured virtual links:
  PVCLs   SoftVCLs   SVCLs   Total-Cfgd   Installed-Conns
      4          0       0             4                 4
```

Examples

The following is sample output from the **show atm interface** command for an IMA group.

```
Switch# show atm interface atm 0/0/ima1

Interface:      ATM0/0/ima1     Port-type:      imapam_t1_ima
IF Status:      UP              Admin Status:   up
Auto-config:    enabled         AutoCfgState:   completed
IF-Side:        Network         IF-type:        NNI
Uni-type:       not applicable  Uni-version:    not applicable
Max-VPI-bits:   8               Max-VCI-bits:   14
Max-VP:         255             Max-VC:         16383
ConfMaxSvpcVpi: 255             CurrMaxSvpcVpi: 255
ConfMaxSvccVpi: 255             CurrMaxSvccVpi: 255
ConfMinSvccVci: 35              CurrMinSvccVci: 35
Svc Upc Intent: pass            Signalling:     Enabled
ATM Address for Soft VC: 47.0091.8100.0000.0040.0b0a.2a81.4000.0c80.0090.00
Configured virtual links:
  PVCLs SoftVCLs   SVCLs   TVCLs   PVPLs SoftVPLs   SVPLs Total-Cfgd Inst-Conns
      3        0       0       0       0        0       0          3          3
Logical ports(VP-tunnels):     0
Input cells:    14806           Output cells:   14730
5 minute input rate:             0 bits/sec,       0 cells/sec
5 minute output rate:            0 bits/sec,       0 cells/sec
Input AAL5 pkts: 95217, Output AAL5 pkts: 95193, AAL5 crc errors: 0
```

Related Commands

Command	Description
atm pvp	Used to create a PVP.
show ip access-lists	Displays the contents of all current IP access lists.
show atm status	Displays current information about ATM interfaces and the number of installed connections.
show ima interface	Displays the IMA interface, IMA group, and ATM layer hardware configuration.

show atm interface resource

To display resource management interface configuration status and statistics, use the **show atm interface resource** EXEC command.

show atm interface resource {**atm** | **atm-p**}{*card/subcard/port* | *card/subcard/***ima***group*}] [**accounting**]

Syntax Description

atm	Specifies an ATM interface.
atm-p	Specifies an ATM-P interface.
card/subcard/port	Specifies the card, subcard, and port number for the ATM or ATM-P interface.
ima*group*	Specifies an IMA group number (0 to 3).
accounting	Displays RM interface CAC statistics.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **show atm interface resource** command displays different information depending on the type of interface:

- external physical interface
- subinterface
- CPU interface

Examples

Catalyst 8540 MSR

The following example shows the resource management information displayed by the **show atm interface resource** command for a physical interface with the switch processor feature card installed.

```
Switch# show atm interface resource atm 0/0/1
Resource Management configuration:
Service Classes:
Service Category map: c1 cbr, c2 vbr-rt, c3 vbr-nrt, c4 abr, c5 ubr
Scheduling: RS c1 WRR c2, WRR c3, WRR c4, WRR c5
WRR Weight: 8 c2, 1 c3, 1 c4, 1 c5
Pacing: disabled   0 Kbps rate configured, 0 Kbps rate installed
overbooking : 300%
Service Categories supported: cbr,vbr-rt,vbr-nrt,abr,ubr
Link Distance: 0 kilometers
Controlled Link sharing:
Max aggregate guaranteed services: 90% Rx,  90% TX
Max bandwidth: none cbr RX, none cbr TX, 35% vbr RX, 35% vbr TX,
none abr RX, none abr TX, none ubr RX, none ubr TX
Min bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
```

```
none abr RX, none abr TX, none ubr RX, none ubr TX
Best effort connection limit: disabled  0 max connections
Max traffic parameters by service (rate in Kbps, tolerance in cell-times):
Peak-cell-rate RX: none cbr, none vbr, none abr, none ubr
Peak-cell-rate TX: none cbr, none vbr, none abr, none ubr
Sustained-cell-rate: none vbr RX, none vbr TX
Minimum-cell-rate RX: none abr, none ubr
Minimum-cell-rate TX: none abr, none ubr
CDVT RX: none cbr, none vbr, none abr, none ubr
CDVT TX: none cbr, none vbr, none abr, none ubr
MBS: none vbr RX, none vbr TX
Resource Management state:
Physical Line Rate (in Kbps) : 155520
Available bit rates (in Kbps):
139967 cbr RX, 139967 cbr TX, 54431 vbr RX, 54431 vbr TX,
139967 abr RX, 139967 abr TX, 139967 ubr RX, 139967 ubr TX
Allocated bit rates:
0 cbr RX, 0 cbr TX, 0 vbr RX, 0 vbr TX,
0 abr RX, 0 abr TX, 0 ubr RX, 0 ubr TX
Best effort connections: 0 pvcs,  0 svcs
Switch#
```

Examples

Catalyst 8540 MSR

The following example shows the resource management information displayed by the **show atm interface resource** command for OC-48c ports only.

```
Switch# show atm interface resource atm 11/0/0
Resource Management configuration:
    Service Classes:
        Service Category map: c2 cbr, c2 vbr-rt, c3 vbr-nrt, c4 abr,
        Scheduling: RS c1 WRR c2, WRR c3, WRR c4, WRR c5
        WRR Weight: 15 c2, 2 c3, 2 c4, 2 c5
    CAC Configuration to account for Framing Overhead : Disabled
    Pacing: disabled   0 Kbps rate configured, 0 Kbps rate installed
    Service Categories supported: cbr,vbr-rt,vbr-nrt,abr,ubr
    Link Distance: 0 kilometers
    Controlled Link sharing:
        Max aggregate guaranteed services: none RX,  none TX
        Max bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
                       none abr RX, none abr TX, none ubr RX, none ubr TX
        Min bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
                       none abr RX, none abr TX, none ubr RX, none ubr TX
    Best effort connection limit: disabled  0 max connections
    Max traffic parameters by service (rate in Kbps, tolerance in cell-times):
        Peak-cell-rate RX: none cbr, none vbr, none abr, none ubr
        Peak-cell-rate TX: none cbr, none vbr, none abr, none ubr
        Sustained-cell-rate: none vbr RX, none vbr TX
        Minimum-cell-rate RX: none abr, none ubr
        Minimum-cell-rate TX: none abr, none ubr
        CDVT RX: none cbr, none vbr, none abr, none ubr
        CDVT TX: none cbr, none vbr, none abr, none ubr
        MBS: none vbr RX, none vbr TX
Resource Management state:
Scheduler 1:
        Available bit rates (in Kbps):
          590975 cbr TX, 590975 vbr TX, 590975 abr TX, 590975 ubr TX
        Allocated bit rates (in Kbps):
          0 cbr TX, 0 vbr TX, 0 abr TX, 0 ubr TX
Scheduler 2:
        Available bit rates (in Kbps):
          590975 cbr TX, 590975 vbr TX, 590975 abr TX, 590975 ubr TX
```

```
        Allocated bit rates (in Kbps):
          0 cbr TX, 0 vbr TX, 0 abr TX, 0 ubr TX
Scheduler 3:
        Available bit rates (in Kbps):
          590975 cbr TX, 590975 vbr TX, 590975 abr TX, 590975 ubr TX
        Allocated bit rates (in Kbps):
          0 cbr TX, 0 vbr TX, 0 abr TX, 0 ubr TX
Scheduler 4:
        Available bit rates (in Kbps):
          590975 cbr TX, 590975 vbr TX, 590975 abr TX, 590975 ubr TX
        Allocated bit rates (in Kbps):
          0 cbr TX, 0 vbr TX, 0 abr TX, 0 ubr TX
Available bit rates (in Kbps):
        2363903 cbr RX, 2363903 cbr TX, 2363903 vbr RX, 2363903 vbr TX,
        2363903 abr RX, 2363903 abr TX, 2363903 ubr RX, 2363903 ubr TX
    Allocated bit rates:
        0 cbr RX, 0 cbr TX, 0 vbr RX, 0 vbr TX,
        0 abr RX, 0 abr TX, 0 ubr RX, 0 ubr TX
    Best effort connections: 0 pvcs,  0 svcs
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example shows the resource management information displayed by the **show atm interface resource** command for a physical interface with an FC-PCQ installed.

```
Switch# show atm interface resource atm 1/1/0
Resource Management configuration:
    Service Classes:
        Service Category map: c2 cbr, c2 vbr-rt, c3 vbr-nrt, c4 abr, c5 ubr
        Scheduling: RS c1 WRR c2, WRR c3, WRR c4, WRR c5
        WRR Weight: 15 c2, 2 c3, 2 c4, 2 c5
    CAC Configuration to account for Framing Overhead : Disabled
    Pacing: disabled   0 Kbps rate configured, 0 Kbps rate installed
    Service Categories supported: cbr,vbr-rt,vbr-nrt,abr,ubr
    Link Distance: 0 kilometers
    Controlled Link sharing:
        Max aggregate guaranteed services: none RX,  none TX
        Max bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
                       none abr RX, none abr TX, none ubr RX, none ubr TX
        Min bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
                       none abr RX, none abr TX, none ubr RX, none ubr TX
    Best effort connection limit: disabled  0 max connections
    Max traffic parameters by service (rate in Kbps, tolerance in cell-times):
        Peak-cell-rate RX: none cbr, none vbr, none abr, none ubr
        Peak-cell-rate TX: none cbr, none vbr, none abr, none ubr
        Sustained-cell-rate: none vbr RX, none vbr TX
        Minimum-cell-rate RX: none abr, none ubr
        Minimum-cell-rate TX: none abr, none ubr
        CDVT RX: none cbr, none vbr, none abr, none ubr
        CDVT TX: none cbr, none vbr, none abr, none ubr
        MBS: none vbr RX, none vbr TX
Resource Management state:
    Available bit rates (in Kbps):
        147743 cbr RX, 147743 cbr TX, 147743 vbr RX, 147743 vbr TX,
        147743 abr RX, 147743 abr TX, 147743 ubr RX, 147743 ubr TX
    Allocated bit rates:
        0 cbr RX, 0 cbr TX, 0 vbr RX, 0 vbr TX,
        0 abr RX, 0 abr TX, 0 ubr RX, 0 ubr TX
    Best effort connections: 1 pvcs,  0 svcs
```

Examples

The following example shows the resource management information displayed by the **show atm interface resource** command with the **accounting** parameter.

```
Switch# show atm interface resource atm 3/1/0 accounting
RCAC result statistics (by request service category):
    cbr:
        0 satisfied, 0 no bandwidth, 0 delay
        0 loss, 0 delay variation, 0 traffic parameter
vbr-rt:
        3 satisfied, 0 unsupported combination, 0 no bandwidth
        0 delay, 0 loss, 0 delay variation
        0 traffic parameter
    vbr-nrt:
        0 satisfied, 0 unsupported combination, 0 no bandwidth
        0 loss, 0 traffic parameter
    abr:
        0 satisfied, 0 traffic parameter, 0 best effort limit
    ubr:
        0 satisfied, 0 traffic parameter, 0 best effort limit
```

The following example shows the resource management information displayed by the **show atm interface resource** command for an IMA interface.

```
Switch# show atm interface resource atm 0/0/ima1
Resource Management configuration:
    Service Classes:
        Service Category map: c2 cbr, c2 vbr-rt, c3 vbr-nrt, c4 abr, c5 ubr
        Scheduling: RS c1 WRR c2, WRR c3, WRR c4, WRR c5
        WRR Weight: 15 c2, 2 c3, 2 c4, 2 c5
    CAC Configuration to account for Framing Overhead : Disabled
    Pacing: disabled   0 Kbps rate configured, 0 Kbps rate installed
    Service Categories supported: cbr,vbr-rt,vbr-nrt,abr,ubr
    Link Distance: 0 kilometers
    Controlled Link sharing:
        Max aggregate guaranteed services: none RX,  none TX
        Max bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
                       none abr RX, none abr TX, none ubr RX, none ubr TX
        Min bandwidth: none cbr RX, none cbr TX, none vbr RX, none vbr TX,
                       none abr RX, none abr TX, none ubr RX, none ubr TX
    Best effort connection limit: disabled  0 max connections
    Max traffic parameters by service (rate in Kbps, tolerance in cell-times):
        Peak-cell-rate RX: none cbr, none vbr, none abr, none ubr
        Peak-cell-rate TX: none cbr, none vbr, none abr, none ubr
        Sustained-cell-rate: none vbr RX, none vbr TX
        Minimum-cell-rate RX: none abr, none ubr
        Minimum-cell-rate TX: none abr, none ubr
        CDVT RX: none cbr, none vbr, none abr, none ubr
        CDVT TX: none cbr, none vbr, none abr, none ubr
        MBS: none vbr RX, none vbr TX
Resource Management state:
    Available bit rates (in Kbps):
        4340 cbr RX, 4340 cbr TX, 4340 vbr RX, 4340 vbr TX,
        4340 abr RX, 4340 abr TX, 4340 ubr RX, 4340 ubr TX
    Available bit rates for SVCs (in Kbps):
        4340 cbr RX, 4340 cbr TX, 4340 vbr RX, 4340 vbr TX,
        4340 abr RX, 4340 abr TX, 4340 ubr RX, 4340 ubr TX
    Allocated bit rates:
        0 cbr RX, 0 cbr TX, 0 vbr RX, 0 vbr TX,
        0 abr RX, 0 abr TX, 0 ubr RX, 0 ubr TX
    Best effort connections: 0 pvcs,  0 svcs
```

Table 18-8 describes the field values shown in the previous displays.

Table 18-8 show atm interface resource Management Field Values

Field	Values
Service category map	The service category-to-variable map.
Scheduling	Type of scheduling used by each service category.
WRR Weight	The weighted round-robin weight used by each service category configured for weighted round-robin scheduling.
Pacing	The status of pacing (enabled or disabled) and the rate in kbps.
Link distance	The link distance in kilometers.
Max aggregate guaranteed services	The maximum aggregate guaranteed services bandwidth allocatable to connections, expressed in percent of the bandwidth on the interface in a particular direction.
Max bandwidth	The maximum bandwidth allocatable to connections of a particular service type, expressed in percent of the bandwidth on the interface in a particular direction.
Min bandwidth	The minimum bandwidth allocatable to connections of a particular service type, expressed in percent of the bandwidth on the interface in a particular direction.
Best effort connection limit	The maximum number of best effort connections.
Peak-cell-rate RX	The peak receive cell rate by service category.
Peak-cell-rate TX	The peak transmit cell rate by service category.
Sustained-cell-rate	The sustained cell rate by service category.
Tolerance RX	The receive tolerance (cell delay variation or maximum burst size) by service category.
Tolerance TX	The transmit tolerance (cell delay variation or maximum burst size) by service category.
Available bit rates (in kbps)	The transmit and receive bit rates available by service category in kbps.
Allocated bit rates	The transmit and receive bit rates allocated by service category in kbps.
Best effort connections	The number of PVC and SVC best-effort connections.

Related Commands

Command	Description
atm cac best-effort-limit	Changes or sets the interface limit on the number of best-effort connections.
atm cac framing overhead	Instructs CAC to consider framing overhead.
atm cac link-sharing	Changes the resource management interface controlled link-sharing parameters.
atm cac max-cdvt	Configures the maximum CDVT (per service category and direction) allowed for a connection on an interface by CAC.
atm cac max-mbs	Changes the interface maximum for incoming and outgoing MBS at connection startup.
atm cac max-min-cell-rate	Configures the maximum MCR for ABR and UBR service category traffic flowing into and out of the switch.
atm cac max-peak-cell-rate	Configures the maximum PCR for specific service categories and traffic directions.
atm cac max-sustained-cell-rate	Configures the maximum SCR for traffic flow in either direction.
atm cac overbooking	Configures overbooking on an ATM or IMA interface.
atm cac service-category	Permits or denies a service category on an ATM physical interface, shaped VP tunnel subinterface, or hierarchical VP tunnel subinterface.
atm link-distance	Alters the propagation delay component of the cell-transfer delay offered by an interface.
atm output-queue (Catalyst 8510 MSR and LightStream 1010)	Changes the maximum queue size of the output queue.
atm output-threshold (Catalyst 8510 MSR and LightStream 1010)	Changes the output queue thresholds.
atm pacing	Enables or changes the artificial limitation on interface output rate.

show atm map

To display the list of all configured ATM static maps to remote hosts on an ATM network, use the **show atm map** EXEC command.

show atm map

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show atm map** command.

```
Switch# show atm map
Map list ab: PERMANENT
ip 1.1.1.1 maps to VC 200
```

The following example is sample output from the **show atm map** command for a multipoint connection.

```
Switch# show atm map
Map list atm_pri: PERMANENT
ip 4.4.4.4 maps to NSAP CD.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12, broadcast,
aal5mux, multipoint connection up, VC 6
ip 4.4.4.6 maps to NSAP DE.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12, broadcast,
aal5mux, connection up, VC 15, multipoint connection up, VC 6

Map list atm_ipx: PERMANENT
ipx 1004.dddd.dddd.dddd maps to NSAP DE.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12,
broadcast, aal5mux, multipoint connection up, VC 8
ipx 1004.cccc.cccc.cccc maps to NSAP CD.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12,
broadcast, aal5mux, multipoint connection up, VC 8

Map list atm_apple: PERMANENT
appletalk 62000.5 maps to NSAP CD.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12,
broadcast, aal5mux, multipoint connection up, VC 4
appletalk 62000.6 maps to NSAP DE.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12,
broadcast, aal5mux, multipoint connection up, VC 4
```

Table 18-9 describes the fields shown in the display.

Table 18-9 show atm map Field Description

Field	Description
Map list	Name of map list.
PERMANENT	This map entry was entered from configuration; it was not entered automatically by a process.
protocol address maps to VC *x* or *protocol address* maps to NSAP...	Name of protocol, the protocol address, and the VCD or NSAP the address is mapped.
broadcast	Indicates pseudo-broadcasting.
aal5mux	Indicates the encapsulation used, a multipoint or point-to-point virtual connection, and the number of the virtual connection.
multipoint connection up	Indicates that this is a multipoint virtual connection.
VC 6	Number of the virtual connection.
Connection up	Indicates a point-to-point virtual connection.

Related Commands

Command	Description
atm pvc	Used to create a PVC.
map-list	Defines an ATM map statement for either a PVC or SVC.

show atm pnni aesa embedded-number

To show the E.164 AESAs with the E.164 AFI to the left-justified encoding format, use the **show atm pnni aesa embedded-number** privileged EXEC command.

show atm pnni aesa embedded-number

show atm pnni aesa embedded-number *prefix*

Syntax Description

prefix	E.164 AFI portion of the E.164 AESA.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays E.164 AESAs with the E.164 AFI to the left-justified encoding format.

Examples

The following example is sample output from the **show atm pnni aesa embedded-number** command, without the prefix specified.

```
Switch# show atm pnni aesa embedded-number
AESA embedded-number is left-justified.
```

The following example is sample output from the **show atm pnni aesa embedded-number** command, with the prefix specified.

```
Switch# show atm pnni aesa embedded-number 45001234
AESA embedded-number is left-justified.
Translating 45.0012.34/32 to
            45.1234/24
```

Related Commands

Command	Description
debug atm pnni	Enables PNNI debugging output.

show atm pnni aggregation link

To show the aggregated PNNI links on the switch, use the **show atm pnni aggregation link** privileged EXEC command.

show atm pnni aggregation link [**local-node** *node-index*] [**aggregation-detail** | **border-detail**]

Syntax Description

local-node	Specifies the PNNI local node, where higher-level induced links are generated.
node-index	Index number of the PNNI local node, in the range of 1 to 8.
aggregation-detail	Displays the aggregation table with aggregated metrics for the higher-level induced links.
border-detail	Displays the aggregation table with all border uplink metrics.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays the aggregation table(s) for PNNI links.

Examples

The following example is sample output from the **show atm pnni aggregation link** command.

```
Switch# show atm pnni aggregation link
PNNI link aggregation for local-node 2 (level=44, name=rhino18.2.44)
  Configured aggregation modes (per service class):
     CBR         VBR-RT       VBR-NRT       ABR           UBR
  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~
  best-link    best-link    best-link    best-link    best-link
  Aggregated outside links from child peer group:
  Upnode Number: 10   Upnode Name: rhino27.2.44
   AggToken  InducPort BorderPort    Border Node(No./Name)
  ~~~~~~~~~~ ~~~~~~~~~ ~~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~
  0          02202000  ATM0/1/2      1 rhino18
  Upnode Number: 11   Upnode Name: Switch.3.32
   AggToken  InducPort BorderPort    Border Node(No./Name)
  ~~~~~~~~~~ ~~~~~~~~~ ~~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~
  0          02CF2000  ATM0/0/2      1 rhino18
  5          02CF2005  ATM0/0/2.4    9 ls1010-1
  8197       02CF22A1  ATM0/0/1      9 ls1010-1
PNNI link aggregation for local-node 3 (level=32, name=rhino18.3.32)
  Configured aggregation modes (per service class):
     CBR         VBR-RT       VBR-NRT       ABR           UBR
  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~
  best-link    best-link    best-link    best-link    best-link
  Aggregated outside links from child peer group:
  Upnode Number: 11   Upnode Name: Switch.3.32
   AggToken  InducPort BorderPort    Border Node(No./Name)
```

```
~~~~~~~~~~ ~~~~~~~~~ ~~~~~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~
0          03CF2000  2CF2000       2 rhino18.2.44
5          03CF2005  2CF2005       2 rhino18.2.44
8197       03CF22A1  2CF22A1       2 rhino18.2.44
```

Related Commands

Command	Description
atm pnni aggregation-token	Specifies the aggregation token for a PNNI interface.

show atm pnni aggregation node

To show the PNNI nodal aggregation tables for a complex node, use the **show atm pnni aggregation node** privileged EXEC command.

show atm pnni aggregation node [**local-node** *node-index*] [**border-detail** | **exception-detail** |**port** *hex-port-id* [**port2** *hex-port-id*]]

Syntax Description

local-node	Specifies the complex PNNI local node.
node-index	Index number of the PNNI local node, in the range of 2 to 8.
border-detail	Displays the border path table with path metrics between all pairs of border nodes in the child peer group.
exception-detail	Displays the complex node radius, spokes, and exception bypasses.
port *hex-port id*	Displays the calculated metrics for all spokes and bypasses connected to the specified port. The metrics also display for nonexception spokes or bypasses.
port2 *hex-port id*	Specifies the second port of a port pair and displays the metrics for a single spoke or bypass.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays the aggregation table(s) for a complex PNNI local node.

Examples

The following example is sample output from the **show atm pnni aggregation node** command.

```
Switch# show atm pnni aggregation node
PNNI nodal aggregation for local-node 2 (level=56, child PG level=60)
  Complex node representation, exception threshold: 60%

  Configured nodal aggregation modes (per service class):
    CBR          VBR-RT       VBR-NRT      ABR          UBR
  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~
  best-link    best-link    best-link    best-link    aggressive

Summary Complex Node Port List:
  Port ID  Rem Inn Agg-Token  Border Cnt In-Spoke  Out-Spoke Agg-Accur
  ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~ ~~~~~~~~~~ ~~~~~~~~~ ~~~~~~~~~ ~~~~~~~~~~
  21FB000  12      0          1          default   default   ok
  2371000  13      0          1          default   default   ok
```

```
Summary Complex Node Bypass Pairs  List (exception bypass pairs only)
  /~~~~~~~~ LOWER PORT ID ~~~~~~~~\ /~~~~~~~~ HIGHER PORT ID ~~~~~~~\
  Port ID  Rem Inn Agg-Token  Inacc Port ID  Rem Inn Agg-Token  Inacc Exceptns
  ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~ ~~~~~ ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~ ~~~~~ ~~~~~~~~
  21FB000  12      0          no    2371000  13      0          no    fwd rev
```

Table 18-10 describes field descriptions for the **show atm pnni aggregation node** command.

Table 18-10 show atm pnni aggregation node Field Descriptions

Field	Description
Port ID = 0	Represents the nucleus.
Agg-Accur	Displays the aggregation accuracy of the aggregated links.
Inacc	Indicates the state of the aggregation accuracy, either yes or no. If the aggregated links are on different border nodes that are distant from one another, it might not be possible to accurately represent their spoke and bypass metrics with a single set of metrics. In this case, they are shown as inaccurate.

Examples

The following example is sample output from the **show atm pnni aggregation node exception-detail** command.

```
Switch# show atm pnni aggregation node exception-detail
PNNI nodal aggregation for local-node 2 (level=56, child PG level=60)
  Complex node representation, exception threshold: 60%

  Metrics for Complex Node Default Radius (input 0x0, output 0x0):
   vp capable
            maxcr    avcr     ctd    cdv   clr0  clr01  aw      crm    vf
   CBR      155519   147743   128    115   10    10     4200    n/a    n/a
   VBR-RT   155519   155519   589    576   8     8      4200    ---    ---
   VBR-NRT  155519   155519   n/a    n/a   8     8      4200    ---    ---
   ABR      155519   0        n/a    n/a   n/a   n/a    4200    n/a    n/a
   UBR      155519   n/a      n/a    n/a   n/a   n/a    3360    n/a    n/a

Detailed Complex Node Bypass Pairs List (exception bypass pairs only)

  /~~~~~~~~ LOWER PORT ID ~~~~~~~~\ /~~~~~~~~ HIGHER PORT ID ~~~~~~~\
  Port ID  Rem Inn Agg-Token  Inacc Port ID  Rem Inn Agg-Token  Inacc Exceptns
  ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~ ~~~~~ ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~ ~~~~~ ~~~~~~~~
  21FB000  12      0          no    2371000  13      0          no    fwd rev

  Remote nodes for this port pair:
  21FB000  2371000   Remote Node (No./Name)
  ~~~~~~~~ ~~~~~~~~  ~~~~~~~~~~~~~~~~~~~~~~~~~~
  remote             12 pnni-09.2.56
           remote    13 pnni-11

  Border nodes for this port pair:
  21FB000  2371000   Border Node (No./Name)
  ~~~~~~~~ ~~~~~~~~  ~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
  border             1 pnni-14
           border    9 pnni-12

  Metrics for Complex Node Bypass (input 0x21FB000, output 0x2371000):
   vp capable
            maxcr    avcr     ctd    cdv   clr0  clr01  aw      crm    vf
   CBR      155519   147743   154    138   10    10     5040    n/a    n/a
   VBR-RT   155519   155519   707    691   8     8      5040    ---    ---
   VBR-NRT  155519   155519   n/a    n/a   8     8      5040    ---    ---
   ABR      155519   0        n/a    n/a   n/a   n/a    5040    n/a    n/a
   UBR      155519   n/a      n/a    n/a   n/a   n/a    5040    n/a    n/a

  Metrics for Complex Node Bypass (input 0x2371000, output 0x21FB000):
   vp capable
            maxcr    avcr     ctd    cdv   clr0  clr01  aw      crm    vf
   CBR      155519   147743   154    138   10    10     5040    n/a    n/a
   VBR-RT   155519   155519   707    691   8     8      5040    ---    ---
   VBR-NRT  155519   155519   n/a    n/a   8     8      5040    ---    ---
   ABR      155519   0        n/a    n/a   n/a   n/a    5040    n/a    n/a
   UBR      155519   n/a      n/a    n/a   n/a   n/a    5040    n/a    n/a
```

The following example is sample output from the **show atm pnni aggregation node border-detail** command.

```
Switch# show atm pnni aggregation node border-detail
Nodal aggregation is complex for local-node 2 (level=56, name=pnni-14.2.56),
No of border nodes 2,
 Table version 13 active for 07:05:31 [hh:mm:ss]

  Configured nodal aggregation modes (per service class):
      CBR          VBR-RT       VBR-NRT      ABR          UBR
  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~  ~~~~~~~~~~~
  best-link    best-link    best-link    best-link    aggressive

   Inter Border-Node Metric Table
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

From border 1  ---> border 9   [pnni-14-->pnni-12]
   vp capable, (vp_cap_flags=0x1F)
            maxcr    avcr     ctd    cdv   clr0  clr01  aw      crm    vf
   CBR      155519   147743   154    138   10    10     5040    n/a    n/a
   VBR-RT   155519   155519   707    691   8     8      5040    ---    ---
   VBR-NRT  155519   155519   n/a    n/a   8     8      5040    ---    ---
   ABR      155519   0        n/a    n/a   n/a   n/a    5040    n/a    n/a
   UBR      155519   n/a      n/a    n/a   n/a   n/a    5040    n/a    n/a

From border 9  ---> border 1   [pnni-12-->pnni-14]
   vp capable, (vp_cap_flags=0x1F)
            maxcr    avcr     ctd    cdv   clr0  clr01  aw      crm    vf
   CBR      155519   147743   154    138   10    10     5040    n/a    n/a
   VBR-RT   155519   155519   707    691   8     8      5040    ---    ---
   VBR-NRT  155519   155519   n/a    n/a   8     8      5040    ---    ---
   ABR      155519   0        n/a    n/a   n/a   n/a    5040    n/a    n/a
   UBR      155519   n/a      n/a    n/a   n/a   n/a    5040    n/a    n/a
```

Related Commands

Command	Description
atm pnni aggregation-token	Specifies the aggregation token for a PNNI interface.
nodal-representation	Specifies the type of PNNI LGN representation.

show atm pnni background routes

To show the precalculated background route table to other PNNI nodes, use the **show atm pnni background routes** EXEC command.

show atm pnni background routes [*internal-node-num*] [**abr** | **cbr** | **vbr_rt** | **vbr_nrt** | **ubr**] [**admin-weight** | **cdv** | **ctd**]

Syntax Description

internal-node-num	Shows the background route tables for the node specified by this internal node number.
abr	Shows the background route tables for the available bit rate service category.
cbr	Shows the background route tables for the constant bit rate service category.
vbr_rt	Shows the background route tables for the real-time variable bit rate service category.
vbr_nrt	Shows the background route tables for the non-real-time variable bit rate service category.
ubr	Shows the background route tables for the unspecified bit rate service category.
admin-weight	Shows the background route tables based on administrative weight as the primary metric.
cdv	Shows the background route tables based on cell delay variation as the primary metric.
ctd	Shows the background route tables based on cell transfer delay as the primary metric.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command. Originally **bg routes**.
11.2(5)	Modified: changed to **show atm pnni background routes**.

Usage Guidelines

Use this command to display routes from the background route tables to all known nodes in the PNNI network.

This command filters based on service category or metric information.

Examples

The following example is sample output from the **show atm pnni background routes** command.

```
Switch# show atm pnni background routes cbr admin-weight
Background Routes From CBR/AW Table
-------------------------------------
1 Routes To Node 2
    1. Hops 2. 1:ATM1/1/0 -> 3:ATM0/1/1 -> 2
        ->: aw 10080  cdv 276  ctd 308  acr 147743  clr0 10  clr01 0
        <-: aw 10080  cdv 276  ctd 308  acr 147743  clr0 10  clr01 0

1 Routes To Node 3
    1. Hops 1. 1:ATM1/1/0 -> 3
        ->: aw 5040  cdv 138  ctd 154  acr 147743  clr0 10  clr01 0
        <-: aw 5040  cdv 138  ctd 154  acr 147743  clr0 10  clr01 0

1 Routes To Node 4
    1. Hops 2. 1:ATM1/1/0 -> 3:ATM0/0/2 -> 4
        ->: aw 10080  cdv 276  ctd 308  acr 147743  clr0 10  clr01 0
        <-: aw 10080  cdv 276  ctd 308  acr 147743  clr0 10  clr01 0

3 Routes To Node 5
    1. Hops 3. 1:ATM1/1/0 -> 3:ATM0/0/2 -> 4:ATM1/0/0 -> 5
        ->: aw 15120  cdv 414  ctd 462  acr 147743  clr0 10  clr01 0
        <-: aw 15120  cdv 414  ctd 462  acr 147743  clr0 10  clr01 0
    2. Hops 3. 1:ATM1/1/0 -> 3:ATM0/0/2 -> 4:ATM0/1/0 -> 5
        ->: aw 15120  cdv 414  ctd 462  acr 147743  clr0 10  clr01 0
        <-: aw 15120  cdv 414  ctd 462  acr 147743  clr0 10  clr01 0
    3. Hops 3. 1:ATM1/1/0 -> 3:ATM0/0/2 -> 4:ATM1/0/3 -> 5
        ->: aw 15120  cdv 414  ctd 462  acr 147743  clr0 10  clr01 0
        <-: aw 15120  cdv 414  ctd 462  acr 147743  clr0 10  clr01 0
```

Related Commands

Command	Description
background-routes-enable	Enables background route computation and specifies how often the switch polls for a significant change that activates a new computation of the background routes.

show atm pnni background status

To show the status of background route computation activity, use the **show atm pnni background status** privileged EXEC command.

show atm pnni background status

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command. Originally **bg status**.
11.2(5)	Modified: changed to **show atm pnni background status**.

Usage Guidelines

This command displays the status of the background SPF activity.

Examples

The following example is sample output from the **show atm pnni background status** command.

```
Switch# show atm pnni background status
Background Route Computation is Enabled
Background Interval is set at 10 seconds
Background Insignificant Threshold is set at 32
```

Related Commands

Command	Description
background-routes-enable	Enables background route computation and specifies how often the switch polls for a significant change that activates a new computation of the background routes.

show atm pnni database

To display the contents of the PNNI topology database, use the **show atm pnni database** EXEC command.

show atm pnni database [*internal-node-number* [*ptse-id*] | **local-node** *node-index*] [**detail**]

Syntax Description

internal-node-number	Displays information about a specified node (1 to 255).
ptse-id	Displays information about a specified PTSE (1 to 4294967295) on a node.
node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8.
detail	Displays more detailed information and is used as the last keyword of the command.

Command Modes

EXEC

Command History

Release	Modification

Usage Guidelines

The topology database is the collection of PTSEs that the PNNI node gathered from the network.

To display the mapping of *internal-node-number* to PNNI node identifier and node name, use the **show atm pnni identifiers** command.

Use this command without the **detail** keyword to display identifying information about each PTSE.

Use the **detail** keyword to display information about the contents of the PTSEs, including nodal information, internal reachable addresses, exterior reachable addresses, and horizontal links.

- Nodal information includes the node's ATM address, leadership priority, and which node the current node accepts as a peer group leader.
- Internal reachable addresses are attached to the PNNI routing domain.
- Exterior reachable addresses can be accessed outside the scope of the PNNI routing domain, for example, through static routes configured on IISP interfaces.
- Horizontal links are between PNNI nodes that belong to the same peer group.

For information on specific PTSE types and their use, refer to the ATM Forum PNNI 1.0 specification, af-pnni-0055.000.

Examples

The following example is sample output from the **show atm pnni database** command.

```
Switch# show atm pnni database
Node 1 ID 56:160:47.00918100000000603E7B3201.00603E7B3201.00 (name: Switch20)

  PTSE ID  Length  Type  Seq no.   Checksum  Lifetime   Description
  1        92      97    228       3191      2232       Nodal info
  2        52      224   29123     31376     3307       Int. Reachable Address
  3        52      256   181       51057     1845       Ext. Reachable Address
  4        188     288   61        29561     3068       Horizontal Link

Node 2 ID 56:160:47.00918100000000003DDE74601.0003DDE74601.00 (name: Switch22)

  PTSE ID  Length  Type  Seq no.   Checksum  Lifetime   Description
  1        92      97    889       4149      2563       Nodal info
  2        52      224   98986     37349     2504       Int. Reachable Address
  3        72      256   918       49460     3043       Ext. Reachable Address
  4        156     288   63        45295     2668       Horizontal Link
```

The following example is sample output using the **detail** option with this command.

```
Switch# show atm pnni database 1 detail
Node 1 ID 56:160:47.00918100000000603E7B3201.00603E7B3201.00 (name: Switch20)

  PTSE ID  Length  Type  Seq no.   Checksum  Lifetime   Description
  1        92      97    229       3190      1854       Nodal info
    Time to refresh 269, time to originate 0

    Type 97 (Nodal info), Length 48
    ATM address 47.00918100000000603E7B3201.00603E7B3201.00
    priority 0, leader bit NOT SET
    preferred PGL 0:0:00.000000000000000000000000.000000000000.00

  2        52      224   29124     31375     2387       Int. Reachable Address
    Time to refresh 1023, time to originate 0

    Type 224 (Int. Reachable Address), Length 32, Port 0, vp capable
    Scope (level) 0, Address info length (ail) 16, Address info count 1
    Pfx: 47.0091.8100.0000.0060.3E7B.3201..., length 104

  3        52      256   183       51055     2744       Ext. Reachable Address
    Time to refresh 1135, time to originate 0

    Type 256 (Ext. Reachable Address), Length 32, Port 0, vp capable
    Scope (level) 0, Address info length (ail) 16, Address info count 1
    Pfx: 47.0091.8100.0000.0003.dde7.4601..., length 104

  4        188     288   62        29560     2297       Horizontal Link
    Time to refresh 835, time to originate 0

    Type 288 (Horizontal Link), Length 168, vp capable
    Remote Node: 56:160:47.00918100000000003DDE74601.0003DDE74601.00
    Local port 80002000, Remote port 81802000, Aggregation token 0
    Metric:
      Type 128, length 32, Traffic class: 0x8800 ( CBR UBR )
        MCR 155519, ACR 147743, CTD 154, CDV 138, CLR0 10, CLR01 10, AW 5040
      Type 128, length 32, Traffic class: 0x4000 ( VBR-RT )
        MCR 155519, ACR 155519, CTD 707, CDV 691, CLR0 8, CLR01 8, AW 5040
      Type 128, length 32, Traffic class: 0x2000 ( VBR-NRT )
        MCR 155519, ACR 155519, CTD n/a, CDV n/a, CLR0 8, CLR01 8, AW 5040
      Type 128, length 32, Traffic class: 0x1000 ( ABR )
        MCR 155519, ACR 0, CTD n/a, CDV n/a, CLR0 n/a, CLR01 n/a, AW 5040
```

show atm pnni election

To display information relevant to the PNNI peer group leader election process, use the **show atm pnni election** EXEC command.

show atm pnni election [**local-node** *node-index*] [**peers**]

Syntax Description

node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8.
peers	Displays the leadership priority and preferred PGL as advertised by all peers in the peer group.

Command Modes

EXEC

Command History

Release	Modification

Usage Guidelines

Using the **show atm pnni election** EXEC command without the **peer** keyword only displays the local information that pertains to the node's PGL election.

Examples

The following example is sample output from the **show atm pnni election** command.

```
Switch# show atm pnni election
PGL Status.............: Not PGL
Preferred PGL..........: Switch20
Preferred PGL Priority.: 64
Active PGL.............: Switch20
Active PGL Priority....: 64
Current FSM State......: PGLE Operating: Not PGL
Last FSM State.........: PGLE Calculating
Last FSM Event.........: Preferred PGL Is Not Self

Configured Priority....: 0
Advertised Priority....: 0
Conf. Parent Node Index: NONE

Hello Startup Factor...: 5
PGL Init Interval......: 15 secs
Search Peer Interval...: 75 secs
Re-election Interval...: 15 secs
Override Delay.........: 30 secs
```

Examples

The following example is sample output from the **show atm pnni election peers** command.

```
Switch# show atm pnni election peers
Node     Leadership   Preferred
  Number   Priority     PGL
  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  1        0            Switch20
  2        64           Switch20
  3        0            Switch20
  4        0            Switch20
  5        0            Switch20
  6        0            Switch20
  7        0            Switch20
  8        0            Switch20
  9        0            Switch20
```

show atm pnni explicit-paths

To display a summary of explicit paths that have been configured, use the **show atm pnni explicit-paths** command.

show atm pnni explicit-path [**name** *path-name* | **identifier** *path-id*} [**upto** *index*] [**detail**]

Syntax Description

name *path-name*	Specifies the path name for which explicit path information is to be displayed.
identifier *path-id*	Specifies the path ID for which explicit path information is to be displayed.
upto *index*	Specifies the path entry index up to which the routable status is calculated.
detail	Displays full path information with any known errors and warnings for each entry.

Command Modes

EXEC

Command History

Release	Modification

Usage Guidelines

To limit the display to a specific path, use the **name** option. The path information includes the "routable" status, which is based on an actual UBR explicit path calculation to the last included node entry.

Use the **upto** option for troubleshooting explicit paths that are shown as not routable. The routable status is only calculated up to the specified path entry index, which allows you to isolate the first failing path entry.

Use the **detail** option to list the full paths, along with any known errors or warnings associated with each entry.

Examples

The following example shows how to display a summary of explicit paths.

```
Switch# show atm pnni explicit-paths
Summary of configured Explicit Paths:
 PathId Status       UpTo  Routable AdminWt Explicit Path Name
 ~~~~~~ ~~~~~~~~~~  ~~~~~ ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~~~~~~~~~~
 1      enabled      3     yes      10040   dallas_4.path1
 2      enabled      6     yes      15120   chicago_2.path1
 3      enabled      2     yes      10080   chicago_2.path2
 4      enabled      2     yes      20595   new_york.path1
```

Examples

The following example shows how to display the detailed configuration, including any known warnings and error messages, for a non-routable explicit path named *new_york.path2*.

```
Switch# show atm pnni explicit-paths name new_york.path2 detail
 PathId Status       UpTo  Routable AdminWt Explicit Path Name
 ~~~~~~ ~~~~~~~~~~  ~~~~~ ~~~~~~~~ ~~~~~~~ ~~~~~~~~~~~~~~~~~~~
 1      enabled      4     no       0       new_york.path2
  PNNI routing err_code for UBR call = 6 (PNNI_DEST_UNREACHABLE)

  Entry Type      Node [Port] specifier
  ~~~~~ ~~~~~~~~~ ~~~~~~~~~~~~~~~~~~~~~
  1     next-node dallas_2
  2     next-node dallas_4 port 80000004
                  Warning:Entry index 2 specifies a non-routable port
  3     next-node wash_dc_1
                  Warning:Entry index 3 has no connectivity from prior node
  4     segment   new_york.2.40
```

Related Commands

Command	Description
show atm pnni explicit-paths	Displays a summary of explicit paths that have been configured.

show atm pnni hierarchy

To show the PNNI hierarchy, use the **show atm pnni hierarchy** privileged EXEC command.

show atm pnni hierarchy [**network** [**detail**] | **local-configured**]

Syntax Description

network	Shows the PGLs and higher-level PNNI ancestor LGNs that are active throughout the PNNI routing domain, as visible from this node.
detail	Shows more detailed network hierarchy information.
local-configured	Shows only the locally configured nodes and parent nodes on this system.

Defaults

local-configured

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(3a)	New command

Usage Guidelines

This command displays the configured PNNI hierarchy and its status.

Examples

The following example is sample output from the **show atm pnni hierarchy** command.

```
Switch# show atm pnni hierarchy
Locally configured parent nodes:
  Node          Parent
  Index  Level  Index   Local-node Status     Node Name
  ~~~~~  ~~~~~  ~~~~~~  ~~~~~~~~~~~~~~~~~~~~  ~~~~~~~~~~~~~~~~~~~~~~
  1      60     2       Enabled/ Running      xxxxxx-1
  2      44     3       Enabled/ Not Running  xxxxxx-1.2.44
  3      28     N/A     Enabled/ Not Running  xxxxxx-1.3.28
```

The following example is sample output from the **show atm pnni hierarchy network** command.

```
Switch# show atm pnni hierarchy network
Summary of active parent LGNs in the routing domain:
  Node  Level  Parent  Node Name
  ~~~~  ~~~~~  ~~~~~~  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  1     60     10      xxxxxx-1
  10    44     12      xxxxx18.2.44
  12    32     0       xxxxx27.3.32
```

Examples

The following example is sample output from the **show atm pnni hierarchy network detail** command.

```
Switch# show atm pnni hierarchy network detail
Detailed hierarchy network display:
  Number Of Network LGN Ancestors: 2

  Lowest Level (60) information:
  Node No.....: 1    Node Name: xxxxxx-1
  Node's ID...:   60:160:47.009181000000060705BD9A5.0060705BD900.00
  Node's Addr.:          47.009181000000060705BD9A5.0060705BD900.01
  Node's PG ID:       60:47.0091.8100.0000.0000.0000.0000
  PGL No......: 9    PGL Name: xxxxx18
  PGL ID......:   60:160:47.00918100000000613E7B2F01.00613E7B2F99.00

  Level 44 ancestor information:
  Parent LGN..: 10   LGN Name: xxxxx18.2.44
  LGN's ID....:    44:60:47.009181000000000000000000.00613E7B2F99.00
  LGN's Addr..:          47.009181000000000613E7B2F01.00613E7B2F99.02
  LGN's PG ID.:       44:47.0091.8100.0000.0000.0000.0000
  LGN PGL No..: 11   LGN PGL Name: xxxxx27.2.44
  LGN's PGL ID:    44:68:47.009181000000004000000000.00400B0A3081.00

  Level 32 ancestor information:
  Parent LGN..: 12   LGN Name: xxxxx27.3.32
  LGN's ID....:    32:44:47.009181000000000000000000.00400B0A3081.00
  LGN's Addr..:          47.009181000000000400B0A3081.00400B0A3081.03
  LGN's PG ID.:       32:47.0091.8100.0000.0000.0000.0000
  LGN PGL No..:      Unelected or unknown
  LGN's PGL ID:      0:0:00.000000000000000000000000.000000000000.00
```

Related Commands

Command	Description
next-node	Specifies the next adjacent entry in a fully-specified ATM PNNI explicit path.
parent	Specifies the PNNI local node index of the parent node.

show atm pnni identifiers

To display the mapping from the local internal node numbers to the global PNNI node identifiers and node names, use the **show atm pnni identifiers** privileged EXEC command.

show atm pnni identifiers [*internal-node-number* | **local-node** *node-index*]

Syntax Description

internal-node-number	Displays the mapping from the specified internal node number to its PNNI node identifier.
node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8.

Command Modes

Privileged EXEC

Command History

Release	Modification

Usage Guidelines

Because PNNI node identifiers are long, the PNNI implementation has mapped them into internal node numbers. The internal node numbers are used to display the topology in a compact fashion.

Examples

The following example is sample output from the **show atm pnni identifiers** command.

```
Switch# show atm pnni identifiers
Node  Node Id                                                  Name
  1     56:160:47.00918100000000603E7B3201.00603E7B3201.00  Switch20
  2     56:160:47.00918100000000003DDE74601.0003DDE74601.00  Switch22
```

show atm pnni interface

To display specific information about an interface or to list the interfaces running on a PNNI node, use the **show atm pnni interface** EXEC command.

show atm pnni interface [**local-node** *node-index* | *hex-port-id* | **atm** *card/subcard/port*] [**detail**]

Syntax Description

node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8.
hex-port-id	Identifier in hexadecimal notation of the port to show.
card/subcard/port	Card, subcard, and port number of the PNNI interface.
detail	Displays detailed information and is used as the last keyword of the command.

Command Modes

EXEC
Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

Use the **show atm pnni interface** command to display information about the status of the PNNI interfaces and the Hello protocol run over the PNNI interfaces.

For a description of the Hello states and timers, refer to the ATM Forum PNNI 1.0 specification, af-pnni-0055.000.

Examples

The following example is sample output using the **detail** option of the **show atm pnni interface** command.

```
Switch# show atm pnni interface atm 0/0/2 detail

Port ATM0/0/2 RCC is up  , Hello state common_out with node SanFran.BldA.T4
Next hello occurs in 1 seconds, Dead timer fires in 63 seconds
  CBR    : AW 5040 MCR 155519 ACR 147743 CTD 154 CDV 138 CLR0 10 CLR01 10
  VBR-RT : AW 5040 MCR 155519 ACR 155519 CTD 707 CDV 691 CLR0 8 CLR01 8
  VBR-NRT: AW 5040 MCR 155519 ACR 155519 CLR0 8 CLR01 8
  ABR    : AW 5040 MCR 155519 ACR 0
  UBR    : AW 5040 MCR 155519
  Aggregation Token: configured 0 , derived 2, remote 2
Tx ULIA seq# 1, Rx ULIA seq# 1, Tx NHL seq# 2, Rx NHL seq# 1
  Remote node ID        72:160:47.009144556677223310111266.00603E7B2001.00
  Remote node address          47.009144556677223310111266.00603E7B2001.01
  Remote port ID         ATM0/0/3 (80003000) (0)
  Common peer group ID      56:47.0091.4455.6677.0000.0000.0000
  Upnode ID              56:72:47.009144556677223300000000.00603E7B2001.00
  Upnode Address               47.009144556677223310111266.00603E7B2001.02
  Upnode number: 10       Upnode Name: SanFran
```

show atm pnni local-node

To display information about a PNNI logical node running on the switch, use the **show atm pnni local-node** privileged EXEC command.

show atm pnni local-node [*node-index*]

Syntax Description

node-index	Displays information about a specific PNNI logical node running on this switch, in the range of 1 to 8.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **show atm pnni local-node** command displays information about the PNNI node and its status.

Examples

The following example is sample output from the **show atm pnni local-node** command.

```
Switch# show atm pnni local-node
PNNI node 1 is enabled and running
  Node name: NewYork.BldB.T3
  System address          47.009144556677114410111255.00603E5BC401.01
  Node ID          72:160:47.009144556677114410111255.00603E5BC401.00
  Peer group ID        72:47.0091.4455.6677.1144.0000.0000
  Level 72, Priority 45 95, No. of interfaces 3, No. of neighbors 1
  Parent Node Index: 2
  Node Allows Transit Calls
  Node Representation: simple
  Hello interval 15 sec, inactivity factor 5,
  Hello hold-down 10 tenths of sec
  Ack-delay 10 tenths of sec, retransmit interval 5 sec,
  Resource poll interval 5 sec
  SVCC integrity times: calling 35 sec, called 50 sec,
  Horizontal Link inactivity time 120 sec,
  PTSE refresh interval 1800 sec, lifetime factor 200 percent,
  Min PTSE interval 10 tenths of sec
  Auto summarization: on, Supported PNNI versions: newest 1, oldest 1
  Default administrative weight mode: uniform
  Max admin weight percentage: -1
  Next resource poll in 3 seconds
  Max PTSEs requested per PTSE request packet: 32
  Redistributing static routes: Yes
```

show atm pnni neighbor

To list PNNI neighboring peers for a switch router, use the **show atm pnni neighbor** EXEC command.

show atm pnni neighbor [**local-node** *node-index*]

Syntax Description

node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8.

Command Modes

EXEC
Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **show atm pnni neighbor** command displays information about adjacencies. Multiple links can be connected to the same neighboring peer. The output from this command displays all PNNI interfaces to each neighboring peer, including the local port, the remote port, and the Hello state for each interface. Based on the port identifiers, PNNI derives the port string if the remote switch is an ATM switch router.

The switch may not translate the port identifier into a meaningful string (such as ATM 3/0/0) if the remote switch is not an ATM switch router. For this reason, both the port string and the port identifier are displayed. At any time only one interface to each neighboring peer is used for flooding PTSEs. This interface is identified as `(Flooding Port)` in the command output.

Examples

The following example is sample output from the **show atm pnni neighbor** command.

```
Switch# show atm pnni neighbor local-node 1

Neighbors For Node (Index 1, Level 72)

  Neighbor Name: NewYork.BldB.T1, Node number: 12
  Neighbor Node Id: 72:160:47.009144556677114410111233.00603E7B3A01.00
  Neighboring Peer State: Full
                            ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  Link Selection Set To: minimize blocking of future calls
    Port           Remote Port Id    Hello state
    ATM0/1/3       ATM1/1/3          2way_in    (Flooding Port)
```

show atm pnni precedence

To show the current PNNI prefix priorities for routing, use the **show atm pnni precedence** privileged EXEC configuration command.

show atm pnni precedence

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The following example is sample output from the **show atm pnni precedence** command.

```
Switch# show atm pnni precedence
                                Working   Default
  Prefix Poa Type               Priority  Priority
  ----------------------------  --------  --------
  local-internal                   1         1
  static-local-internal-metrics    2         2
  static-local-exterior            3         3
  static-local-exterior-metrics    2         2
  pnni-remote-internal             2         2
  pnni-remote-internal-metrics     2         2
  pnni-remote-exterior             4         4
  pnni-remote-exterior-metrics     2         2
```

Related Commands

Command	Description
precedence	Configures the precedence of different types of reachable addresses.

show atm pnni resource-info

To display information about routing parameters of all PNNI interfaces received from a resource management module, use the **show atm pnni resource-info** EXEC command.

show atm pnni resource-info [*hex-port-id*] [**atm** *card/subcard/port*] [**local-node** *node-index*]

Syntax Description

hex-port-id	Hexadecimal port ID value.
card/subcard/port	Card, subcard, and port number for the specified ATM interface.
node-index	Index number of the PNNI local node, in the range of 1 to 8.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command. Originally **rm-info**.
11.2(5)	Modified: changed to **show atm pnni resource-info**.

Usage Guidelines

This command is used to display information about the MCR, ACR, CTD, CDV, and CLR for a specific port. Only applicable information is displayed.

- MCR is the maximum cell rate, measured in cells.
- ACR is the available cell rate, measured in cells.
- CTD is the cell transfer delay, measured in microseconds.
- CDV is the cell rate delay variation, in microseconds.
- CLR is the cell loss ratio exponent (for example, 10 means 10exp(-10)).
- [a,b] are the low and high thresholds for the PNNI insignificant change for applicable parameters.

Examples

The following example is sample output from the **show atm pnni resource-info** command.

```
Switch# show atm pnni resource-info
acr pm 50,  acr mt 3, cdv pm 25, ctd pm 50, rm poll interval 5 sec
Interface insignificant change bounds:
ATM0/1/0 , port ID 80100000
  CBR    : MCR 155519 ACR 147743 [73871,155519] CTD 154 [77,231]
           CDV 138 [104,172] CLR0 10 CLR01 10
  VBR-RT : MCR 155519 ACR 155519 [77759,155519] CTD 707 [354,1060]
           CDV 691 [519,863] CLR0 8 CLR01 8
  VBR-NRT: MCR 155519 ACR 155519 [77759,155519] CLR0 8 CLR01 8
  UBR    : MCR 155519
ATM0/1/3 , port ID 80103000
  CBR    : MCR 155519 ACR 147743 [73871,155519] CTD 154 [77,231]
           CDV 138 [104,172] CLR0 10 CLR01 10
  VBR-RT : MCR 155519 ACR 155519 [77759,155519] CTD 707 [354,1060]
           CDV 691 [519,863] CLR0 8 CLR01 8
  VBR-NRT: MCR 155519 ACR 155519 [77759,155519] CLR0 8 CLR01 8
```

```
  UBR    : MCR 155519
ATM1/0/0 , port ID 80800000
  CBR    : MCR 155519 ACR 147743 [73871,155519] CTD 154 [77,231]
           CDV 138 [104,172] CLR0 10 CLR01 10
  VBR-RT : MCR 155519 ACR 155519 [77759,155519] CTD 707 [354,1060]
           CDV 691 [519,863] CLR0 8 CLR01 8
  VBR-NRT: MCR 155519 ACR 155519 [77759,155519] CLR0 8 CLR01 8
  UBR    : MCR 155519
ATM1/0/3 , port ID 80803000
  CBR    : MCR 155519 ACR 147743 [73871,155519] CTD 154 [77,231]
           CDV 138 [104,172] CLR0 10 CLR01 10
  VBR-RT : MCR 155519 ACR 155519 [77759,155519] CTD 707 [354,1060]
           CDV 691 [519,863] CLR0 8 CLR01 8
  VBR-NRT: MCR 155519 ACR 155519 [77759,155519] CLR0 8 CLR01 8
  UBR    : MCR 155519
```

show atm pnni scope

To display the mapping from organizational scope values—used at UNI interfaces—to PNNI scope (in terms of PNNI routing level indicators), use the **show atm pnni scope** privileged EXEC command.

show atm pnni scope

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

This command groups ranges of organization scope values that map to the same PNNI level.
The following example is sample output from the **show atm pnni scope** privileged EXEC command.

```
Switch# show atm pnni scope
UNI scope   PNNI Level
---------   ----------
(1  - 10)      56
(11 - 12)      48
(13 - 14)      32
(15 - 15)      0

Scope mode: automatic
```

Related Commands

Command	Description
scope map	Specifies the mapping from a range of organizational scope values (used at UNI interfaces) to a PNNI scope value (such as PNNI routing-level indicators).
scope mode	Specifies the configuration mode of the mapping from organizational scope values (used at UNI interfaces) to PNNI scope (such as PNNI routing-level indicators).

show atm pnni statistics

To display PNNI statistics, use the **show atm pnni statistics** EXEC command.

show atm pnni statistics call

Syntax Description

call	Displays the PNNI call statistics.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays statistics related to path selection, for example, number of crankbacks, number of calls set up, number of calls serviced by the background tree, on-demand calculation, and PTSE exchanges, such as number of incoming PTSEs per minute or number of PTSEs retransmitted.

Examples

The following example is sample output from the **show atm pnni statistics call** command.

```
Switch# show atm pnni statistics call
pnni routing call statistics since 00:04:58

                   total     cbr       rtvbr     nrtvbr    abr       ubr
source route reqs  137       0         0         0         0         137
successful         110       0         0         0         0         110
unsuccessful       27        0         0         0         0         27
crankback reqs     8         0         0         0         0         8
successful         8         0         0         0         0         8
unsuccessful       0         0         0         0         0         0
intraswitch routes 34        0         0         0         0         34
on-demand attempts 0         0         0         0         0         0
successful         0         0         0         0         0         0
unsuccessful       0         0         0         0         0         0
background lookups 76        0         0         0         0         76
successful         76        0         0         0         0         76
unsuccessful       0         0         0         0         0         0
next port requests 81        0         0         0         0         81
successful         66        0         0         0         0         66
unsuccessful       15        0         0         0         0         15

                   total     average
usecs in queue     74890     546
usecs in dijkstra  0         0
usecs in routing   38991     284
```

Related Commands

Command	Description
stopbits	Cisco IOS command removed from this manual. See Appendix D.

show atm pnni summary

To display summary information advertised by PNNI nodes, use the **show atm pnni summary** privileged EXEC command.

show atm pnni summary [**local-node** *node-index*]

Syntax Description

node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8. Use this option to restrict the display to a single node.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example is sample output from the **show atm pnni summary** command.

```
Switch# show atm pnni summary

Codes: Node - Node index advertising this summary
       Type - Summary type (INT - internal, EXT - exterior)
       Sup  - Suppressed flag (Y - Yes, N - No)
       Auto - Auto Summary flag (Y - Yes, N - No)
       Adv  - Advertised flag (Y - Yes, N - No)
       C.M  - Creation Mode (A - Auto, C - Configured).

 Node Type Sup Auto Adv  Summary Prefix
 ~~~~ ~~~~ ~~~ ~~~~ ~~~  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  1   Int   N   Y    Y   47.0091.8100.0000.0060.3e7b.3101/104
  1   Int   N   N    N   aa.bbcc/24
  1   Int   Y   N    N   bb.ccdd/24
  1   Ext   N   N    N   cc.ddee/24
  1   Ext   Y   N    N   dd.eeff/24
  2   Int   N   N    N   11.2233.4455.6677.88/64
  3   Ext   Y   N    N   44.4444.444/36
```

show atm pnni svcc-rcc

To display information about the SVCC RCCs on PNNI local nodes, use the **show atm pnni svcc-rcc** privileged EXEC command.

show atm pnni svcc-rcc [**local-node** *node-index* | **remote-node** *internal-node-num*] [**detail**]

Syntax Description

node-index	Index number of the PNNI local node to which the command applies, in the range of 1 to 8.
internal-node-num	Internal node number of the PNNI remote node.
detail	Displays detailed SVCC RCC information; must be the last keyword.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

This command displays information about the SVCC RCCs on one or more PNNI local nodes.

Examples

The following example is sample output from the **show atm pnni svcc-rcc** command.

```
Switch# show atm pnni svcc-rcc
PNNI VCC-CSS(s) for local-node 2 (level=64):
  Rem-Node RCC Hello St Exit Port       VPI  VCI   HrzLns Rem-Node name
  ~~~~~~~~ ~~~ ~~~~~~~~ ~~~~~~~~~~~~~~ ~~~~ ~~~~~ ~~~~~~ ~~~~~~~~~~~~
  12       UP  2way_in  ATM0/1/1        0    33    1      T2.2.64
PNNI VCC-CSS(s) for local-node 3 (level=56):
  Rem-Node RCC Hello St Exit Port       VPI  VCI   HrzLns Rem-Node name
  ~~~~~~~~ ~~~ ~~~~~~~~ ~~~~~~~~~~~~~~ ~~~~ ~~~~~ ~~~~~~ ~~~~~~~~~~~~
  11       UP  2way_in  ATM0/0/3        0    33    1      T5.3.56
```

Related Commands

Command	Description
debug atm pnni	Enables PNNI debugging output.
show atm pnni interface	Displays specific information about an interface or lists the interfaces running on a PNNI node.

show atm pnni topology

To display the topology connectivity information from the internal topology database, use the **show atm pnni topology** EXEC command.

show atm pnni topology [**node** *node-name*] [**detail**]

Syntax Description

node	Displays the topology information about a specific node identified by the *node-name*.
node-name	Identifies the node by a specific name.
detail	Displays more detailed information and is used as the last keyword of the command.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The topology as seen from the PNNI database can be displayed using the **show atm pnni topology** command. This command shows all accessible PNNI nodes in the network (through PTSEs) and any links to neighboring nodes.

PNNI nodes are represented internally by an 8-bit number. This command shows the mapping between the internal node number and the full 22-byte node ID.

A link status of “up” indicates the link is advertised by the node on both ends of a link. A link status of “2down” indicates the remote node (neighbor) did not advertise the link. Links that are down are not used for path selection by the current node.

Examples

The following example is partial output from the **show atm pnni topology** command.

```
Switch# show atm pnni topology
Node 1 (name: xxxxxx-1, type: xxxxxx, ios-version: xx.x)
Node ID..: 60:160:47.009181000000060705BD9A5.0060705BD900.00
Node AESA:        47.009181000000060705BD9A5.0060705BD900.01
Link Service Classes Advertised: CBR VBR-RT VBR-NRT ABR UBR
Leadership Priority: 60, Claims PGL: Yes, Transit Calls: Allowed
Ancestor: No, Nodal Representation: Simple

   status  link-type  local port     remote port    neighbor
   ~~~~~~  ~~~~~~~~~  ~~~~~~~~~~~~~  ~~~~~~~~~~~~~  ~~~~~~~~
   up      hrz        ATM0/0/2       ATM0/0/2       Switch
   up      hrz        ATM0/0/2.4     ATM0/0/2.4     Switch
   up      hrz        ATM0/0/0       ATM0/0/0       xxxxx18
   up      hrz        ATM0/1/3       ATM0/0/1       xxxxx18
   up      hrz        ATM0/0/1       ATM0/0/1       Switch
```

```
Node 2 (name: xxxxxx-1.2.36, type: xxxxxx, ios-version: 11.3)
Node ID..:  36:60:47.009181000000000000000000.0060705BD900.00
Node AESA:        47.009181000000060705BD9A5.0060705BD900.02
Link Service Classes Advertised: CBR VBR-RT VBR-NRT ABR UBR
Leadership Priority: 0, Claims PGL: No, Transit Calls: Allowed
Ancestor: Yes, Nodal Representation: Simple

   status  link-type  local port     remote port    neighbor
   ~~~~~~  ~~~~~~~~~  ~~~~~~~~~~~~~  ~~~~~~~~~~~~~  ~~~~~~~~
   up      hrz        2D24009        2B70009        xxxxx27.2.36
   up      hrz        2D24000        2B70000        xxxxx27.2.36
```

show atm pnni traffic

To display information about traffic received on PNNI interfaces, use the **show atm pnni traffic** privileged EXEC command.

show atm pnni traffic

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example is sample output from the **show atm pnni traffic** command.

```
Traffic statistics for local-node 1 (Level 60)

  Interface ID    PNNI bytes rcvd   bits/sec   Since     Rem Node(No./Name)
  ~~~~~~~~~~~~~   ~~~~~~~~~~~~~~~  ~~~~~~~~   ~~~~~~~~  ~~~~~~~~~~~~~~~~~~
  ATM0/0/0        7368              398        00:02:28  11 xxxxx18
  ATM0/0/1        7228              390        00:02:28  9 Switch
  ATM0/0/2        1300              70         00:02:28  9 Switch
  ATM0/0/2.4      1300              70         00:02:28  9 Switch
  ATM0/1/0        0                 0          00:02:33
  ATM0/1/3        1300              70         00:02:28  11 xxxxx18

Traffic statistics for local-node 2 (Level 36)

  Interface ID    PNNI bytes rcvd   bits/sec   Since     Rem Node(No./Name)
  ~~~~~~~~~~~~~   ~~~~~~~~~~~~~~~  ~~~~~~~~   ~~~~~~~~  ~~~~~~~~~~~~~~~~~~
  FFFFFFFF        4460              275        00:02:09  10 xxxxx27.2.36
```

show atm qos-defaults

To provide default values for QoS and display the table used, use the **show atm qos-defaults** EXEC command.

show atm qos-defaults

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command. Originally **show atm qos**.
11.2(5)	Modified: changed to **show atm qos-defaults**.

Examples

The following sample output from the **show atm qos-defaults** command displays the default QoS table.

```
Switch# show atm qos-defaults
Default QoS objective table:
Max cell transfer delay (in microseconds): any cbr, any vbr-rt
Peak-to-peak cell delay variation (in microseconds): any cbr, any vbr-rt
Max cell loss ratio for CLP0 cells: any cbr, any vbr-rt, any vbr-nrt
Max cell loss ratio for CLP0+1 cells: any cbr, any vbr-rt, any vbr-nrt
```

Table 18-11 describes the fields shown in the display.

Table 18-11 show atm qos-defaults Field Descriptions

Field	Description
Max cell transfer delay	Is displayed in microseconds and applies to one of the following (**any** indicates the objective parameter is undefined): • **cbr** • **vbr-rt**
Peak-to-peak cell delay variation	Is displayed in microseconds and applies to one of the following (**any** indicates the objective parameter is undefined): • **cbr** • **vbr-rt**
Max cell loss ratio	Is displayed as a negative power of ten and applies to one of the following (**any** indicates the objective parameter is undefined): • **cbr** • **vbr-rt** • **vbr-nrt**

Related Commands

Command	Description
atm qos default	Changes individual QoS objectives assigned to SVC setup messages entering the switch through UNI interfaces.

show atm resource

To display global resource manager configuration and status, use the **show atm resource** EXEC command.

Catalyst 8540 MSR

show atm resource [**module_id** *number*]

Catalyst 8510 MSR and LightStream 1010

show atm resource

Syntax Description

module_id *number*	Identification number of the module for which you want to display configuration data and status. (Catalyst 8540 MSR only).

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The output from this command normalizes the maximum cell and queue limit values to match what is installed in the hardware. Any values specified explicitly via configuration are preserved and can be displayed by viewing the configuration.

Examples

Catalyst 8540 MSR

The following example shows the results of using the **show atm resource** command with the switch processor feature card installed.

```
Switch# show atm resource
        Resource configuration:
            Over-subscription-factor 8  Sustained-cell-rate-margin-factor 1%
            Abr-mode:   EFCI
            Service Category to Threshold Group mapping:
             cbr 1 vbr-rt 2 vbr-nrt 3 abr 4 ubr 5
           Threshold Groups:
            Module Group Max     Max Q  Min Q  Q thresholds  Cell  Name
              ID         cells   limit  limit  Mark Discard  count
                         instal  instal instal
            ------------------------------------------------------------
            1      1     131071  63     63     25 %  87 %      0     cbr-default-tg
                   2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
                   3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
                   4     131071  511    31     25 %  87 %      0     abr-default-tg
                   5     131071  511    31     25 %  87 %      0     ubr-default-tg
                   6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
           ============================================================
           2       1     131071  63     63     25 %  87 %      0     cbr-default-tg
```

```
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
3       1     131071  63     63     25 %  87 %      0     cbr-default-tg
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
4       1     131071  63     63     25 %  87 %      0     cbr-default-tg
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
5       1     131071  63     63     25 %  87 %      0     cbr-default-tg
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
6       1     131071  63     63     25 %  87 %      0     cbr-default-tg
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
7       1     131071  63     63     25 %  87 %      0     cbr-default-tg
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
8       1     131071  63     63     25 %  87 %      0     cbr-default-tg
        2     131071  127    127    25 %  87 %      0     vbrrt-default-tg
        3     131071  511    31     25 %  87 %      0     vbrnrt-default-tg
        4     131071  511    31     25 %  87 %      0     abr-default-tg
        5     131071  511    31     25 %  87 %      0     ubr-default-tg
        6     131071  1023   1023   25 %  87 %      0     well-known-vc-tg
=============================================================
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example shows the results of using the **show atm resource** command with an FC-PCQ installed.

```
Switch# show atm resource
Resource configuration:
    Over-subscription-factor 8  Sustained-cell-rate-margin-factor 1%
    Abr-mode:   relative-rate
    Atm service-category-limit (in cells):
         64512 cbr 64512 vbr-rt 64512 vbr-nrt 64512 abr-ubr
Resource state:
    Cells per service-category:
         0 cbr 0 vbr-rt 0 vbr-nrt 0 abr-ubr
```

Related Commands

Command	Description
atm abr-mode (Catalyst 8510 MSR and LightStream 1010)	Used to select **efci** marking, **relative-rate** marking, or both.
atm pacing	Enables or changes the artificial limitation on interface output rate.
atm service-category-limit (Catalyst 8510 MSR and LightStream 1010)	Sets the limits on the number of cells simultaneously allowed in the switch memory by type of output queue.
atm sustained-cell-rate-margin-factor	Changes the Sustained SCRMF, which dictates the weight given to PCR in computing the bandwidth used by VBR connections.

show atm rmon

To show the status of the ATM RMON MIB, use the **show atm rmon** EXEC command.

show atm rmon {**host** *number* | **matrix** *number* | **stats** *number* | **status**}

Syntax Description

host	Displays the ATM RMON host table port select group number information.
matrix	Displays the ATM RMON matrix table information.
stats	Displays the ATM RMON status table information.
status	Displays the ATM RMON resource status information.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example shows ATM host table information for the specified port select group using the **show atm rmon host** EXEC command.

```
atmrmon-switch# show atm rmon host 1
PortSelGrp: 1   Collection: Enabled     Drops: 0
47.00790000000000000000000.00A03E000001.00
  CBR/VBR in: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
         out: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR in: calls: 0/123852  cells: 0 connTime: 0 days 00:00:00
         out: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
47.00918100000000615C71A501.00000C39C23F.00
  CBR/VBR in: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
         out: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR in: calls: 1/14  cells: 0 connTime: 3 days 21:18:29
         out: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
47.00918100000000615C71A501.00603E329221.00
  CBR/VBR in: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
         out: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR in: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
         out: calls: 0/123852  cells: 0 connTime: 0 days 00:00:00
47.00918100000000615C71A501.00603E329221.01
  CBR/VBR in: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
         out: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR in: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
         out: calls: 1/14  cells: 0 connTime: 3 days 21:18:30
```

Table 18-12 describes some of the fields in the output from the **show atm rmon** command.

Table 18-12 show atm rmon Field Descriptions

Field	Description
47.007900000000000000000000.00A03E000001.00	Address of the host.
CBR/VBR in: calls: 0/0	Total successful CBR/VBR calls, including calls currently connected.
cells: 0	Total active cells (in: A to everybody; out: everybody to A).
connTime: 0	Total connection time aggregated for multiple connections.

The following example shows ATM matrix table information for the specified port select group using the **show atm rmon matrix** EXEC command.

```
atmrmon-switch# show atm rmon matrix 1
PortSelGrp: 1   Collection: Enabled     Drops: 0
47.007900000000000000000000.00A03E000001.00
47.00918100000000615C71A501.00603E329221.00
  CBR/VBR   calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR   calls: 0/0  cells: 0 connTime: 0 days 00:00:00
47.00918100000000615C71A501.00000C39C23F.00
47.00918100000000615C71A501.00603E329221.01
  CBR/VBR   calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR   calls: 0/0  cells: 0 connTime: 0 days 00:00:00
47.00918100000000615C71A501.00603E329221.00
47.007900000000000000000000.00A03E000001.00
  CBR/VBR   calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR   calls: 0/123856  cells: 0 connTime: 0 days 00:00:00
47.00918100000000615C71A501.00603E329221.01
47.00918100000000615C71A501.00000C39C23F.00
  CBR/VBR   calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR   calls: 1/14  cells: 0 connTime: 3 days 21:18:40
```

The **show atm rmon stats** command summarizes the statistics for the entire port select group, including non-monitored traffic. The following example shows ATM stats table information for the specified port select group using the **show atm rmon stats** EXEC command.

```
atmrmon-switch# show atm rmon stats 1
PortSelGrp: 1   Collection: Enabled     Drops: 0
  CBR/VBR: calls: 0/0  cells: 0 connTime: 0 days 00:00:00
  ABR/UBR: calls: 1/123862  cells: 0 connTime: 3 days 21:18:19
```

The following example shows ATM status table information for the specified port select group, and identifies which ATM interfaces were configured using the **atm rmon collect** or the **snmp enable** command.

```
atmrmon-switch# show atm rmon status
PortSelGrp: 1 Status: Enabled  Hosts:  4/no-max  Matrix:  4/no-max
        ATM0/0/0        ATM0/0/2
PortSelGrp: 2 Status: Enabled  Hosts:  0/no-max  Matrix:  0/no-max
        ATM0/0/3
PortSelGrp: 4 Status: Enabled  Hosts:  0/1  Matrix:  0/5
        ATM0/0/1
PortSelGrp: 5 Status: Enabled  Hosts:  0/no-max  Matrix:  0/no-max
        ATM0/1/2
PortSelGrp: 6 Status: Enabled  Hosts:  0/no-max  Matrix:  0/no-max
        ATM0/1/3
```

```
PortSelGrp: 7 Status: Enabled  Hosts:  0/no-max  Matrix:  0/no-max
        ATM0
```

As the following example shows, when using the **status** option, the configuration is maintained even when data collection is disabled.

```
atmrmon-switch# show atm rmon status
PortSelGrp: 1 Status: Disabled  Hosts: 0/10000    Matrix:  0/20000
        ATM0/0/0        ATM0/0/2
PortSelGrp: 2 Status: Disabled  Hosts: 0/10000    Matrix: 0/20000
        ATM0/0/3
```

Related Commands

Command	Description
atm rmon collect	Adds a port to an ATM-RMON MIB port select group.
atm rmon enable	Enables ATM-RMON MIB data collection.
atm rmon portselgrp	Configures statics, host, and matrix collection parameters for ATM-RMON MIB.

show atm route

To display all local or network-wide reachable address prefixes in the switch router's ATM routing table, use the **show atm route** EXEC command.

show atm route [*address-prefix* [**longer_prefix**] | **local**]

Syntax Description

address-prefix	Displays all routing table entries for the specified prefix.
longer_prefix	Displays all routing tables entries for longer prefixes that match the specified address prefix.
local	Displays information about reachable addresses attached to this switch router only. This includes static routes configured on this switch router and routes learned using ILMI address registration.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

This command displays the ATM address prefixes in the ATM routing table. Prefixes are tagged with either **E** or **I**. The **E** represents external prefixes that were configured using the **atm route** command. The **I** represents internal prefixes registered through ILMI or generated internally by the system for other purposes (for example; soft-PVP support). The prefix is displayed in the format *prefix/length*, where *length* indicates the length, in bits:

```
1234.24/16
```

The node represents the switch router that generated the route. Node 1 represents this switch router, while other numbers represent switch routers learned from the network. The port number, the protocol that generated the advertisement, the time stamp, and the port status (or summary information) are also displayed.

The link is down in the following cases:

- For local prefixes, the status is displayed as DN if either the associated interface is down or the associated interface type is NNI. Note that static routes to address prefixes cannot be used on NNI interfaces.
- For remote prefixes, such as those advertised by a remote node, the status is displayed as DN if connectivity from the local switch to the remote switch is lost.

Examples

The following example is sample output from the **show atm route** command.

```
Switch# show atm route

Codes: P - installing Protocol (S - Static, P - PNNI, R - Routing control),
       T - Type (I - Internal prefix, E - Exterior prefix, SE -
                 Summary Exterior prefix, SI - Summary Internal prefix)
                    ZE - Suppress Summary Exterior, ZI - Suppress Summary Internal)

P   T Node/Port        St Lev Prefix
~ ~~~ ~~~~~~~~~~~~~~~ ~~ ~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
P   E 2   0           UP 0   default/0
R  SI 1   0           UP 0   47.0091.8100.0000.0060.3E7B.3201/104
R   I 1   ATM0/0/0     UP 0   47.0091.8100.0000.0060.3E7B.3201.0000.0c40.81d2/152
R   I 1   ATM0/0/0     UP 0   47.0091.8100.0000.0060.3E7B.3201.0000.0c40.81d3/152
R   I 1   ATM0/0/0     UP 0   47.0091.8100.0000.0060.3E7B.3201.0000.0c40.81d4/152
R   I 1   ATM0/0/0     UP 0   47.0091.8100.0000.0060.3E7B.3201.0000.0c40.81d5/152
R   I 1   ATM0         UP 0   47.0091.8100.0000.0060.3E7B.3201.0060.3e7b.3201/152
R   I 1   ATM0         UP 0   47.0091.8100.0000.0060.3E7B.3201.0060.3e7b.3202/152
R   I 1   ATM0         UP 0   47.0091.8100.0000.0060.3E7B.3201.0060.3e7b.3203/152
R   I 1   ATM0         UP 0   47.0091.8100.0000.0060.3E7B.3201.0060.3e7b.3204/152
R   I 1   ATM0         UP 0   47.0091.8100.0000.0060.3E7B.3201.4000.0c/128
S   E 1   ATM0/0/1     UP 0   47.0091.8100.0000.0003.dde7.4601/104
P   I 2   0           UP 0   47.0091.8100.0000.0003.dde7.4601/104
P   I 3   0           UP 0   47.0091.8100.0000.0060.3e7b.3801/104
```

show atm routing-mode

To display the routing mode in which the switch is running, use the **show atm routing-mode** privileged EXEC command.

show atm routing-mode

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

The routing mode of the switch is dynamic (PNNI) or static (IISP).

Examples

This following example is sample output from the **show atm routing-mode** command.

```
Switch# show atm routing-mode
Routing Mode: Dynamic (PNNI)
```

Related Commands

Command	Description
atm routing-mode	Restricts the mode of ATM routing on an ATM switch router.

show atm signalling cug

To display all configured CUGs, use the **show atm signalling cug** EXEC command.

show atm signalling cug [**interface atm** *card/subcard/port*] [**access** | **alias** *alias-name* | **interlock-code** *ic*]

Syntax Description

card/subcard/port	The card, subcard, and port number of the ATM interface.
alias-name	The name of the CUG alias for the 24-byte interlock code.
ic	The interlock code number.

Command Modes

EXEC

Command History

Release	Modification
11.2(8.0.1)	New command

Examples

The following example is sample output from the **show atm signalling cug** command.

```
Switch# show atm signalling cug
Interface:          ATM3/0/0
Cug Alias Name:
Cug Interlock Code: 00.000000000000000000000000.000000000000.00.01001111
Non preferential Cug
Permit Network to User Calls
Permit User to Network Calls
```

Related Commands

Command	Description
atm signalling cug access	Restricts access to and from a closed user group.
atm signalling cug alias	Creates a CUG alias.
atm signalling cug assign	Assigns a CUG to an interface.

show atm signalling diagnostics

To display the configured filter entries and the collection call records for the ATM signalling diagnostics feature, use the **show atm signalling diagnostics** EXEC command.

show atm signalling diagnostics {**filter** | **record** | **status** *filter-index*}

Syntax Description

filter	Displays the information in the filter table.
record	Displays the call failure records.
status	Displays global diagnostics status.
filter-index	Displays all of the records filtered for each entry in the filter index specified. The *filter-index* can range from 1 to 50.

Command Modes

EXEC

Command History

Release	Modification
11.2(8.0.1)	New command

Examples

The following example is sample output from the **show atm signalling diagnostics filter** command.

```
Switch# show atm signalling diagnostics filter
F I L T E R   I N D E X    1
-------------------------------
Scope: internal, Cast Type: p2mp
Connection Kind: soft-vc
Service Category:  CBR (Constant Bit Rate)  UBR (Unspecified Bit Rate)
Clear Cause: 0, Initial TimerValue: 600
Max Records: 20,   NumMatches: 0,   Timer expiry: 600
Incoming Port: ATM0/0/1, Outgoing Port: ATM0/1/1
Calling Nsap Address:47.111122223333444455556666.777788889999.00
Calling Address Mask:FF.FFFFFF000000000000000000.000000000000.00
Called Nsap Address :47.111122223333444455556666.777788889999.01
Called Address Mask :FF.FFFFFF000000000000000000.000000000000.00
Status : active
```

Examples

The following example is sample output from the **show atm signalling diagnostics record 1** command.

```
Switch# show atm signalling diagnostics record 1
D I S P L A Y I N D E X    1
-------------------------------
Scope: internal,  Cast Type: p2p, Conn Indicator: Setup Failure
Connection Kind:   switched-vc
Service Category:  UBR (Unspecified Bit Rate)
Clear Cause: 0x29,  Diagnostics: NULL
Incoming Port: ATM1/0/3,  Outgoing Port:ATM0/1/3
Calling-Address: 47.009181000000006011000000.470803040506.00
Calling-SubAddr: NULL
Called-Address : 47.00918100000000 6083C42C01.750203040506.00
```

```
Called-SubAddr : NULL
Crankback Type : No Crankback
DTL's :
NodeId:56:160:47.009181000000006011000000.006083AB9001.00 Port: 0/1/3:2
NodeId:56:160:47.00918100000000603E7B4101.00603E7B4101.00 Port: 0/0/0:2
NodeId:56:160:47.00918100000000006083C42C01.006083C42C01.00 Port: 0
```

show atm signalling statistics

To show the ATM signalling statistics, use the **show atm signalling statistics** EXEC command.

show atm signalling statistics [**interface atm** *card/subcard/port*] [**ie**]

Syntax Description

card/subcard/port	Specifies the card, subcard, and port number of the ATM interface.
ie	Displays the information element statistics.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

If no interface is specified, statistics for all interfaces are displayed.

Examples

The following example is sample output from the **show atm signalling statistics** EXEC command with no interface specified.

```
Switch# show atm signalling statistics
Global Statistics:
Calls Throttled: 0
Max Crankback: 3
Max Connections Pending: 255
Max Connections Pending Hi Water Mark: 0

ATM 0:0   UP Time 00:00:32  # of int resets: 0
----------------------------------------------------------------
Terminating connections: 0       Soft VCs: 0
Active Transit PTP SVC: 0        Active Transit MTP SVC: 0
Port requests:  0                Source route requests: 0
Conn-Pending: 0                  Conn-Pending High Water Mark: 0
Calls Throttled: 0               Max-Conn-Pending:  40

          Messages:   Incoming  Outgoing
          ---------   --------  --------
PTP Setup Messages:         0         0
MTP Setup Messages:         0         0
  Release Messages:         0         0
  Restart Messages:         0         0

           Message:   Received Transmitted Tx-Reject Rx-Reject
Add Party Messages:           0           0         0         0

     Failure Cause:   Routing     CAC   Access-list    Addr-Reg  Misc-Failure
    Location Local:         0       0             0           0             0
   Location Remote:         0       0             0           0             0
```

Examples

The following example is sample output from the **show atm signalling statistics** EXEC command for interface ATM 0/0/0.

```
Switch# show atm signalling statistics interface atm 0/0/0
ATM 0/0/0:0   UP Time 00:01:32  # of int resets: 0
----------------------------------------------------------------
Terminating connections: 0       Soft VCs: 0
Active Transit PTP SVC: 0        Active Transit MTP SVC: 0
Port requests:  0                Source route requests: 0
Conn-Pending: 0                  Conn-Pending High Water Mark: 0
Calls Throttled: 0               Max-Conn-Pending:  40

          Messages:   Incoming  Outgoing
          ---------   --------  --------
PTP Setup Messages:         0         0
MTP Setup Messages:         0         0
  Release Messages:         0         0
  Restart Messages:         0         0

           Message:   Received Transmitted Tx-Reject Rx-Reject
Add Party Messages:           0           0         0         0

     Failure Cause:   Routing     CAC   Access-list    Addr-Reg  Misc-Failure
    Location Local:         0       0             0           0             0
   Location Remote:         0       0             0           0             0
```

Related Commands

Command	Description
clear atm signalling statistics	Clears existing ATM signalling statistics.

show atm snoop

To display the current port snooping configuration and actual register values for the highest ATM interface, use the **show atm snoop** EXEC command.

show atm snoop

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays the snoop test port name, snoop option (enabled or disabled), monitored port name (if enabled), and snoop direction (receive or transmit if enabled).

This command applies only to card 4, subcard 1, and the highest port allowed for the card. See the **atm signalling vpci** command for port information.

Examples

The following example displays the snoop configuration and actual register values for the highest interface.

```
Switch# show atm snoop
Snoop Test Port Name:  ATM3/1/3 (interface status=SNOOPING)
Snoop option:          (configured=enabled) (actual=enabled)
Monitored Port Name:   (configured=ATM3/0/0) (actual=ATM3/0/0)
Snoop direction:       (configured=receive) (actual=receive)
```

The following example shows that there is no card in the snoop test port card 4, subcard 1 position.

```
Switch# show atm snoop

Snoop Test Port Name:  ATM3/1/3 (port is bad or missing)
Snoop option:          (configured=disabled)
```

The following example shows that the snoop test port has been inserted and configured but is shut down.

```
Switch# show atm snoop

Snoop Test Port Name:  ATM3/1/3 (interface status=DOWN)(shutdown)
Snoop option:          (configured=enabled)
Monitored Port Name:   (configured=ATM3/1/0)
Snoop direction:       (configured=receive)
```

Related Commands

Command	Description
atm signalling vpci	Specifies the value of VPCI to be carried in the signalling messages within a VP tunnel.

show atm snoop-vc

To display the current port snooping configuration and actual register values per-VC, use the **show atm snoop-vc** EXEC command.

show atm snoop-vc [**interface atm** *card*/*subcard*/*port*]

Syntax Description

card/*subcard*/*port*	Specifies the card, subcard, and port number of the ATM interface.

Command Modes

EXEC

Command History

Release	Modification
11.2(8.0.1)	New command

Usage Guidelines

This command displays the snoop test port name, snoop option (enabled or disabled), monitored port name (if enabled), and snoop direction (receive or transmit if enabled).

Examples

The following example displays all VC snoop connections on the switch.

```
Switch# show atm snoop-vc
       Snooping                                Snooped
Interface    VPI   VCI   Type    X-Interface  X-VPI X-VCI Dir    Status
ATM0/0/2     0     5     PVC     ATM0/1/1     0     5     Rx     DOWN
ATM0/0/2     0     16    PVC     ATM0/1/1     0     16    Rx     DOWN
ATM0/1/2     0     5     PVC     ATM0/0/1     0     5     Tx     DOWN
ATM0/1/2     0     16    PVC     ATM0/0/1     0     16    Tx     DOWN
ATM0/1/2     0     18    PVC     ATM0/0/1     0     18    Tx     UP
ATM0/1/2     0     100   PVC     ATM0/0/1     0     100   Tx     DOWN
ATM0/1/2     0     201   PVC     ATM0/0/1     0     201   Tx     DOWN
ATM0/1/2     0     202   PVC     ATM0/0/1     0     202   Tx     DOWN
ATM0/1/2     0     300   PVC     ATM0/0/1     0     300   Tx     DOWN
ATM0/1/2     0     301   PVC     ATM0/0/1     0     301   Tx     DOWN
```

The following example displays all VC snoop connections on ATM interface 0/1/2.

```
Switch# show atm snoop-vc interface atm 0/1/2
      Snooping                                Snooped
Interface    VPI   VCI   Type    X-Interface  X-VPI X-VCI Dir    Status
ATM0/1/2     0     5     PVC     ATM0/0/1     0     5     Tx     DOWN
ATM0/1/2     0     16    PVC     ATM0/0/1     0     16    Tx     DOWN
ATM0/1/2     0     18    PVC     ATM0/0/1     0     18    Tx     UP
ATM0/1/2     0     100   PVC     ATM0/0/1     0     100   Tx     DOWN
ATM0/1/2     0     201   PVC     ATM0/0/1     0     201   Tx     DOWN
ATM0/1/2     0     202   PVC     ATM0/0/1     0     202   Tx     DOWN
ATM0/1/2     0     300   PVC     ATM0/0/1     0     300   Tx     DOWN
ATM0/1/2     0     301   PVC     ATM0/0/1     0     301   Tx     DOWN
```

Examples

The following example displays VC snoop connection VPI 0, VCI 543 on ATM interface 0/0/0.

```
Switch# show atm snoop-vc interface atm 0/0/0 0 543

Interface: ATM0/0/0, Type: oc3suni
VPI = 0  VCI = 543
Status: UP
Time-since-last-status-change: 00:00:19
Connection-type: PVC
Cast-type: snooping-leaf
Packet-discard-option: enabled
Usage-Parameter-Control (UPC): pass
Wrr weight: 32
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states:  Not-applicable
Cross-connect-interface: ATM0, Type: ATM Swi/Proc
Cross-connect-VPI = 0
Cross-connect-VCI = 42
Cross-connect-UPC: pass
Cross-connect OAM-configuration: disabled
Cross-connect OAM-state:  Not-applicable
Threshold Group: 6, Cells queued: 0
Rx cells: 0, Tx cells: 4
Rx connection-traffic-table-index: 3
Rx service-category: VBR-RT (Realtime Variable Bit Rate)
Rx pcr-clp01: 424
Rx scr-clp01: 424
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx       mbs: 50
Tx connection-traffic-table-index: 3
Tx service-category: VBR-RT (Realtime Variable Bit Rate)
Tx pcr-clp01: 424
Tx scr-clp01: 424
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: 50
```

Related Commands

Command	Description
atm snoop-vc	Sets the current port snooping configuration and actual register values per-VC.

show atm snoop-vp

To display the current port snooping configuration and actual register values per-VP, use the **show atm snoop-vp** EXEC command.

show atm snoop-vp [**interface atm** *card/subcard/port*]

Syntax Description

card/subcard/port	Specifies the card, subcard, and port number of the ATM interface.

Command Modes

EXEC

Command History

Release	Modification
11.2(8.0.1)	New command

Usage Guidelines

This command displays the snoop test port name, snoop option (enabled or disabled), monitored port name (if enabled), and snoop direction (receive or transmit if enabled).

Examples

The following example displays all VP snoop connections on the switch.

```
Switch# show atm snoop-vp
       Snooping                              Snooped
Interface    VPI  Type    X-Interface  X-VPI Dir    Status
ATM0/0/2     0    PVC     ATM0/1/1     0     Rx     DOWN
ATM0/0/2     0    PVC     ATM0/1/1     0     Rx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     UP
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
ATM0/1/2     0    PVC     ATM0/0/1     0     Tx     DOWN
```

Related Commands

Command	Description
atm snoop-vp	Sets the current port snooping configuration and actual register values per-VP.

show atm status

To display current information about ATM interfaces and the number of installed connections, use the **show atm status** EXEC command.

show atm status

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following is sample output from the **show atm status** command.

```
Switch# show atm status
NUMBER OF INSTALLED CONNECTIONS: (P2P=Point to Point, P2MP=Point to MultiPoint)

Type       PVCs  SoftPVCs      SVCs      PVPs  SoftPVPs      SVPs      Total
P2P          11         0         0         1         0         0         12
P2MP          0         0         0         0         0         0          0
                                     TOTAL INSTALLED CONNECTIONS =         12

PER-INTERFACE STATUS SUMMARY AT 14:56:19 UTC Mon Mar 25 1997:
   Interface      IF         Admin  Auto-Cfg    ILMI Addr     SSCOP    Hello
     Name       Status      Status    Status    Reg State     State    State
------------- -------- ------------ -------- ------------ --------- --------
ATM0               UP           up      n/a   Restarting      Idle      n/a
ATM3/0/0           UP           up     done  UpAndNormal    Active  2way_in
ATM3/0/0.25      DOWN     shutdown  waiting          n/a      Idle      n/a
ATM3/0/0.26        UP           up  waiting  WaitDevType      Idle      n/a
ATM3/0/1         DOWN         down  waiting          n/a      Idle      n/a
ATM3/0/2           UP           up     done  UpAndNormal    Active  2way_in
ATM3/0/3         DOWN         down  waiting          n/a      Idle      n/a
```

show atm traffic

To display the ATM layer traffic information for all of the ATM interfaces, use the **show atm traffic** EXEC command.

show atm traffic

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays input and output cell counts and a 5-minute transfer rate for all ATM interfaces.

Examples

The following example is sample output from the **show atm traffic** command.

```
Switch# show atm traffic
Interface ATM0
Rx cells: 0
Tx cells: 0
5 minute input rate: 0 bits/sec, 0 cells/sec
5 minute output rate: 0 bits/sec, 0 cells/sec

Interface ATM3/0/0
Rx cells: 0
Tx cells: 0
5 minute input rate: 0 bits/sec, 0 cells/sec
5 minute output rate: 0 bits/sec, 0 cells/sec
```

Related Commands

Command	Description
show atm interface	Displays ATM-specific information about an ATM interface.

show atm vc

To display the ATM layer connection information about the virtual connection, use the **show atm vc** EXEC command.

show atm vc
show atm vc interface {**atm** | **atm-p**} *card/subcard/port*[**.***vpt#*] [*vpi vci*] [**detail**]
show atm vc [**cast-type** *cast-type*] [**conn-type** *conn-type*] [**interface** {**atm** | **atm-p**} *card/subcard/port*[**.***vpt#*]]
show atm vc traffic [**interface** {**atm** | **atm-p**} *card/subcard/port*[**.***vpt#*] [*vpi vci*]]

Syntax Description

card/subcard/port	Card, subcard, and port number for the interface.
.*vpt#*	Virtual path tunnel identifier to display.
vpi vci	Virtual path identifier and virtual channel identifier to display.
detail	Displays the Rx cell drops and queued-cells for all VCs on a given interface.
cast-type	Specifies the cast type as multipoint-to-point (**mp2p**), point-to-multipoint (**p2mp**), or point-to-point (**p2p**).
conn-type	Specifies the connection type as **pvc**, **soft-vc**, **svc**, or **tvc**.
traffic	Displays the virtual channel cell traffic.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example shows a display for the **vc** interface.

```
Switch# show atm vc
Interface    VPI   VCI   Type    X-Interface  X-VPI X-VCI  Encap Status
ATM0/1/0     0     5      PVC     ATM0         0     52    QSAAL  UP
ATM0/1/0     0     16     PVC     ATM0         0     32    ILMI   UP
ATM0/1/0     0     18     PVC     ATM0         0     73    PNNI   UP
ATM0/1/1     0     5      PVC     ATM0         0     53    QSAAL  DOWN
ATM0/1/1     0     16     PVC     ATM0         0     33    ILMI   DOWN
ATM0/1/2     0     5      PVC     ATM0         0     54    QSAAL  DOWN
ATM0/1/2     0     16     PVC     ATM0         0     34    ILMI   DOWN
ATM0/1/3     0     5      PVC     ATM0         0     55    QSAAL  UP
ATM0/1/3     0     16     PVC     ATM0         0     35    ILMI   UP
ATM1/0/0     0     5      PVC     ATM0         0     56    QSAAL  UP
ATM1/0/0     0     16     PVC     ATM0         0     36    ILMI   UP
ATM1/0/1     0     5      PVC     ATM0         0     57    QSAAL  DOWN
ATM1/0/1     0     16     PVC     ATM0         0     37    ILMI   DOWN
ATM1/0/2     0     5      PVC     ATM0         0     58    QSAAL  DOWN
ATM1/0/2     0     16     PVC     ATM0         0     38    ILMI   DOWN
ATM1/0/3     0     5      PVC     ATM0         0     59    QSAAL  UP
ATM1/0/3     0     16     PVC     ATM0         0     39    ILMI   UP
ATM1/0/3     0     18     PVC     ATM0         0     72    PNNI   UP
```

```
ATM1/1/0     0     5      PVC     ATM0         0     60    QSAAL  DOWN
ATM1/1/0     0     16     PVC     ATM0         0     40    ILMI   DOWN
ATM1/1/1     0     5      PVC     ATM0         0     61    QSAAL  DOWN
ATM1/1/1     0     16     PVC     ATM0         0     41    ILMI   DOWN
```

Table 18-13 describes the fields shown in the display.

Table 18-13 show atm vc Field Descriptions

Field	Description
Interface	Displays the card, subcard, and port number of the specified ATM interface.
VPI	Displays the number of the virtual path identifier.
VCI	Displays the number of the virtual channel identifier.
Type	Displays the type of interface for the specified ATM interface.
X-Interface	Displays the card, subcard, and port number of the cross-connected value for the ATM interface.
X-VPI	Displays the number of the cross-connected value of the virtual path identifier.
X-VCI	Displays the number of the cross-connected value of the virtual channel identifier.
Encap	Displays the type of connection on the interface.
Status	Displays the current state of the specified ATM interface.

Examples

The following example displays the output for interface ATM 1/0/0 with and without the **detail** keyword which shows the Rx-cel-drops and the Rx-queued-cells:

```
Swtich# show atm vc traffic interface atm 1/0/0
Interface         VPI  VCI   Type      rx-cell-cnts     tx-cell-cnts
ATM-P1/0/0        0    32    PVC               1                0
ATM-P1/0/0        0    33    PVC               0                0
ATM-P1/0/0        0    34    PVC               0                0
ATM-P1/0/0        0    35    PVC               0                0
ATM-P1/0/0        0    37    PVC               0                0
ATM-P1/0/0        0    39    PVC               0                0
ATM-P1/0/0        0    48    PVC               0                0
Switch# show atm vc traffic interface atm 1/0/0 detail
Interface         VPI  VCI   Type      rx-cell    tx-cell rx-cell-drop rx-cell-qued
ATM-P1/0/0        0    32    PVC             1          0           0           0
ATM-P1/0/0        0    33    PVC             0          0           0           0
ATM-P1/0/0        0    34    PVC             0          0           0           0
ATM-P1/0/0        0    35    PVC             0          0           0           0
ATM-P1/0/0        0    37    PVC             0          0           0           0
ATM-P1/0/0        0    39    PVC             0          0           0           0
ATM-P1/0/0        0    48    PVC             0          0           0           0
```

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The following example shows the interface information for ATM 1/0/0, with VPI 0, VCI 5, and packet discard enabled, using an FC-PCQ.

```
Switch# show atm vc interface atm 1/0/0 1 100

Interface: ATM1/0/0, Type: oc3suni
VPI = 0  VCI = 5
Status: UP
Time-since-last-status-change: 1d18h
Connection-type: PVC
```

```
Cast-type: point-to-point
Packet-discard-option: enabled
Usage-Parameter-Control (UPC): pass
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states:  Not-applicable
Cross-connect-interface: ATM0, Type: ATM Swi/Proc
Cross-connect-VPI = 0
Cross-connect-VCI = 58
Cross-connect-UPC: pass
Cross-connect OAM-configuration: disabled
Cross-connect OAM-state:  Not-applicable
Encapsulation: AALQSAAL
Rx cells: 32520, Tx cells: 32520
Rx connection-traffic-table-index: 3
Rx service-category: VBR-RT (Realtime Variable Bit Rate)
Rx pcr-clp01: 424
Rx scr-clp01: 424
Rx mcr-clp01: none
Rx      cdvt: none
Rx       mbs: 50
Tx connection-traffic-table-index: 3
Tx service-category: VBR-RT (Realtime Variable Bit Rate)
Tx pcr-clp01: 424
Tx scr-clp01: 424
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: 50
Crc Errors:0, Sar Timeouts:0, OverSizedSDUs:0
BufSzOvfl:  Small:0, Medium:0, Big:0, VeryBig:0, Large:0
```

Examples

The following example shows the interface information for ATM 1/0/0, with VPI 1, VCI 100 and packet discard disabled, using the switch processor feature card.

```
Switch# show atm vc interface atm 1/0/0 1 100

Interface: ATM1/0/0, Type: oc12suni
VPI = 1 VCI = 100
Status: UP
Time-since-last-status-change: 02:55:48
Connection-type: PVC
Cast-type: point-to-point
Packet-discard-option: disabled
Usage-Parameter-Control (UPC): pass
Wrr weight: 32
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states:  Not-applicable
```

```
Cross-connect-interface: ATM0/1/1, Type: oc3suni
Cross-connect-VPI = 1
Cross-connect-VCI = 100
Cross-connect-UPC: pass
Cross-connect OAM-configuration: disabled
Cross-connect OAM-state:  Not-applicable
Threshold Group: 5, Cells queued: 0
Rx cells: 0, Tx cells: 0
Tx Clp0:0,  Tx Clp1: 0
Rx Clp0:0,  Rx Clp1: 0
Rx Upc Violations:0, Rx cell drops:0
Rx Clp0 q full drops:0, Rx Clp1 qthresh drops:0
Rx connection-traffic-table-index: 1
Rx service-category: UBR (Unspecified Bit Rate)
Rx pcr-clp01: 7113539
Rx scr-clp01: none
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx       mbs: none
Tx connection-traffic-table-index: 1
Tx service-category: UBR (Unspecified Bit Rate)
Tx pcr-clp01: 7113539
Tx scr-clp01: none
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: none
```

Examples

The following example shows the interface information for ATM 1/0/0, with VPI 0, VCI 5, and packet discard enabled, using the FC-PFQ.

```
Switch# show atm vc interface atm 1/0/0 0 5

Interface: ATM1/0/0, Type: oc12suni
VPI = 0  VCI = 5
Status: UP
Time-since-last-status-change: 03:02:32
Connection-type: PVC
Cast-type: point-to-point
Packet-discard-option: enabled
Usage-Parameter-Control (UPC): pass
Wrr weight: 32
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states:  Not-applicable
Cross-connect-interface: ATM0, Type: ATM Swi/Proc
Cross-connect-VPI = 0
Cross-connect-VCI = 45
Cross-connect-UPC: pass
Cross-connect OAM-configuration: disabled
Cross-connect OAM-state:  Not-applicable
Encapsulation: AALQSAAL
Threshold Group: 6, Cells queued: 0
Rx cells: 2302, Tx cells: 2301
Tx Clp0:2301,  Tx Clp1: 0
Rx Clp0:2302,  Rx Clp1: 0
Rx Upc Violations:0, Rx cell drops:0
Rx pkts:0, Rx pkt drops:0
Rx connection-traffic-table-index: 3
```

```
Rx service-category: VBR-RT (Realtime Variable Bit Rate)
Rx pcr-clp01: 424
Rx scr-clp01: 424
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx       mbs: 50
Tx connection-traffic-table-index: 3
Tx service-category: VBR-RT (Realtime Variable Bit Rate)
Tx pcr-clp01: 424
Tx scr-clp01: 424
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: 50
Crc Errors:0, Sar Timeouts:0, OverSizedSDUs:0
BufSzOvfl:  Small:0, Medium:0, Big:0, VeryBig:0, Large:0
```

Examples

The following example shows the last explicit path status for a soft VC. Note that the first listed explicit path, *new_york.path2*, shows an unreachable result, but the second explicit path, *new_york.path1*, has succeeded.

```
Switch# show atm vc interface atm0/1/3 0 40
VPI = 0 VCI = 40
Status:UP
Time-since-last-status-change:00:00:03
Connection-type:SoftVC
Cast-type:point-to-point
 Soft vc location:Source
 Remote ATM address:47.0091.8100.0000.0060.705b.d900.4000.0c81.9000.00
 Remote VPI:0
 Remote VCI:40
 Soft vc call state:Active
 Number of soft vc re-try attempts:0
 First-retry-interval:5000 milliseconds
 Maximum-retry-interval:60000 milliseconds
 Aggregate admin weight:15120
 TIME STAMPS:
 Current Slot:4
  Outgoing Release   February 26 17:02:45.940
  Incoming Rel comp  February 26 17:02:45.944
  Outgoing Setup     February 26 17:02:45.948
  Incoming Connect   February 26 17:02:46.000
  Outgoing Setup     February 23 11:54:17.587
  Incoming Release   February 23 11:54:17.591
  Outgoing Setup     February 23 11:54:37.591
  Incoming Release   February 23 11:54:37.611
  Outgoing Setup     February 23 11:55:17.611
  Incoming Connect   February 23 11:55:17.655

 Explicit-path 1:result=6 PNNI_DEST_UNREACHABLE  (new_york.path2)
 Explicit-path 2:result=1 PNNI_SUCCESS  (new_york.path1)
 Only-explicit
Packet-discard-option:disabled
Usage-Parameter-Control (UPC):pass
Number of OAM-configured connections:0
OAM-configuration:disabled
OAM-states: Not-applicable
```

```
Cross-connect-interface:ATM0/0/3.4, Type:oc3suni
Cross-connect-VPI = 4
Cross-connect-VCI = 35
Cross-connect-UPC:pass
Cross-connect OAM-configuration:disabled
Cross-connect OAM-state: Not-applicable
Rx cells:0, Tx cells:0
Rx connection-traffic-table-index:1
Rx service-category:UBR (Unspecified Bit Rate)
Rx pcr-clp01:7113539
Rx scr-clp01:none
Rx mcr-clp01:none
Rx      cdvt:1024 (from default for interface)
Rx       mbs:none
Tx connection-traffic-table-index:1
Tx service-category:UBR (Unspecified Bit Rate)
Tx pcr-clp01:7113539
Tx scr-clp01:none
Tx mcr-clp01:none
Tx      cdvt:none
Tx       mbs:none
```

Table 18-14 describes the fields shown in the displays.

Table 18-14 show atm vc interface ATM Field Descriptions

Field	Description
Interface	Displays the card, subcard, and port number of the ATM interface.
VPI/VCI	Displays the number of the virtual path identifier and the virtual channel identifier.
Status	Displays the type of interface for the specified ATM interface.
Time-since-last-status-change	Displays the time elapsed since the last status change.
Connection-type	Displays the type of connection for the specified ATM interface.
Cast-type	Displays the type of cast for the specified ATM interface.
Packet-discard-option	Displays the state of the packet-discard option; enabled or disabled.
Usage-Parameter-Control (UPC)	Displays the state of the UPC.
Wrr weight	Weighted round-robin weight.
Number of OAM-configured connections	Displays the number of connections configured by OAM.
OAM-configuration	Displays the state of the OAM configuration; enabled or disabled.
OAM-states	Displays the status of the OAM state; applicable or not applicable.
Cross-connect-interface	Displays the card, subcard, and port number of the cross-connected ATM.
Cross-connect-VPI	Displays the number of the cross-connected virtual path identifier.
Cross-connect-VCI	Displays the number of the cross-connected virtual channel identifier.
Cross-connect-UPC	Displays the state of the cross-connected UPC; pass or not pass.
Cross-connect OAM-configuration	Displays the state of the cross-connected OAM configuration; enabled or disabled.

Table 18-14 show atm vc interface ATM Field Descriptions (continued)

Field	Description
Cross-connect OAM-state	Displays the status of the cross-connected OAM state; applicable or not applicable.
Encapsulation	Encapsulation type.
Threshold Group/Cells queued	Displays the threshold group number and number of cells queued.
Rx cells/Tx cells	Displays the number of cells transmitted and received.
Tx Clp0/Tx Clp1	Displays the number of CLP=0 and CLP=1 cells transmitted.
Rx Clp0/Rx Clp1	Displays the number of CLP=0 and CLP=1 cells received.
Rx Upc Violations	Displays the number of UPC violations detected in the receive cell stream.
Rx cell drops	Displays the number of cells received and then dropped.
Rx pkts	Displays the number of packets received.
Rx pkt drops	Displays the number of packets dropped.
RxClp0q full drops	Displays the number of CLP=0 cells received and then dropped for exceeding the input queue size.
Rx Clp1 qthresh drops	Displays the number of CLP=1 cells received and then dropped for exceeding the discard threshold of the input queue.
Rx connection-traffic-table-index	Displays the receive connection-traffic-table-index.
Rx service-category	Displays the receive service category.
Rx pcr-clp01	Displays the receive peak cell rate for clp01 cells (kbps).
Rx scr-clp01	Displays the receive sustained cell rate for clp01 cells (kbps).
Rx mcr-clp01	Displays the receive minimum cell rate for clp01 cells (kbps).
Rx cdvt	Displays the receive cell delay variation tolerance.
Rx mbs	Displays the receive minimum burst size.
Tx connection-traffic-table-index	Displays the transmit connection-traffic-table-index.
Tx service-category	Displays the transmit service category.
Tx pcr-clp01	Displays the transmit peak cell rate for clp01 cells (kbps).
Tx scr-clp01	Displays the transmit sustained cell rate for clp01 cells (kbps).
Tx mcr-clp01	Displays the transmit minimum cell rate for clp01 cells (kbps).
Tx cdvt	Displays the transmit cell delay variation tolerance.
Tx mbs	Displays the transmit minimum burst size.
Crc error	Displays the number of cyclic redundancy check errors.
Sar Timeouts	Displays the number of segmentation and reassembly timeouts.
OverSizedSDUs	Displays the number of oversized service data units.
BufSzOvfl	Displays the number of buffer size overflows.

Examples

The following example shows how to enter the command for a display of the cast type, point-to-multipoint, and connection type soft-vc on ATM interface 0/0/0.

```
Switch# show atm vc cast-type p2mp conn-type soft-vc interface ATM 0/0/0
```

The following example shows how to enter the command for a display of the connection type SVC and cast-type point-to-point on ATM interface 0/0/0.

```
Switch# show atm vc conn-type svc cast-type p2p interface ATM 0/0/0
```

The following example shows the transmit and receive cell count on ATM interface 1/0/0, with VPI 1 and VPI 100.

```
Switch# show atm vc traffic interface atm 1/0/0 1 100
Interface    VPI     VCI      Type      rx-cell-cnts     tx-cell-cnts
ATM1/0/0     1       100       PVC                0                0
```

Related Commands

Command	Description
atm pvc	Used to create a PVC.
show atm interface	Displays ATM-specific information about an ATM interface.
show atm status	Displays current information about ATM interfaces and the number of installed connections.
show atm vc signalling	Displays the ATM VC signalling activity.

show atm vc signalling

To show the ATM VC signalling activity, use the **show atm vc signalling** EXEC command.

show atm vc signalling [**interface atm** *card/subcard/port*] [**cast-type p2p** | **p2mp**] [**detail**]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
cast-type	Displays the payload type protocol and the message type protocol information for a point-to-point (**p2p**) or point-to-multipoint (**p2mp**) connection.
detail	Displays detailed information about a connection, including type of connection, calling party, current and previous state, and how the call was initiated.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show atm vc signalling** EXEC command.

```
Switch# show atm vc signalling

Interface  VPI   VCI   CallRef  X-Interface VPI    VCI     CallRef  Type
*ATM0/0/0  0     32       1       ATM1/0/0   0     32       1       MTP
*ATM0/0/0  0     33       2       ATM1/0/0   0     33       2       MTP
*ATM0/0/0  0     34       3       ATM1/0/0   0     34       3       MTP
*ATM0/0/0  0     35       4       ATM1/0/0   0     35       4       MTP
*ATM0/0/0  0     36       5       ATM1/0/0   0     36       5       MTP
*ATM0/0/0  0     37       6       ATM1/0/0   0     37       6       MTP
*ATM0/0/0  0     38       7       ATM1/0/0   0     38       7       MTP
*ATM0/0/0  0     39       8       ATM1/0/0   0     39       8       MTP
*ATM0/0/0  0     40       9       ATM1/0/0   0     40       9       MTP
*ATM0/0/0  0     41       10      ATM1/0/0   0     41       10      PTP
*ATM0/0/0  0     42       11      ATM1/0/0   0     42       11      PTP
*ATM0/0/0  0     43       12      ATM1/0/0   0     43       12      PTP
*ATM0/0/0  0     44       13      ATM1/0/0   0     44       13      PTP
*ATM0/0/0  0     45       14      ATM1/0/0   0     45       14      PTP
*ATM0/0/0  0     46       15      ATM1/0/0   0     46       15      PTP
*ATM0/0/0  0     47       16      ATM1/0/0   0     47       16      PTP
*ATM0/0/0  0     48       17      ATM1/0/0   0     48       17      PTP
*ATM0/0/0  0     49       18      ATM1/0/0   0     49       18      PTP
*ATM0/0/0  0     50       19      ATM1/0/0   0     50       19      PTP
```

The following example is sample output from the **show atm vc signalling** EXEC command using the **p2p** option.

```
Switch# show atm vc signalling cast-type p2p
Interface  VPI   VCI   CallRef  X-Interface VPI    VCI     CallRef  Type
 ATM0      0     67       5        ATM0/1/1  0     32       1       PTP
*ATM0/0/0  0     32       1        ATM1/0/0  0     32       1       PTP
*ATM0/0/0  0     33       2        ATM1/0/0  0     33       2       PTP
*ATM0/0/0  0     34       3        ATM1/0/0  0     34       3       PTP
*ATM0/0/0  0     35       4        ATM1/0/0  0     35       4       PTP
*ATM0/0/0  0     36       5        ATM1/0/0  0     36       5       PTP
*ATM0/0/0  0     37       6        ATM1/0/0  0     37       6       PTP
*ATM0/0/0  0     38       7        ATM1/0/0  0     38       7       PTP
*ATM0/0/0  0     39       8        ATM1/0/0  0     39       8       PTP
*ATM0/0/0  0     40       9        ATM1/0/0  0     40       9       PTP
*ATM0/0/0  0     41       10       ATM1/0/0  0     41       10      PTP
*ATM0/0/0  0     42       11       ATM1/0/0  0     42       11      PTP
*ATM0/0/0  0     43       12       ATM1/0/0  0     43       12      PTP
*ATM0/0/0  0     44       13       ATM1/0/0  0     44       13      PTP
*ATM0/0/0  0     45       14       ATM1/0/0  0     45       14      PTP
*ATM0/0/0  0     46       15       ATM1/0/0  0     46       15      PTP
*ATM0/0/0  0     47       16       ATM1/0/0  0     47       16      PTP
```

The following sample shows the output using the **detail** and **cast-type** options with the **show atm vc signalling** command.

```
Switch# show atm vc signalling detail cast-type p2mp
(0/0/0:0  0,36 - 0005) p2p
    From: 47.222200000000000000000
    remote, Rcvd Connect Ack -> Active(N10),

(1/0/0:0  0,36 - 0005) p2p
      To: 47.111100000000000000000
      local , Req Connect Ack -> Active(N10),
```

Table 18-15 describes the fields from the **show atm vc signalling detail** command.

Table 18-15 show atm vc signalling detail Field Descriptions

Field	Description
0/0/0	The interface number.
0,36	The VCI/VCI number.
0005	The call reference number.
p2p	The type of connection.
From	The origin of the calling party.
remote/local	The call was initiated either remotely or locally.
Rcvd Connect Ack	The previous state of the call.
Active	The current state of the call.

show atm vp

To display the ATM layer connection information about the virtual path, use the **show atm vp** EXEC command.

show atm vp

show atm vp interface {**atm** | **atm-p**} *card/subcard/port*[**.***vpt#*] [*vpi vci*]

show atm vp cast-type *cast-type* [**conn-type** *conn-type*] [**interface** {**atm** | **atm-p**} *card/subcard/port*[**.***vpt#*]]

show atm vp traffic [**interface** {**atm** | **atm-p**} *card/subcard/port*[**.***vpt#*] [*vpi vci*]]

Syntax Description

card/subcard/port	Card, subcard, and port number for the interface.
.*vpt#*	Virtual path tunnel identifier.
vpi vci	Virtual path identifier and virtual channel identifier to display.
cast-type	Specifies the cast type as point-to-multipoint (**p2mp**) or point-to-point (**p2p**).
conn-type	Specifies the connection type as **pvc**, **soft-vc**, or **svc**.
traffic	Displays the virtual channel cell traffic.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show atm vp** command.

```
Switch# show atm vp
Interface     VPI    Type  X-Interface     X-VPI     Status
ATM3/1/1      1       SVP     ATM3/1/2     200       UP
ATM3/1/1      2       SVP     ATM3/1/2     201       UP
ATM3/1/1      3       SVP     ATM3/1/2     202       UP
ATM3/1/2      200     SoftVP  ATM3/1/1     1         UP
ATM3/1/2      201     SoftVP  ATM3/1/1     2         UP
ATM3/1/2      202     SoftVP  ATM3/1/1     3         UP
ATM3/1/2      255     SoftVP  NOT CONNECTED
```

The following is sample output from the **show atm vp** command for ATM 3/1/1.

```
Switch# show atm vp interface atm 3/1/1
Interface     VPI    Type  X-Interface     X-VPI     Status
ATM3/1/1      1       SVP     ATM3/1/2     200       UP
ATM3/1/1      2       SVP     ATM3/1/2     201       UP
ATM3/1/1      3       SVP     ATM3/1/2     202       UP
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show atm vp** command for ATM 0/1/0 and VP 18 with an FC-PCQ installed.

```
Switch# show atm vp interface atm 0/1/0 18

Interface: ATM0/1/0, Type: oc3suni
VPI = 18
Status: UP
Time-since-last-status-change: 16:13:58
Connection-type: PVP
Cast-type: point-to-point
Usage-Parameter-Control (UPC): pass
Number of OAM-configured connections: 52
OAM-configuration: Seg-loopback-on Ais-on
OAM-states:  OAM-Up
OAM-Loopback-Tx-Interval: 5
Cross-connect-interface: ATM0/1/2, Type: oc3suni
Cross-connect-VPI = 18
Cross-connect-UPC: pass
Cross-connect OAM-configuration: Seg-loopback-on Ais-on
Cross-connect OAM-state:  OAM-Up
OAM-Loopback-Tx-Interval: 5
Rx cells: 197554, Tx cells: 151430
Rx connection-traffic-table-index: 1
Rx service-category: UBR (Unspecified Bit Rate)
Rx pcr-clp01: 7113539
Rx scr-clp01: none
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx       mbs: none
Tx connection-traffic-table-index: 1
Tx service-category: UBR (Unspecified Bit Rate)
Tx pcr-clp01: 7113539
Tx scr-clp01: none
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: none
```

Examples

The following example is sample output from the **show atm vp** command for ATM 0/0/1 and VP 51 with the switch processor feature card installed.

```
Switch# show atm vp interface atm 0/0/1 51

Interface: ATM0/0/1, Type: oc3suni
VPI = 51
Status: TUNNEL
Time-since-last-status-change: 3d02h
Connection-type: PVP
Cast-type: point-to-point
Usage-Parameter-Control (UPC): pass
Wrr weight: 32
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states:  Not-applicable
Threshold Group: 5, Cells queued: 0
Rx cells: 0, Tx cells: 0
Tx Clp0:0,  Tx Clp1: 0
Rx Clp0:0,  Rx Clp1: 0
Rx Upc Violations:0, Rx cell drops:0
```

```
Rx Clp0 q full drops:0, Rx Clp1 qthresh drops:0
Rx connection-traffic-table-index: 1
Rx service-category: UBR (Unspecified Bit Rate)
Rx pcr-clp01: 7113539
Rx scr-clp01: none
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx       mbs: none
Tx connection-traffic-table-index: 1
Tx service-category: UBR (Unspecified Bit Rate)
Tx pcr-clp01: 7113539
Tx scr-clp01: none
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: none
```

Table 18-16 describes the fields shown in the display.

Table 18-16 show atm vp interface atm Field Descriptions

Field	Description
Interface	Displays the card, subcard, and port number of the ATM interface.
VPI/VCI	Displays the number of the virtual path identifier and the virtual channel identifier.
Status	Displays the type of interface for the specified ATM interface.
Time-since-last-status-change	Displays the time elapsed since the last status change.
Connection-type	Displays the type of connection for the specified ATM interface.
Cast-type	Displays the type of cast for the specified ATM interface.
Usage-Parameter-Control (UPC)	Displays the state of the UPC.
Number of OAM-configured connections	Displays the amount of connections configured by OAM.
OAM-configuration	Displays the state of the OAM configuration; enabled or disabled.
OAM-states	Displays the status of the OAM state; applicable or not applicable.
OAM Loopback-Tx-Interval	Displays the OAM loopback transmit interval.
Cross-connect-interface	Displays the cross-connect interface number.
Cross-connect-VPI	Displays the cross-connect VPI number.
Cross-connect-UPC	Displays the cross-connect UPC status.
Cross-connect OAM-configuration	Displays the configuration of the OAM in the cross-connect half-leg.
Cross-connect OAM-state	Displays the state of the OAM cross-connect half-leg.
OAM-Loopback-Tx-Interval	Displays the OAM loopback transmit interval.
Rx cells/Tx cells	Displays the number of cells transmitted and received.
Rx connection-traffic-table-index	Displays the receive connection-traffic-table-index.
Rx service-category	Displays the receive service category.
Rx pcr-clp01	Displays the receive peak cell rate for clp01 cells (kbps).

Table 18-16 show atm vp interface atm Field Descriptions (continued)

Field	Description
Rx scr-clp01	Displays the receive sustained cell rate for clp01 cells (kbps).
Rx mcr-clp01	Displays the receive minimum cell rate for clp01 cells (kbps).
Rx cdvt	Displays the receive cell delay variation tolerance.
Rx mbs	Displays the receive maximum burst size.
Tx connection-traffic-table-index	Displays the transmit connection-traffic-table-index.
Tx service-category	Displays the transmit service category.
Tx pcr-clp01	Displays the transmit peak cell rate for clp01 cells (kbps).
Tx scr-clp01	Displays the transmit sustained cell rate for clp01 cells (kbps).
Tx mcr-clp01	Displays the transmit minimum cell rate for clp01 cells (kbps)
Tx cdvt	Displays the transmit cell delay variation tolerance.
Tx mbs	Displays the transmit maximum burst size.

The following example shows how to display the cast type, point-to-multipoint, and connection type soft-VC information on ATM interface 0/0/0.

```
Switch# show atm vp cast-type p2mp conn-type soft-vc interface atm 0/0/0
```

The following example shows how display the connection type SVC and cast-type point-to-point information on ATM interface 0/0/0.

```
Switch# show atm vp conn-type svc cast-type p2p interface atm 0/0/0
```

Related Commands

Command	Description
show atm interface	Displays ATM-specific information about an ATM interface.
show atm status	Displays current information about ATM interfaces and the number of installed connections.

show bootflash:

To display information about the bootflash: file system, use the **show bootflash:** EXEC command.

show bootflash: [**all** | **chips** | **filesys**]

Syntax Description

all	Displays all flash information.
chips	Displays flash chip information.
file*sys*	Displays file system status information.

Defaults

Displays information about files in the file system.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command. Originally **show boot**.
12.0(3c)W5(9)	Modified: Changed to **show bootflash:**

Examples

The following example is sample output from the **show boot** command displaying chip information.

```
Switch# show bootflash: chips
******** RSP Internal Flash Bank -- Intel Chips ********
Flash SIMM Reg: 3424
  Flash SIMM PRESENT
  2 Banks
  Bank Size = 4M
  HW Rev = 4

Flash Status Registers: Bank 0
  Intelligent ID Code  : 89898989 A2A2A2A2
  Status Reg: 80808080

Flash Status Registers: Bank 1
  Intelligent ID Code  : 89898989 A2A2A2A2
  Status Reg: 80808080
```

Related Commands

Command	Description
boot	Cisco IOS command removed from this manual. Refer to Appendix D.
bert (Catalyst 8510 MSR and LightStream 1010)	Checks the bit errors on a line for a particular interval.
boot system	Specifies the system image that the switch loads at startup.
show version	Displays the system hardware configuration, software version, and names and sources of configuration files and boot images.

show buffers

Use the **show buffers** EXEC command to display statistics for the buffer pools on the network server.

show buffers [**address** *hex-addr* | **all** | **assigned** | **free** | **input-interface** *interface-type card/subcard/port* | **old** | **pool** *pool-name* [**dump** | **header** | **packet**]] | [**failures**]

Syntax Description

hex-addr	Address, in hexadecimal notation, of the buffer to display.
all	Displays all buffers.
assigned	Displays the buffers in use.
free	Displays the buffers available for use.
interface-type	Specifies an input interface as **atm**, **atm-p**, **cbr**, **ethernet**, or **null**.
card/subcard/port	Specifies the card, subcard, and port number for the interface.
old	Displays buffers older than one minute.
pool-name	Specifies the name of a buffer pool to use.
dump	Shows the buffer header and all data in the display.
header	Shows the buffer header only in the display.
packet	Shows the buffer header and packet data in the display.
failures	Displays buffer allocation failures.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show buffers** command with no arguments, showing all buffer pool information.

```
Switch# show buffers
Buffer elements:
     500 in free list (500 max allowed)
     19874 hits, 0 misses, 0 created

Public buffer pools:
Small buffers, 104 bytes (total 120, permanent 120):
     120 in free list (20 min, 250 max allowed)
     18937 hits, 0 misses, 0 trims, 0 created
     0 failures (0 no memory)
Middle buffers, 600 bytes (total 100, permanent 100):
     100 in free list (10 min, 200 max allowed)
     58957 hits, 0 misses, 0 trims, 0 created
     0 failures (0 no memory)
Big buffers, 1524 bytes (total 20, permanent 20):
     20 in free list (5 min, 200 max allowed)
     1123 hits, 0 misses, 0 trims, 0 created
     0 failures (0 no memory)
VeryBig buffers, 4520 bytes (total 10, permanent 10):
```

```
     10 in free list (0 min, 300 max allowed)
     0 hits, 0 misses, 0 trims, 0 created
     0 failures (0 no memory)
Large buffers, 5024 bytes (total 0, permanent 0):
     0 in free list (0 min, 20 max allowed)
0 hits, 0 misses, 0 trims, 0 created
     0 failures (0 no memory)
Huge buffers, 18024 bytes (total 0, permanent 0):
     0 in free list (0 min, 13 max allowed)
     0 hits, 0 misses, 0 trims, 0 created
     0 failures (0 no memory)

Interface buffer pools:
AAL5_Small buffers, 512 bytes (total 512, permanent 512):
     0 in free list (0 min, 512 max allowed)
     512 hits, 0 misses
     512 max cache size, 512 in cache
AAL5_Medium buffers, 4096 bytes (total 128, permanent 128):
     0 in free list (0 min, 128 max allowed)
     128 hits, 0 misses
     128 max cache size, 128 in cache
AAL5_Large buffers, 9216 bytes (total 64, permanent 64):
     0 in free list (0 min, 64 max allowed)
     64 hits, 0 misses
     64 max cache size, 64 in cache
```

Table 18-17 describes the significant fields shown in the display.

Table 18-17 show buffers Field Descriptions

Field	Description
Buffer elements	Buffer elements are small structures used as placeholders for buffers in internal operating system queues. Buffer elements are used when a buffer might need to be on more than one queue.
Free list	Total number of the currently unallocated buffer elements.
Max allowed	Maximum number of buffers that are available for allocation.
Hits	Count of successful attempts to allocate a buffer when needed.
Misses	Count of buffer allocation attempts that resulted in growing the buffer pool to allocate a buffer.
Created	Count of new buffers created to satisfy buffer allocation attempts when the available buffers in the pool have already been allocated.
Small buffers	Buffers that are 104 bytes long.
Middle buffers	Buffers that are 600 bytes long.
Big buffers	Buffers that are 1524 bytes long.
VeryBig buffers	Buffers that are 4520 bytes long.
Large buffers	Buffers that are 5024 bytes long.
Huge buffers	Buffers that are 18024 bytes long.
Total	Total number of this type of buffer.
Permanent	Number of these buffers that are permanent.
Free list	Number of available or unallocated buffers in that pool.

Table 18-17 show buffers Field Descriptions (continued)

Field	Description
Min	Minimum number of free or unallocated buffers in the buffer pool.
Max allowed	Maximum number of free or unallocated buffers in the buffer pool.
Hits	Count of successful attempts to allocate a buffer when needed.
Misses	Count of buffer allocation attempts that resulted in growing the buffer pool in order to allocate a buffer.
Trims	Count of buffers released to the system because they were not being used. This field is displayed only for dynamic buffer pools, not interface buffer pools, which are static.
Created	Count of new buffers created in response to misses. This field is displayed only for dynamic buffer pools, not interface buffer pools, which are static.
Total	Total number of this type of buffer.
Permanent	Number of these buffers that are permanent.
Free list	Number of available or unallocated buffers in that pool.
Min	Minimum number of free or unallocated buffers in the buffer pool.
Max allowed	Maximum number of free or unallocated buffers in the buffer pool.
Hits	Count of successful attempts to allocate a buffer when needed.
Fall backs	Count of buffer allocation attempts that resulted in falling back to the smallest public buffer pool that is at least as big as the interface buffer pool.
Max Cache Size	Maximum number of buffers from interface pool that can be in the buffer pool's cache. Each interface buffer pool has its own cache. These are not additional permanent buffers; they come from the interface's buffer pools. Some interfaces place all buffers from the interface pool into the cache. In this case, it is normal for the *free list* to display 0.
Failures	Total number of allocation requests that failed because no buffer was available for allocation; the datagram was lost. Such failures normally occur at interrupt level.
No memory	Number of failures that occurred because no memory was available to create a new buffer.

show calendar

To display the calendar hardware setting, use the **show calendar** EXEC command.

show calendar

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
1.1(4)	New command

Usage Guidelines

You can compare the time and date shown with this command with the time and date listed using the **show clock** command to verify that the calendar and system clock are synchronized. The time displayed is relative to the configured time zone.

Examples

In the following example, the hardware calendar indicates the time stamp of 12:13:44 p.m. on Friday, April 4, 1997.

```
Switch# show calendar
12:13:44 PST Fri April 4 1997
```

Related Commands

Command	Description
show clock	Displays the system clock.

show capability (Catalyst 8540 MSR)

To display the capabilities of the primary or secondary route processor and the software version that is running, use the **show capability** EXEC command.

show capability {**primary** | **secondary**}

Syntax Description

primary	Displays the capabilities of the primary route processor.
secondary	Displays the capabilities of the secondary route processor.

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

The **show capability** display includes hardware and functional versions of the various components.

Examples

The following example shows capabilities of the primary route processor for the ATM switch router.

```
Switch# show capability primary
  Dram Size is :64 MB
  Pmem Size is :4 MB
  Nvram Size is :512 KB
  BootFlash Size is :8 MB
  ACPM hw version 3.1
  ACPM functional version 3.8
  Netclk Module present flag :1
  NCLK hw version 1.0
  NCLK func version 1.2
  Printing the parameters for Switch card: 0
  SWC0 HW version 2.2
  SWC0 Functional version 0.40
  SWC0 Table memory size: 8 MB
  SWC0 Feat Card Present Flag: 1
  SWC0 Feat Card HW version 1.0
  SWC0 Feat Card Functional version 2.0
  Printing the parameters for Switch card: 1
  SWC1 HW version 0.0
  SWC1 Functional version 0.0
  SWC1 Table memory size: 0 MB
  SWC1 Feat Card Present Flag: 0
  SWC1 Feat Card HW version 0.0
  SWC1 Feat Card Functional version 0.0
  Printing the parameters for Switch card: 2
  SWC2 HW version 2.2
  SWC2 Functional version 0.40
  SWC2 Table memory size: 8 MB
```

```
  SWC2 Feat Card Present Flag: 1
  SWC2 Feat Card HW version 1.0
  SWC2 Feat Card Functional version 2.0
Number of Drivers in IOS: 3
  Driver 0 type: 2560
  Driver 0 Functional Version 0.27
  Driver 1 type: 2562
  Driver 1 Functional Version 0.1
  Driver 2 type: 2564
  Driver 2 Functional Version 0.1
```

show cdp

To display global CDP information, including timer and hold-time information, use the **show cdp** EXEC command.

show cdp

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show cdp** command. Global CDP timer and hold-time parameters are set to the defaults of 60 and 180 seconds, respectively.

```
Switch# show cdp
Global CDP information:
        Sending CDP packets every 60 seconds
        Sending a holdtime value of 180 seconds
```

Related Commands

Command	Description
cdp holdtime	Cisco IOS command removed from this manual. Refer to Appendix D.
cdp timer	Cisco IOS command removed from this manual. Refer to Appendix D.
show cdp entry	Displays information about a neighbor device listed in the CDP table.
show cdp neighbors	Displays information about neighbors.

show cdp entry

To display information about a neighbor device listed in the CDP table, use the **show cdp entry** EXEC command.

show cdp entry *entry-name* [**protocol** | **version**]

Syntax Description

entry-name	Name of the neighbor about which you want information.
protocol	Limits the display to information about the protocols enabled on a device.
version	Limits the display to information about the version of software running on the device.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show cdp entry protocol** command. Only information about the protocols enabled on *device.cisco.com* is displayed.

```
Switch# show cdp entry device.cisco.com protocol
Protocol information for device.cisco.com:
  IP address: 198.92.68.18
  CLNS address: 490001.1111.1111.1111.00
  DECnet address: 10.1
```

The following example is sample output from the **show cdp entry version** command. Only information about the version of software running on *device.cisco.com* is displayed.

```
Switch# show cdp entry device.cisco.com version
Version information for device.cisco.com:
  GS Software (GS3), IOS Version xx.x(10302) [jhunt 161]
Copyright (c) 1986-1998 by cisco Systems, Inc.
Compiled Mon 07-Nov-97 14:34
```

Related Commands

Command	Description
show cdp neighbors	Displays information about neighbors.

show cdp interface

To display information about the interfaces on which CDP is enabled, use the **show cdp interface** EXEC command.

show cdp interface [*interface-type card/subcard/port*]

Syntax Description

interface-type	Type of interface, specified as **atm**, **atm-p**, **cbr**, **ethernet**, or **null**.
card/subcard/port	Card, subcard, and port number for the interface.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

Catalyst 8540 MSR

The following example is sample output from the **show cdp interface** command. Status information and information about CDP timer and hold-time settings is displayed for all interfaces on which CDP is enabled.

```
Switch# show cdp interface
Ethernet 0 is up, line protocol is up, encapsulation is ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
```

The following example is sample output from the **show cdp interface** command with an interface specified. Status information and information about CDP timer and hold-time settings is displayed for the Ethernet 0 interface only.

```
Switch# show cdp interface ethernet 0
Ethernet 0 is up, line protocol is up, encapsulation is ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show cdp interface** command. Status information and information about CDP timer and hold-time settings is displayed for all interfaces on which CDP is enabled.

```
Switch# show cdp interface
Aux0 is up, line protocol is up, encapsulation is SMDS
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet 0 is up, line protocol is up, encapsulation is ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
```

show cdp neighbors

To display information about neighbors, use the **show cdp neighbors** EXEC command.

show cdp neighbors [*interface-type card/subcard/port*] [**detail**]

Syntax Description

interface-type	Specifies the type of the interface connected to the neighbors in question.
card/subcard/port	Identifies the card, subcard, and port number of the interface connected to the neighbors in question.
detail	Displays detailed information about a neighbor (or neighbors), including network address, enabled protocols, hold time, and software version.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following is sample output from the **show cdp neighbors** command. Device ID, interface type and number, hold-time settings, capabilities, platform, and port ID information about the switch router's neighbors are displayed.

```
Switch# show cdp neighbors
Capability Codes: R - Switch, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
device.cisco.com      Eth 0          151         R T        AGS       Eth 0
device.cisco.com      Ser 0          165         R T        AGS       Ser 3
```

The following is sample output from the **show cdp neighbors detail** command, with information about the ATM neighbors, including network address, enabled protocols, and software version.

```
Switch# show cdp neighbors detail
Device ID: device.cisco.com
Entry address(es):
  IP address: 198.92.68.18
  CLNS address: 490001.1111.1111.1111.00
  DECnet address: 10.1
Platform: AGS, Capabilities: Switch Trans-Bridge
Interface: Ethernet 0, Port ID (outgoing port): Ethernet 0
Holdtime: 143 sec
Version:
GS Software (GS3), Experimental Version xx.x(10302) [asmith 161]
Copyright (c) 1986-1998 by Cisco Systems, Inc.
Compiled Mon 07-Nov-97 14:34
```

Related Commands

Command	Description
show cdp entry	Displays information about a neighbor device listed in the CDP table.

show cdp traffic

To display traffic information from the CDP table, use the **show cdp traffic** EXEC command.

show cdp traffic

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show cdp traffic** command.

```
Switch# show cdp traffic
CDP counters:
        Packets output: 94, Input: 75
        Hdr syntax: 0, Chksum error: 0, Encaps failed: 0
        No memory: 0, Invalid packet: 0, Fragmented: 0
```

In this example, traffic information is displayed, including the numbers of packets sent, the number of packets received, header syntax, checksum errors, failed encapsulations, memory problems, and invalid and fragmented packets. Header syntax indicates the number of packets CDP receives that have an invalid header format.

show ces address

To show all the configured CES-IWF ATM addresses, use the **show ces address** EXEC command.

show ces address

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show ces address** command.

```
Switch# show ces address
CES-IWF ATM Address(es):
47.0091.8100.0000.0061.705a.cd01.4000.0c80.0030.10  CBR0/0/0:0  vpi 0 vci 16
47.0091.8100.0000.0061.705a.cd01.4000.0c80.0034.10  CBR0/0/1:1  vpi 0 vci 1040
47.0091.8100.0000.0061.705a.cd01.4000.0c80.0034.20  CBR0/0/1:2  vpi 0 vci 1056
47.0091.8100.0000.0061.705a.cd01.4000.0c80.0038.10  CBR0/0/2:0  vpi 0 vci 2064
```

show ces circuit

To show detailed circuit information, use the **show ces circuit** EXEC command.

show ces circuit [**interface cbr** *card*/*subcard*/*port* [*circuits*]]

Syntax Description

card/subcard/port	Card, subcard, and port number of the CBR interface.
circuits	Number of circuits to display, from 0 to 31.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output about CBR interface 1/0/0 from the **show ces circuit** command.

```
Switch# show ces circuit interface cbr 1/0/0
Interface  Circuit  Circuit-Type     X-interface   X-vpi   X-vci Status
 CBR0/0/1    1       Active SoftVC     ATM1/0/1      0        33  UP
 CBR0/0/1    2       Active SoftVC     ATM1/0/1      0        34  UP
```

The following example is sample output about CBR interface 0/0/1 on circuit 1 using the **show ces circuit** command.

```
Switch# show ces circuit interface cbr 0/0/1 1
Circuit:Name CBR0/0/1:1, Circuit-state ADMIN_UP / Interface CBR0/0/1,
Circuit_id 1, Port-Type T1, Port-State UP
Port Clocking network-derived, aal1 Clocking Method CESIWF_AAL1_CLOCK_SYNC
Channel in use on this port: 1-24
Channels used by this circuit: 1-12
Cell-Rate: 2043, Bit-Rate 768000
cas OFF, cell_header 0x4100 (vci = 1040)
Configured CDV 2000 usecs, Measured CDV unavailable
De-jitter: UnderFlow unavailable, OverFlow unavaliable
ErrTolerance 8, idleCircuitdetect OFF, onHookIdleCode 0x0
state: VcActive, maxQueueDepth       42, startDequeueDepth       25
Partial Fill:       47, Structured Data Transfer 288
Active SoftVC
Src:atm addr 47.0091.8100.0000.0061.705a.cd01.4000.0c80.0034.10 vpi 0, vci 1040
Dst:atm addr 47.0091.8100.0000.0060.5c71.2001.4000.0c80.1034.10
```

show ces interface cbr

To show detailed CES port information, use the **show ces interface cbr** privileged EXEC command.

show ces interface cbr *card/subcard/port*

Syntax Description

card/subcard/port	Card, subcard, and port number of the CBR interface.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show ces interface cbr** command.

```
Switch# show ces interface cbr0/0/0
Interface:      CBR0/0/0        Port-type:T1-DCU
IF Status:      UP              Admin Status: UP
Channels in use on this port: 1-24
LineType: ESF        LineCoding: B8ZS  LoopConfig: NoLoop
SignalMode: NoSignalling   XmtClockSrc: network-derived
DataFormat: UnStructured   AAL1 Clocking Mode: Adaptive     LineLength: 0_110

LineState:  LossOfSignal
Errors in the Current Interval:
  PCVs        0 LCVs        0   ESs         0   SESs        0   SEFSs        0
  UASs        0 CSSs        0   LESs        0   BESs        0   DMs          0
Errors in the last 24Hrs:
  PCVs     1028 LCVs   190733   ESs         0   SESs        2   SEFSs        0
  UASs        0 CSSs        0   LESs        0   BESs        0   DMs          6
Input  Counters: 12160995 cells, 571566765 bytes
Output Counters: 83926483 cells, 3944544701 bytes
```

show ces status

To display the status of the ports on the CES interface, use the **show ces status** EXEC command.

show ces status

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show ces status** command.

```
Switch# show ces status
Interface      IF      Admin        Port  Channels in
     Name       Status   Status        Type      use
------------ -------- --------- ----------- -----------
     CBR0/0/0       UP        UP          T1        1-24
     CBR0/0/1       UP        UP          T1        1-24
     CBR0/0/2       UP        UP          T1        1-24
     CBR0/0/3       UP        UP          T1
```

show clock

To display the system clock, use the **show clock** EXEC command.

show clock [**detail**]

Syntax Description

detail	Indicates the clock source (NTP, VINES, and so on) and the current summertime setting (if any).

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The system clock keeps an authoritative flag that indicates whether or not the time is believed to be accurate. If system clock has been set by a timing source, the flag is set. If the time is not authoritative, it is used only for display purposes. Until the clock is authoritative and the authoritative flag is set, the flag prevents the switch from causing peers to synchronize to itself when the switch time is invalid.

The symbol that precedes the **show clock** display indicates the following:

- An asterisk (*) indicates not authoritative.
- A blank space indicates authoritative.
- A period (.) indicates authoritative, but NTP is not synchronized.

Examples

The following sample output shows that the current clock is authoritative and that the time source is NTP.

```
Switch# show clock detail
15:29:03.158 PST Fri Ap 4 1997
Time source is NTP
```

Related Commands

Command	Description
clock set	Cisco IOS command removed from this manual. Refer to Appendix D.
show calendar	Displays the calendar hardware setting.

show compress

To display compression statistics, use the **show compress** EXEC command.

show compress

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show compress** command.

```
Switch# show compress
Serial0
uncompressed bytes xmt/rcv 10710562/11376835
1  min avg ratio xmt/rcv 2.773/2.474
5  min avg ratio xmt/rcv 4.084/3.793
10 min avg ratio xmt/rcv 4.125/3.873
no bufs xmt 0 no bufs rcv 0
resets 0
```

Table 18-18 describes the fields shown in the display.

Table 18-18 show compress Field Descriptions

Field	Description
Serial0	Name and number of the interface.
uncompressed bytes xmt/rcv	Total number of uncompressed bytes sent and received.
1 min avg ratio xmt/rcv 5 min avg ratio xmt/rcv 10 min avg ratio xmt/rcv	Static compression ratio for bytes sent and received, averaged over a period of 1 minute, 5 minutes, and 10 minutes.
no bufs xmt	Number of times buffers were not available to compress data being sent.
no bufs rcv	Number of times buffers were not available to uncompress data being received.
resets	Number of resets.

show controllers

To display information about a physical port device, use the **show controllers** EXEC command.

show controllers [**atm0** | **ethernet0** | {**atm** | **ethernet**} *card/subcard/port* |
{**atm** *card/subcard/imagroup*} | **e1** *card/subcard/port* [**brief** | **tabular**] |
t3 *card/subcard/port*[**:***t1-line*] [**brief** | **tabular**]]

Syntax Description

atm0	Specifies an ATM interface on the route processor.
ethernet0	Specifies an Ethernet interface on the route processor.
atm	Specifies an ATM interface.
ethernet	Specifies an Ethernet interface.
e1	Specifies a channelized E1 interface.
t3	Specifies a channelized DS3 (CDS3) interface.
card/subcard/port	Specifies the card, subcard, and port number for the interface.
:t1-line	Identifies the T1 line number, which is a number between 1 and 24. If you do not specify this option, all configured T1 lines display.
*card/subcard/***ima***group*	Specifies the card, subcard, and IMA group number (0 to 3) for the IMA interface.
brief	Displays a subset of information.
tabular	Displays statistical information in a tabular format.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The output from this command shows what transmit clock is configured for an interface.

The **show controllers t3** command also displays the port adapter and LSIPC states. If the LSIPC is in a down state, this command shows the number of keepalive attempts that have been made. This command also displays the firmware and hardware version for the Frame Relay port adapter.

Examples

The following example shows output used for debugging for OC-3 counters from the **show controllers atm** command on ATM 0/1/0.

```
Switch# show controllers atm 0/1/0
IF Name: ATM0/1/0    Chip Base Address: A8908000
Port type: OC3    Port rate: 155 Mbps    Port medium: SM Fiber
Port status:SECTION LOS    Loopback:None    Flags:8300
TX Led: Traffic Pattern    RX Led: Traffic Pattern  TX clock source:  free-running
Framing mode:  sts-3c
Cell payload scrambling on
Sts-stream scrambling on
```

```
OC3 counters:

  Key: txcell - # cells transmitted
       rxcell - # cells received
       b1     - # section BIP-8 errors
       b2     - # line BIP-8 errors
       b3     - # path BIP-8 errors
       ocd    - # out-of-cell delineation errors - not implemented
       g1     - # path FEBE errors
       z2     - # line FEBE errors
       chcs   - # correctable HEC errors
uhcs   - # uncorrectable HEC errors

txcell:3745, rxcell:98171428
b1:0, b2:0, b3:0, ocd:0
g1:0, z2:0, chcs:0, uhcs:0

OC3 errored secs:
b1:0, b2:0, b3:0, ocd:0
g1:0, z2:0, chcs:0, uhcs:0

OC3 error-free secs:
b1:1249, b2:1249, b3:1249, ocd:0
g1:1249, z2:1249, chcs:1249, uhcs:1249

Clock reg:80

  mr 0x30, mcfgr 0x70, misr 0xE0, mcmr 0xEF,
  mctlr 0x48, cscsr 0x50, crcsr 0x48, rsop_cier 0x00,
  rsop_sisr 0x47, rsop_bip80r 0x00, rsop_bip81r 0x00, tsop_ctlr 0x80,
  tsop_diagr 0x80, rlop_csr 0x02, rlop_ieisr 0x0E, rlop_bip8_240r 0x00,
  rlop_bip8_241r 0x00, rlop_bip8_242r 0x00, rlop_febe0r 0x00, rlop_febe1r 0x00,
  rlop_febe2r 0x00, tlop_ctlr 0x80, tlop_diagr 0x80, rpop_scr 0x1C,
  rpop_isr 0x9F, rpop_ier 0xFD, rpop_pslr 0xFF, rpop_pbip80r 0x00,
  rpop_pbip81r 0x00, rpop_pfebe0r 0x00, rpop_pfebe1r 0x00, tpop_cdr 0x00,
  tpop_pcr 0x00, tpop_ap0r 0x00, tpop_ap1r 0x90, tpop_pslr 0x13,
  tpop_psr 0x00, racp_csr 0x84, racp_iesr 0x15, racp_mhpr 0x00,
  racp_mhmr 0x00, racp_checr 0x00, racp_uhecr 0x00, racp_rcc0r 0x00,
  racp_rcc1r 0x00, racp_rcc2r 0x00, racp_cfgr 0xFC, tacp_csr 0x04,
  tacp_iuchpr 0x00, tacp_iucpopr 0x6A, tacp_fctlr 0x00, tacp_tcc0r 0x00,
  tacp_tcc1r 0x00, tacp_tcc2r 0x00, tacp_cfgr 0x08,
```

Table 18-19 describes some key fields in the output.

Table 18-19 show controllers Field Descriptions

Field	Description
B1	Selection errors. Calculated over all bits of previous frame after scrambling. Always even parity.
B2	Line errors. Calculated over SPE and line overhead bytes of the previous frame before scrambling.
B3	Path BIP-8 errors. Calculated over SPE of the STE-3c of the previous frame before scrambling.
G1,Z2	Number of FEBE detected by the receive path. Error numbers are inserted into the appropriate bit positions of the outgoing G1,Z2 bytes.

Examples

The following example is sample output from the **show controllers atm0** command.

```
Switch# show controllers atm0
printing the copy stats here...
TxCopiedPkts :0
TxNonCopiedPkts :0
RxCopiedPkts :0
RxNonCopiedPkts :0
Island0: 60ABA4E4 first Ctl address : 607C7890
first blk address A8051000(288)- A80FFE00(7FF)  :total 577(1399)
```

The following example is sample output used for debugging for the T1 interface from the **show controllers atm** command on ATM 0/1/0.

```
Switch# show controllers atm 0/1/0
IF Name: ATM0/1/0, framer Base Address: A8909000
Port type: T1    Port rate: 1.5 Mbps    Port medium: UTP
Port status:Good Signal    Loopback:None    Flags:8008
TX Led: Traffic Pattern    RX Led: Traffic Pattern   CD Led: Green
TX clock source:  free-running
T1 Framing Mode:  ESF PLCP format
FERF on AIS is on
FERF on RED is on
FERF on OOF is on
FERF on LOS is on
LBO: between 0-110

Counters:

  Key: txcell   - # cells transmitted
       rxcell   - # cells received
       lcv      - # line code violations
       ferr     - # framing bit error event counter
       bee     - # bit error event, CRC-6 in ESF, Framing bit error in SF
       b1       - # PLCP BIP errors
       fe       - # PLCP framing pattern octet errors
       plcp_febe- # PLCP FEBE errors
       hcs      - # uncorrectable HEC errors
       uicell   - # unassigned/idle cells dropped

txcell:21460, rxcell:20736
lcv:0, ferr:0, bee:0
febe:0, b1:0, fe:0, plcp_febe:7, hcs:0, uicell:338177354

PDH errored secs:
lcv:0, ferr:0, bee:0
febe:0, b1:0, fe:0, plcp_febe:1, hcs:0

PDH error-free secs:
lcv:101438, ferr:101438, bee:101438
febe:0, b1:101438, fe:101438, plcp_febe:101437, hcs:101438

 Misc reg: 10

  cfgr 0x08, ier 0x00, isr 0x00, ctlr 0x00,
  imrr 0x21, dlcr 0x78, rboc_cier 0x38, rboc_isr 0x3F,
  t3frmr_cfgr 0x80, t3frmr_ier 0x00, t3frmr_isr 0x00, t3frmr_statr 0x02,
  rfdl_cfgr 0x84, rfdl_esr 0x80, rfdl_statr 0x87, rfdl_datar 0x87,
  pmon_pmr 0x38, pmon_iesr 0x38, pmon_lcvec0r 0xFF, pmon_lcvec1r 0xFF,
  pmon_fbeec0r 0xFF, pmon_fbeec1r 0xFF, pmon_sezdc0r 0x9A, pmon_sezdc1r 0xF5,
  pmon_peec0r 0x00, pmon_peec1r 0x00, pmon_ppeec0r 0x00, pmon_ppeec1r 0x00,
  pmon_febeec0r 0x00, pmon_febeec1r 0x00, t3tran_cfgr 0x00, t3tran_diagr 0x00,
  xfdl_cfgr 0x00, xfdl_isr 0x02, xfdl_txdatar 0x00, xboc_coder 0x7F,
```

```
  splr_cfgr 0x84, splr_ier 0x80, splr_isr 0x80, splr_statr 0x00,
  splt_cfgr 0x84, splt_ctlr 0x80, splt_diagr 0x00, splt_f1r 0x00,
  cppm_locmr 0x0C, cppm_copmr 0x70, cppm_b1ec0r 0x00, cppm_b1ec1r 0x00,
  cppm_feec0r 0x00, cppm_feec1r 0x00, cppm_febec0r 0x00, cppm_febec1r 0x00,
  cppm_hcsec0r 0x00, cppm_hcsec1r 0x00, cppm_iucc0r 0x04, cppm_iucc1r 0x0D,
  cppm_rcc0r 0x01, cppm_rcc1r 0x00, cppm_tcc0r 0x01, cppm_tcc1r 0x00,
  rxcp_ctlr 0x28, rxcp_frcr 0x00, rxcp_iesr 0x00, rxcp_iucph1r 0x00,
  rxcp_iucph2r 0x00, rxcp_iucph3r 0x00, rxcp_iucph4r 0x01, rxcp_iucmh1r 0xFF,
  rxcp_iucmh2r 0xFF, rxcp_iucmh3r 0xFF, rxcp_iucmh4r 0xFF, rxcp_upcph1r 0x00,
  rxcp_upcph2r 0x00, rxcp_upcph3r 0x00, rxcp_upcph4r 0x00, rxcp_upcmh1r 0xFF,
  rxcp_upcmh2r 0xFF, rxcp_upcmh3r 0xFF, rxcp_upcmh4r 0xFF, rxcp_hcscsr 0xFC,
  rxcp_lctctr 0xB4, txcp_ctlr 0xA0, txcp_iesr 0x08, txcp_iucph1r 0x00,
  txcp_iucph2r 0x00, txcp_iucph3r 0x00, txcp_iucph4r 0x01, txcp_iucph5r 0x52,
  txcp_iucpr 0x00, e3frmr_foptr 0x00, e3frmr_moptr 0x00, e3frmr_fier 0x00,
  e3frmr_fiisr 0x01, e3frmr_meier 0x00, e3frmr_meiir 0x00, e3frmr_mesr 0x00,
  e3tran_foptr 0x00, e3tran_sdoptr 0x01, e3tran_bip8emr 0x00, e3tran_maoptr 0x00,
ttb_ctlr 0x04, ttb_ttisr 0x00, ttb_iar 0x00, ttb_idr 0x00,
  ttb_eptlr 0x00, ttb_ptlcsr 0x00, sffpcsr 0x20, pcr 0x20,

IF Name: ATM0/1/0, framer Base Address: A8909000

 Dump of framer registers 16 per line
00-0F : 30 00 00 00  00 00 00 0C  00 00 00 00  02 02 00 00
10-1F : 22 02 22 22  50 50 50 50  20 2F 2F 23  7C 78 FF FF
20-2F : 11 00 01 01  01 01 01 01  01 01 38 3F  50 40 40 40
30-3F : FC FF FF FF  00 02 00 00  84 80 87 87  40 00 08 44
40-4F : D0 D4 D0 D0  30 30 00 00  00 03 00 00  00 00 00 00
50-5F : 00 00 FF 00  C4 C0 7F 7F  1C 1C C0 C0  18 18 18 18
60-6F : 18 18 18 18  18 18 18 00  00 00 00 00  00 00 00 00
70-7F : 00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00
```

Examples

The following example is sample output used for debugging for the IMA interface from the **show controllers** command on ATM interface 0/0/ima1.

```
Switch# show controllers atm 0/0/ima1
ATM0/0/ima1 is up
        PAM State is UP
        Firmware Version: 1.6
        FPGA Version : 1.2
        Boot version : 1.2
        mmcport      = 0        hwgrp number = 0
 rxgsr        - Receive Group status register
 txgsr        - Transmit Group status register
 lsbdcbcell   - # of cells in the delay comp buffer LSB
 msbdcbcell   - Number of cells in the delay comp buffer MSB
 txlnks       - Links in the Group in TX direction
 rxlnks       - Links in the Group in RX direction
 scci_reg     - SCCI register
 imaid_reg    - IMA ID register
 gsc_reg      - GSC register
 txtiming_reg - tx timing ref register
 txtest_reg   - tx test link register1
 txtestp_reg  - tx test pattern register
 rxtestp_reg  - rx test pattern register
rxgsr =0x3, txsgr =0x5, dcbcelllsb =0x33, dcbcellmsb =0x5,
txlnks =0x7, rxlnks =0x0, scci_reg =0x7, imaid_reg =0x1,
gsc_reg=0xA2, txtiming_reg=0x20, txtst_reg=0x20, txtstp_reg=0x0,rxtstp_reg=0x40,

linkinfo_reg=0xFClinkinfo_reg=0xFClinkinfo_reg=0xFClinkinfo_reg=0x0
linkinfo_reg=0x0linkinfo_reg=0x0linkinfo_reg=0x0linkinfo_reg=0x0
```

Related Commands

Command	Description
show switch fabric (Catalyst 8540 MSR)	Shows the details of the switch fabric for an ATM switch router.
show ima interface	Displays the IMA interface, IMA group, and ATM layer hardware configuration.

show debugging

To display information about the types of CDP debugging that are enabled for your switch router, use the **show debugging** EXEC command.

show debugging

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show debugging** command, which shows all three types of CDP debugging enabled.

```
Switch# show debugging
CDP:
  CDP packet info debugging is on
  CDP events debugging is on
  CDP neighbor info debugging is on

CDP-PA: Packet received from neon.cisco.com on interface Ethernet0
CDP-EV: Encapsulation on interface Serial0 failed
CDP-AD: Aging entry for neon.cisco.com, on interface Ethernet0
```

show diag

Catalyst 8540 MSR

To display power-on diagnostics status for the Catalyst 8540 MSR, use the **show diag** EXEC command.

show diag [**power-on**]

Catalyst 8510 MSR and LightStream 1010

To display environmental statistics and power-on diagnostics status for the Catalyst 8510 MSR and the LightStream 1010, use the **show diag** EXEC command.

show diag [**environment** | **power-on** | **all**]

Syntax Description

environment	Displays environmental status.
power-on	Displays the status of power-on diagnostics.
all	Displays the status of all command options.

Defaults

Catalyst 8540 MSR: None

Catalyst 8510 MSR and LightStream 1010: None

Command Modes

EXEC for all models

Usage Guidelines

Catalyst 8540 MSR

The power-on diagnostic test results for the Catalyst 8540 MSR are displayed using the **show diag** command.

Catalyst 8510 MSR and LightStream 1010

The power-on or hardware reset diagnostics provide full sets of test suites for the Catalyst 8510 MSR and the LightStream 1010. The test results are stored in the switch memory and an interface is provided using the **show diag** command. If an error is detected during the test, the status LED turns red.

Examples

Catalyst 8540 MSR

The following example is sample output from the **show diag power-on** EXEC command on a switch router primary route processor.

```
Switch# show diag power-on

Cat8540 Power-on Diagnostics Status (.=Pass,F=Fail,U=Unknown,N=Not Applicable)
--------------------------------------------------------------------------------
   Last Power-on Date: 97/09/15   Time: 18:17:50

   BOOTFLASH:  .   PCMCIA-Slot0: N   PCMCIA-Slot1: N
   CPU-IDPROM: .   NVRAM-Config: .
   ETHSRAM:    .   DRAM:         .   SARSRAM:       .
```

```
   PS0:        .   PS2:          N   PS (12V):     .
   FAN:        .   Temperature:  .   Bkp-IDPROM:   .


   Ethernet-port Access:   .         Ethernet-port CAM-Access: .
   Ethernet-port Loopback: .         Ethernet-port Loadgen:    .

Power-on Diagnostics Passed.
```

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show diag environment** EXEC command.

```
Switch# show diag environment
Temperature:                        OK
Fan:                                OK
Voltage:                            OK
Power Supply#0 type: Power One,  status:    Failure
Power Supply#1 type: Astec,  status:    OK
```

The following example is sample output from the **show diag power-on** EXEC command on a switch router with an FC-PCQ installed.

```
Switch# show diag power-on
XXXXXX Power-on Diagnostics Status (.=Pass,F=Fail,U=Unknown,N=Not Applicable)
--------------------------------------------------------------------------------
   Last Power-on Date: 97/04/14   Time: 16:03:22
   BOOTFLASH:  .   PCMCIA-Slot0: .   PCMCIA-Slot1: N
   CPU-IDPROM: .   FCard-IDPROM: .   NVRAM-Config: .
   SRAM:       .   DRAM:         .
   PS1:        .   PS2:          N   PS (12V):     .
   FAN:        .   Temperature:  .   Bkp-IDPROM:    .

   MMC-Switch Access: .              Accordian Access: .
   LUT: .   ITT: .   OPT: .   OTT: .   STK: .   LNK: .   ATTR: .   Queue: .
   Cell-Memory:  .

   Feature-Card Access: .
   ICC: .   OCC: .   OQP: .   OQE: .   CC:  .   RT:  .
   TM0: .   TM1: .   TMC: .   IT:  .   LT:  .   RR:  .   ABR: .

Access/Interrupt/Loopback/CPU-MCast/Port-MCast/FC-MCast/FC-TMCC Test Status:
Ports                     0         1         2         3
--------------------------------------------------------------------------------
PAM 0/0 (T1CE)          .......   .......   .......   .......
PAM 0/1 (155MM)         .......   .......   .......   .......
PAM 1/0 (155MM)         .......   .......   .......   .......
PAM 1/1 (155MM)         .......   .......   .......   .......
PAM 3/0 (155UTP)        .......   .......   .......   .......
PAM 3/1 (DS3Q)        .......   .......   .......   .......Ethernet-port Access:   .
Ethernet-port CAM-Access: .
   Ethernet-port Loopback: .         Ethernet-port Loadgen:    .
```

Examples

The following example is sample output from the **show diag power-on** EXEC command on a switch router with the switch processor feature card installed.

```
Switch# show diag power-on
XXXXXX Power-on Diagnostics Status (.=Pass,F=Fail,U=Unknown,N=Not Applicable)
--------------------------------------------------------------------------------
   Last Power-on Diags  Date: 97/11/05   Time: 11:03:41   By: V 3.2

   BOOTFLASH:  .   PCMCIA-Slot0: N   PCMCIA-Slot1: N
   CPU-IDPROM: .   FCard-IDPROM: .   NVRAM-Config: .
   SRAM:       .   DRAM:         .

   PS1:        N   PS2:          N   PS (12V):     .
   FAN:        .   Temperature:  .   Bkp-IDPROM:   .

   MMC-Switch Access: .              Accordian Access: .
   LUT: .   ITT: .   OPT: .   OTT: .   STK: .   LNK: .   ATTR: .   Queue: .
   Cell-Memory:  .

switch processor feature card
    Access: .
     RST: .    REG: .    IVC: .    IFILL: .    OVC: .    OFILL: .

    TEST:
     CELL: .   SNAKE: .   RATE: .   MCAST: .   SCHED: .
     TGRP: .   UPC  : .   ABR : .   RSTQ : .

Access/Interrupt/Loopback/CPU-MCast/Port-MCast/FC-MCast/FC-TMCC Test Status:
Ports                     0         1         2         3
--------------------------------------------------------------------------------
PAM 0/0 (155UTP)        .....NN   .....NN   .....NN   .....NN
PAM 1/0 (155MM)         .....NN   .....NN   .....NN   .....NN
PAM 1/1 (622)           .....NN      N         N         N
PAM 3/0 (622MM)         .....NN      N         N         N
PAM 3/1 (DS3Q)          .....NN   .....NN   .....NN   .....NN

   Ethernet-port Access:   .         Ethernet-port CAM-Access: .
   Ethernet-port Loopback: .         Ethernet-port Loadgen:    .

Power-on Diagnostics Passed.
```

The following example is sample output from the **show diag all** EXEC command on an ATM switch router.

```
Switch# show diag all
XXXXXX Power-on Diagnostics Status (.=Pass,F=Fail,U=Unknown,N=Not Applicable)
--------------------------------------------------------------------------------

environment
-----------
Temperature:                        OK
Fan:                                OK
Voltage:                            OK
Power Supply#0 type: Power One,  status:    Failure
Power Supply#1 type: Astec,  status:    OK
```

Related Commands

Command	Description
show hardware	Displays the revision number of the hardware.

show diag online (Catalyst 8540 MSR)

To display test results for system diagnostic online tests, use the **show diag online** command.

show diag online [**detail** | **status**] [**access** | **oir** | **snake**]

Syntax Description

detail	Displays test detail for the specified test.
status	Displays test status for the specified test.
access	The access tests ensure connectivity at a configurable interval between the primary route processor and the following: • Active switch processors • Standby switch processor, if it is present • Feature cards • Port adapters • Interface modules Whenever the access test detects a hardware failure, the system issues an error message to the console. If the access test detects a hardware problem with an active switch processor, the standby switch processor, if present, automatically takes over and becomes an active switch processor. The system generates an SNMP trap when the switchover occurs.
oir	Online insertion and removal (OIR) tests check the functioning of the switch fabric and interfaces on a per-port basis. The switch router performs these tests when the system boots up and when you insert a port adapter or interface module into a slot. The OIR test sends a packet to the interface loopback and expects to receive it back within a certain time period. If the packet does not reach the port within the expected time period, or the route processor receives a corrupted packet, the system issues an error message to the console, generates an SNMP trap, and brings the port to an administrative down state.
snake	The snake test establishes a connection across all the active ports in the switch router, originating and terminating at the primary route processor. The route processor establishes a connection by sending a packet to each port in turn, which then terminates at the route processor. If the packet does not reach the route processor within the expected time period, or the received packet is corrupted, further testing is performed to isolate and disable the port causing the problem.The size of the packet and frequency of the test are configurable to minimize the impact on system performance. The snake test supports all ATM interface modules and enhanced Gigabit Ethernet interface modules. It does not support ATM port adapters, Fast Ethernet interface modules, or Gigabit Ethernet interface modules.

Defaults

No default.

Command Modes

Privileged EXEC, EXEC

Command History

Release	Modification
12.0(13)W5(19)	New command

Usage Guidelines

The access and snake online diagnostic tests run at user specified intervals and results are stored. The OIR diagnostic test has a variable packet size that can be configured. The **show diag online** command displays test results.

Diagnostic tests must be enabled by using the **diag online** command before the **show diag online** command display current diagnostic test results.

Examples

The following example is sample output from the **show diag online access** command.

```
Switch# show diag online access
========  Access Test Status and Details ========
======== Online Access Test Status ========

Current Test Status : Test is Enabled
Current Frequency of Access Test : 100 seconds

Slot  Card-Type       Test Status
----  ----------      ------------
 0/*  Super Cam       Pass
 0/0  8T1 IMA PAM     Pass
 0/1  8E1 IMA PAM     Pass
 2/*  ARM PAM         Pass
 3/*  ETHERNET PAM    Pass
 5/*  Switch Card     Pass
 5/0  Feature Card    Pass
 7/*  Switch Card     Pass
 7/0  Feature Card    Pass
 9/*  OC48c PAM       Pass
10/*  OCM Board       Pass
10/0  QUAD 622 Gen    Pass
11/*  OC48c PAM       Pass
12/*  OCM Board       Pass
12/0  QUAD 622 Gen    Pass

======== Online Access Test Status End ========
======== Online Access Test Details ========

Current Test Status : Test is Enabled
Current Frequency of Access Test : 100 seconds

Slot Card-Type       Iteration    Success    Failure    Last Failure
---- ----------      ----------   -------    -------    ------------
 0/* Super Cam       3247         3247       0          ----
 0/0 8T1 IMA PAM     3247         3247       0          ----
 0/1 8E1 IMA PAM     3247         3247       0          ----
 2/* ARM PAM         3247         3247       0          ----
 3/* ETHERNET PAM    3247         3247       0          ----
 5/* Switch Card     3247         3247       0          ----
 5/0 Feature Card    3247         3247       0          ----
 7/* Switch Card     3247         3247       0          ----
 7/0 Feature Card    3247         3247       0          ----
 9/* OC48c PAM       3247         3247       0          ----
10/* OCM Board       3247         3247       0          ----
10/0 QUAD 622 Generi 3247         3247       0          ----
11/* OC48c PAM       3247         3247       0          ----
12/* OCM Board       3247         3247       0          ----
12/0 QUAD 622 Generi 3247         3247       0          ----
```

```
======== Online Access Test Details End ========
Switch#
```

The following example is sample output from the **show diag online detail oir** command.

```
Switch# show diag online detail oir
======== Online OIR Test Details ========
Current Test Status : Test is Enabled
-------- Previous failure details ----------
```

```
Port    Card Type   Pkt Size  Err Type                  Test Time LOOP
_______ _____________ ________ ____________________  _____________ ____
00/1/01 8E1 IMA PAM       300 OIR_TIMER_ERR              00:00:43  PIF
00/1/03 8E1 IMA PAM       300 OIR_TIMER_ERR              00:00:43  PIF

02/0/00                   300 OIR_TEST_ABORT             18:00:38  PHY
02/0/01                   300 OIR_TEST_ABORT             18:00:38  PHY


-------- Complete details --------
Port    Tx Pkt    Rx Pkt    Success   Failure   Total Tests
_______ _________ _________ _________ _________ ___________
00/0/00         1         1         1         0           1
00/0/01         1         1         1         0           1
00/0/02         1         1         1         0           1
00/0/03         1         1         1         0           1
00/1/00         1         1         1         0           1
00/1/01         2         1         1         1           2
00/1/02         1         1         1         0           1
00/1/03         2         1         1         1           2

02/0/00         0         0         0         1           0
02/0/01         0         0         0         1           0

03/0/00         1         1         1         0           1
03/0/01         1         1         1         0           1
03/0/02         1         1         1         0           1
03/0/03         1         1         1         0           1
03/0/04         1         1         1         0           1
03/0/05         1         1         1         0           1
03/0/06         1         1         1         0           1
03/0/07         1         1         1         0           1
03/0/08         1         1         1         0           1
03/0/09         1         1         1         0           1
03/0/10         1         1         1         0           1
03/0/11         1         1         1         0           1
03/0/12         1         1         1         0           1
03/0/13         1         1         1         0           1
03/0/14         1         1         1         0           1
03/0/15         1         1         1         0           1

09/0/00         2         2         2         0           2

10/0/00         2         2         2         0           2
10/0/01         2         2         2         0           2
10/0/02         2         2         2         0           2
10/0/03         2         2         2         0           2

11/0/00         2         2         2         0           2

12/0/00         2         2         2         0           2
12/0/01         2         2         2         0           2
12/0/02         2         2         2         0           2
12/0/03         2         2         2         0           2


Switch#
```

For additional information about the **show diag online** command, or about how to display results, refer to the *ATM Switch Router Software Configuration Guide*.

Related Commands

Command	Description
debug diag online (Catalyst 8540 MSR)	Enables or disables system debugging.
diag online (Catalyst 8540 MSR)	Enables, disables and configures system diagnostic tests.

show environment

To display temperature and voltage information on the console, use the **show environment** EXEC command.

show environment

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show environment** command.

```
Switch# show environment
Temperature:OK
Fan:OK
Voltage: OK
Power Supply #0 type: 0 Status:OK
```

show facility-alarm status (Catalyst 8540 MSR)

To display the current major and minor alarm status, if any, and to display the configuration of the alarm thresholds, use the **show facility-alarm status** EXEC command.

show facility-alarm status

Defaults

Displays all alarms and configuration settings.

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Examples

The following example displays the facility alarm status and configuration while no alarm condition exists.

```
Switch# show facility-alarm status
Thresholds:
 Core minor 38 major 50
Switch#
```

The following example displays the facility alarm status and configuration while an alarm condition exists.

```
Switch# show facility-alarm status
Thresholds:
 Core minor 45 major 53
SOURCE:Chassis TYPE:Power entry module 0 failure SEVERITY:Minor ACO:Normal
```

Related Commands

Command	Description
clear facility-alarm (Catalyst 8540 MSR)	Clears alarm conditions and resets the alarm contacts.
facility-alarm (Catalyst 8540 MSR)	Configures the temperatures so that the ATM switch router declares a major or minor alarm condition.

show file

To display the configuration stored in a specified file, use the **show file** EXEC command.

show file descriptors | **information** [[*device***:**]*filename*] | **systems**

Syntax Description

descriptors	Displays open file descriptors information.
information	Displays file information.
device:	Device containing the configuration file. The colon (**:**) is required. Valid devices are as follows: • **bootflash:** is the internal Flash memory. • **sec-bootflash:** is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR) • **nvram:** is the NVRAM on the route processor card. • **sec-nvram:** is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR) • **slot0:** is the first PC slot on the route processor card and is the initial default device. • **sec-slot0:** is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR) • **slot1:** is the second PC slot on the route processor card. • **sec-slot1:** is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR) If you omit the *device***:** argument, the system uses the default device specified by the **cd** command.
filename	Name of the file. The file can be of any type. The maximum filename length is 63 characters.
systems	Displays file systems information.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

When showing the configuration, the switch informs you whether the displayed configuration is a complete configuration or a distilled version. A distilled configuration is one that does not contain access lists.

Examples

The following example is sample output from the **show file** command.

```
Switch# show file slot0:switch-config
Using 534 out of 129016 bytes
!
version xx.x
!
hostname Cyclops
!
enable-password xxxx
service pad
!
boot system dross-system 131.108.13.111
boot system dross-system 131.108.1.111
!
exception dump 131.108.13.111
!
no ip ipname-lookup
!
decnet routing 13.1
decnet node-type area
decnet max-address 1023
!
interface Ethernet 0
ip address 131.108.1.1 255.255.255.0
ip helper-address 131.120.1.0
ip accounting
ip gdp
decnet cost 3
!
ip domain-name CISCO.COM
ip name-server 255.255.255.255
!
end
```

Related Commands

Command	Description
boot	Cisco IOS command removed from this manual. Refer to Appendix D.
cd	Cisco IOS command removed from this manual. Refer to Appendix D.

show flash

To display the layout and contents of Flash memory, use one of the following **show flash** EXEC commands.

show flash [**all** | **chips** | **filesys**]

Syntax Description

all	Displays the same information as the **dir** command when used with the **/all** and **/long** keywords. This information includes that displayed by the **filesys** and **chips** keywords.
chips	Displays information per partition and per chip, including which bank the chip is in, plus its code, size, and name.
filesys	Displays the Device Info Block, the Status Info, and the Usage Info.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **show flash** command displays the type of Flash memory present, any files that might currently exist in PC slot0: Flash memory, and the amounts of Flash memory used and remaining.

When you specify a PC slot as the device, the switch router displays the layout and contents of the Flash memory card inserted in the specified slot of the route processor card. When you omit the *device***:** argument, the switch router displays the default device specified by the **cd** command. Use the **pwd** command to show the current default device.

Examples

The following example is sample output from the **show flash** command.

```
Switch# show flash
-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .D FFFFFFFF 9099E94C 233F8C  22   2047753  Feb 29 1997 06:30:03 xxxxxx-i-m_Z
2   .. 1        E9D05582 458C54  29   2247751  Apr 04 1997 16:07:33 pnni/ls101Z

3306412 bytes available (4295764 bytes used)
```

As the display shows, the Flash memory can store and display multiple, independent software images for booting itself or for TFTP server software for other products. This feature is useful for storing default system software. These images can be stored in compressed format (but cannot be compressed by the switch).

To eliminate any files from Flash memory (invalidated or otherwise) and free up all available memory space, the entire Flash memory must be erased; individual files cannot be erased from Flash memory.

Table 18-20 describes the **show flash** display fields.

Table 18-20 show flash Field Descriptions

Field	Description
Name	Filename and status of a system image file. The invalidated status appears when a file has been rewritten (recopied) into Flash memory. The first (now invalidated) copy of the file is still present within Flash memory, but it is unusable because of the newest version.
crc	Address of the file in Flash memory.
Length	Size of the system image file (in bytes).
Bytes available/used	Amount of Flash memory used/available amount of Flash memory.

Examples

The following example is sample output for the **show flash all** command that has Flash memory partitioned.

```
Switch# show flash all
-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time------ name
1   .D FFFFFFFF 9099E94C 233F8C  22   2047753  Feb 29 1997 06:30:03 xxxxxx-i-m_Z
2   .. 1        E9D05582 458C54  29   2247751  Apr 04 1997 16:07:33 Switch/ls101Z

3306412 bytes available (4295764 bytes used)

-------- F I L E   S Y S T E M   S T A T U S --------
  Device Number = 2
DEVICE INFO BLOCK:
  Magic Number          = 6887635   File System Vers = 10000    (1.0)
  Length                = 800000    Sector Size      = 40000
  Programming Algorithm = 5         Erased State     = FFFFFFFF
  File System Offset    = 40000     Length = 740000
  MONLIB Offset         = 100       Length = A570
  Bad Sector Map Offset = 3FFFC     Length = 4
  Squeeze Log Offset    = 780000    Length = 40000
  Squeeze Buffer Offset = 7C0000    Length = 40000
  Num Spare Sectors     = 0
    Spares:
STATUS INFO:
  Writable
  NO File Open for Write
  Complete Stats
  No Unrecovered Errors
  Squeeze in progress
USAGE INFO:
  Bytes Used     = 418C54  Bytes Available = 3273AC
  Bad Sectors    = 0       Spared Sectors  = 0
  OK Files       = 1       Bytes = 224C48
  Deleted Files  = 1       Bytes = 1F3F0C
  Files w/Errors = 0       Bytes = 0

******** RSP Internal Flash Bank -- Intel Chips ********
Flash SIMM Reg: 401
  Flash SIMM PRESENT
  2 Banks
  Bank Size = 4M
  HW Rev = 1
```

```
Flash Status Registers: Bank 0
  Intelligent ID Code  : 89898989 A2A2A2A2
  Status Reg: 80808080

Flash Status Registers: Bank 1
  Intelligent ID Code  : 89898989 A2A2A2A2
  Status Reg: 80808080

slot0, slot1, bootflash, nvram, tftp, rcp
```

Table 18-21 describes the **show flash all** display fields.

Table 18-21 show flash all Fields for Partitioned Flash Memory

Field	Description
Bank-Size	Size of bank in bytes
Chip	Chip number
Bank	Bank number
Code	Code number
Size	Size of chip
Name	Name of chip

Related Commands None

show frame-relay connection-traffic-table-row

To display the Frame Relay traffic table, use the **show frame-relay connection-traffic-table-row** EXEC command.

show frame-relay connection-traffic table row [**from-row** | **row** *row*]

Syntax Description

from-row	Shows the table from a specific row.
row *row*	Shows the row that you specify.

Command Modes

EXEC

Command History

Release	Modification
12.0(1a)W5(5b)	New command

Usage Guidelines

The row index must be an integer between 1 and 2147483647. An asterisk is appended to row indexes created by SNMP but not made active. Since these rows are not active, they cannotbe used by connections. If neither the **row** nor **from-row** keywords are used, the entire table is displayed.

Examples

The following example shows information for a Frame Relay connection traffic table row.

```
Switch# show frame-relay connection-traffic-table-row
Row            cir      bc     be      pir      fr-atm      ATM Row
                                                Service-category
100          64000   32768   32768   64000     vbr-nrt         100
Swich#
```

Related Commands

Command	Description
frame-relay connection-traffic-table -row	Creates a table entry in the Frame Relay connection-traffic table.

show frame-relay interface resource

To display the current resource allocation on a Frame Relay interface, use the **show frame-relay interface resource** EXEC command.

show frame-relay interface resource serial *card/subcard/port***:***dlci*

Syntax Description

card/subcard/port	Interface card number, backplane slot number, port number, and logical serial port of the interface.
:dlci	Data-link connection identifier.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **show frame-relay interface resource** command display differs depending on whether the interface type is Frame Relay or Frame FUNI.

Examples

The following example displays detailed information about a Frame Relay port adapter.

```
Switch# show frame-relay interface resource serial 1/1/1:12
Encapsulation: FRAME-RELAY
Resource Management configuration:
    Input queues (PAM to switch fabric):
       Discard threshold: 87% vbr-nrt, 87% abr, 87% ubr
       Marking threshold: 75% vbr-nrt, 75% abr, 75% ubr
    Output queues (PAM to line):
       Discard threshold: 87% vbr-nrt, 87% abr, 87% ubr
       Marking threshold: 75% vbr-nrt, 75% abr, 75% ubr
    Overflow servicing for VBR: enabled
    Overbooking: 200%
Resource Management state:
  Available bit rates (in bps):
     3968000 vbr-nrt RX, 3968000 vbr-nrt TX
     3968000 abr RX,     3968000 abr TX
     3968000 ubr RX,     3968000 ubr TX
  Allocated bit rates (in bps):
     0 vbr-nrt RX, 0 vbr-nrt TX
     0 abr RX,     0 abr TX
     0 ubr RX,     0 ubr TX
Switch#
```

Related Commands

Command	Description
frame-relay input-queue	Configures discard marking thresholds on a Frame Relay interface in the input direction.
frame-relay output-queue	Configures discard marking thresholds on a Frame Relay interface in the output direction.

show frame-relay lmi

To display LMI specific status for an interface, use the **show frame-relay lmi** EXEC command.

show frame-relay lmi [**interface serial** *card/subcard/port*]

Syntax Description

card/subcard/port	Card, subcard, and port number for the serial interface.

Command Modes

EXEC

Command History

Release	Modification
12.0(1a)W5(5b)	New command

Usage Guidelines

Enter the **show frame-relay lmi** command without arguments to obtain statistics about all Frame Relay interfaces.

Examples

The following is sample output from the **show frame-relay lmi** command when the interface is an NNI:

```
Switch# show frame-relay lmi
LMI Statistics for interface Serial3/0/0:1 (Frame Relay NNI) LMI TYPE = CISCO
  Invalid Unnumbered info 0             Invalid Prot Disc 0
  Invalid dummy Call Ref 0              Invalid Msg Type 0
  Invalid Status Message 0              Invalid Lock Shift 0
  Invalid Information ID 0              Invalid Report IE Len 0
  Invalid Report Request 0              Invalid Keep IE Len 0
  Num Status Enq. Rcvd 11               Num Status msgs Sent 11
  Num Update Status Rcvd 0              Num St Enq. Timeouts 0
  Num Status Enq. Sent 10               Num Status msgs Rcvd 10
  Num Update Status Sent 0              Num Status Timeouts 0
```

Table 18-22 describes the field descriptions for the **show frame-relay lmi** command.

Table 18-22 show frame-relay lmi Field Descriptions

Field	Description
LMI Statistics	Signalling or LMI specification: CISCO, ANSI, or ITU-T.
Invalid Unnumbered info	Number of received LMI messages with an invalid unnumbered information field.
Invalid Prot Disc	Number of received LMI messages with an invalid protocol discriminator.
Invalid dummy Call Ref	Number of received LMI messages with invalid dummy call references.
Invalid Msg Type	Number of received LMI messages with an invalid message type.
Invalid Status Message	Number of received LMI messages with an invalid status message.

Table 18-22 show frame-relay lmi Field Descriptions (continued)

Field	Description
Invalid Lock Shift	Number of received LMI messages with an invalid lock shift type.
Invalid Information ID	Number of received LMI messages with an invalid information identifier.
Invalid Report IE Len	Number of received LMI messages with an invalid report IE length.
Invalid Report Request	Number of received LMI messages with an invalid report request.
Invalid Keep IE Len	Number of received LMI messages with an invalid keep IE length.
Num Status Enq. Sent	Number of LMI status inquiry messages sent.
Num Status Msgs Rcvd	Number of LMI status messages received.
Num Update Status Rcvd	Number of LMI asynchronous update status messages received.
Num Status Timeouts	Number of times the status message was not received within the keepalive time value.
Num Status Enq. Rcvd	Number of LMI status enquiry messages received.
Num Status Msgs Sent	Number of LMI status messages sent.
Num Status Enq. Timeouts	Number of times the status enquiry message was not received within the T392 DCE timer value.
Num Update Status Sent	Number of LMI asynchronous update status messages sent.

Related Commands

Command	Description
frame-relay pvc	Creates a Frame Relay-to-ATM network interworking or service interworking PVC or Frame-Relay- to-Frame Relay cross-connected PVC.

show functional-image-info

To display information about the in-system programmable device images (FPGA and PLD images) for a given module in the system, use the **show functional-image-info** EXEC command.

show functional-image-info {*slot* | *subslot*}

Syntax Description

slot	Physical slot number of the designated module. The range is 0 to 12.
subslot	Physical subslot number of the designated module. The range is 0 or 1.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example displays information about the motherboard in slot 8 of an ATM switch router.

```
Switch# show functional-image-info 8
Functional Version of the FPGA Image: 3.8
 #Jtag-Distribution-Format-B
 #HardwareRequired: 100(3.1,4.0,5.0)
 #FunctionalVersion: 3.8
 #Sections: 1
 #Section1Format: MOTOROLA_EXORMAX
  Copyright (c) 1996-98 by cisco Systems, Inc.
  All rights reserved.
  generated by:       holliday
  on:                 Fri Jul  3 14:43:15 PDT 1998
  using:              /cougar/bin/jtag_script Version 1.08
  config file:        cpu.jcf
  Chain description:
  Part type Bits Config file
  10k50     10   /cougar/custom/cpu/cidrFpga2/max/cidr_fpga.ttf
  xc4062    3    /cougar/custom/cpu/cubiFpga2/xil/cubi.bit
  xc4062    3    /cougar/custom/cpu/cubiFpga2/xil/cubi.bit
  generic   2
  XC4005    3    /cougar/custom/common/jtcfg/xil/jtcfg_r.bit
  Number devices            = 5
  Number of instruction bits = 21
  FPGA config file information:
  Bitgen date/time  Sum   File
  98/07/03 14:39:17 26503 /cougar/custom/cpu/cidrFpga2/max/cidr_fpga.ttf
  98/06/25 09:44:49 63850 /cougar/custom/cpu/cubiFpga2/xil/cubi.bit
  98/06/25 09:44:49 63850 /cougar/custom/cpu/cubiFpga2/xil/cubi.bit
  98/06/11 16:56:44 49904 /cougar/custom/common/jtcfg/xil/jtcfg_r.bit
```

Related Commands

Command	Description
reprogram	Upgrades nonvolatile microcode or programmable logic on a selected card from a Flash file.

show hardware

To display the revision number of the hardware, use the **show hardware** EXEC command.

Catalyst 8540 MSR

show hardware [**detail**]

Catalyst 8510 MSR and LightStream 1010

show hardware

Syntax Description

detail	Shows detailed hardware information. (Catalyst 8540 MSR)

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

Catalyst 8540 MSR

The following example is sample output from the **show hardware** command for anATM switch router.

```
Switch# show hardware

C8540 named Switch, Date: 10:54:26 UTC Thu Nov 19 1998

Slot Ctrlr-Type    Part No.  Rev  Ser No  Mfg Date   RMA No. Hw Vrs  Tst EEP
---- ------------  ---------- -- -------- --------- -------- ------- --- ---
 0/* OCM Board     73-2852-05 03 mic02360 Jan 00 00            1.0
 0/0 quad622 Gene  73-2852-05 03 mic02360 Jan 00 00            1.0
 2/* Super Cam               02 07285959 Jan 00 00            3.0
 2/0 155MM PAM     73-1496-03 06 02202232 Jan 15 96 00-00-00   3.0     0   2
 2/1 155MM PAM     73-1496-03 00 03115169 Feb 23 96 00-00-00   3.0     0   2
 4/* Route Proc    73-2644-05 02 mic02360 Jan 00 00            5.1
 5/* Switch Card   73-3315-07 02 MIC02390 Jan 00 00            7.1
 7/* Switch Card   73-3315-07 02 MIC02360 Jan 00 00            7.1
 8/* Route Proc    73-2644-05 00 mic02360 Jan 00 00            5.1
11/* Super Cam     73-2739-03 11 MIC02380 Jan 00 00            3.0
11/0 155MM PAM     73-1496-03 00 03114868 Feb 24 96 00-00-00   3.0     0   2

DS1201 Backplane EEPROM:
Model  Ver.  Serial  MAC-Address  MAC-Size  RMA  RMA-Number   MFG-Date
------ ---- -------- ------------ --------  ---  ----------  -----------
C8540  2   6312897 00107BC6F300   1024      0        0      Aug 21 1998
cubi version : D
```

Examples

The following is sample output from the **show hardware detail** command for an ATM switch router.

```
Switch# show hardware detail

C8540 named Switch, Date: 10:54:45 UTC Thu Nov 19 1998

Slot Ctrlr-Type    Part No.  Rev  Ser No  Mfg Date   RMA No. Hw Vrs  Tst EEP
---- ------------  ---------- -- -------- --------- -------- ------- --- ---
 0/* OCM Board     73-2852-05 03 mic02360 Jan 00 00            1.0
 0/0 quad622 Gene  73-2852-05 03 mic02360 Jan 00 00            1.0
 2/* Super Cam                02 07285959 Jan 00 00            3.0
 2/0 155MM PAM     73-1496-03 06 02202232 Jan 15 96 00-00-00   3.0     0   2
 2/1 155MM PAM     73-1496-03 00 03115169 Feb 23 96 00-00-00   3.0     0   2
11/* Super Cam     73-2739-03 11 MIC02380 Jan 00 00            3.0
11/0 155MM PAM     73-1496-03 00 03114868 Feb 24 96 00-00-00   3.0     0   2

slot:  0/*  Controller-Type : OCM Board
Part Number: 73-2852-05                          Revision: 03
Serial Number: mic0236002b                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 1.0

slot:  0/0  Controller-Type : quad622 Generic
Part Number: 73-2852-05                          Revision: 03
Serial Number: mic0236002b                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 1.0

slot:  2/*  Controller-Type : Super Cam
Part Number:                                     Revision: 02
Serial Number: 07285959                          Mfg Date: Jan 00 00
RMA Number:   H/W Version: 3.0

slot:  4/*  Controller-Type : Route Proc
Part Number: 73-2644-05                          Revision: 02
Serial Number: mic0236005c                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 5.1

slot:  5/*  Controller-Type : Switch Card
Part Number: 73-3315-07                          Revision: 02
Serial Number: MIC023900RD                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 7.1

slot:  7/*  Controller-Type : Switch Card
Part Number: 73-3315-07                          Revision: 02
Serial Number: MIC0236003C                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 7.1

slot:  8/*  Controller-Type : Route Proc
Part Number: 73-2644-05                          Revision: 00
Serial Number: mic0236005g                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 5.1

slot: 11/*  Controller-Type : Super Cam
Part Number: 73-2739-03                          Revision: 11
Serial Number: MIC0238007E                       Mfg Date: Jan 00 00
RMA Number:   H/W Version: 3.0

DS1201 Backplane EEPROM:
Model  Ver.  Serial  MAC-Address  MAC-Size  RMA  RMA-Number   MFG-Date
------ ---- -------- ------------ --------  ---  ----------  -----------
C8540  2   6312897 00107BC6F300   1024      0        0      Aug 21 1998
cubi version : D
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show hardware** command for an ATM switch router.

```
Switch# show hardware

LS1010 named Switch, Date: 12:27:09 UTC Tue Sep 30 1997
Feature Card's FPGA Download Version: 0

Slot Ctrlr-Type    Part No.  Rev  Ser No  Mfg Date   RMA No. Hw Vrs  Tst EEP
---- ------------  ---------- -- -------- --------- -------- ------- --- ---
0/0  155UTP PAM    73-1572-02 01 02749041 Jan 17 96 00-00-00   3.0     0   2
0/1  155MM PAM     73-1496-03 06 02180424 Jan 16 96 00-00-00   3.0     0   2
1/0  155MM PAM     73-1496-03 06 02180444 Jan 17 96 00-00-00   3.0     0   2
1/1  155MM PAM     73-1496-03 06 02202228 Jan 11 96 00-00-00   3.0     0   2
3/0  CE-T1 PAM     73-2176-02 A0 03669320 Feb 15 97 00-00-00   1.0     0   2
3/1  QUAD DS3 PAM  73-2197-02 A0 03816513 Jan 30 97 00-00-00   2.0     0   2
2/0  ATM Swi/Proc  73-1402-06 C2 05426230 Sep 23 97 00-00-00   4.0     0   2
2/1  FC-PFQ        73-2281-04 01 04845638 Sep 17 97 00-00-00   4.0     0   2

DS1201 Backplane EEPROM:
Model  Ver.  Serial  MAC-Address  MAC-Size  RMA  RMA-Number   MFG-Date
------ ---- -------- ------------ --------  ---  ----------  -----------
UNKNOWN  255   -1 FFFFFFFFFFFF   65535      255 16777215  `Vv8`x``V`u ^V` 255 65535
```

show history

To list the commands you have entered in the current EXEC session, use the **show history** EXEC command.

show history

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The command history feature provides a record of EXEC commands you have entered.

Table 18-23 lists the keys and functions you can use to recall commands from the command history buffer.

Table 18-23 History Keys

Key	Function
Ctrl-P or Up arrow	Recalls commands in the history buffer in a backward sequence, beginning with the most recent command. Repeat the key sequence to recall successively older commands.
Ctrl-N or Down arrow	Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up arrow. Repeat the key sequence to recall successively more recent commands.

Examples

The following example is sample output from the **show history** command, which lists the commands the user has entered in EXEC mode for this session.

```
Switch# show history
  help
  where
  show hosts
  show history
```

Related Commands

None

show hosts

To display the default domain name, the style of the name lookup service, a list of name server hosts, and the cached list of host names and addresses, use the **show hosts** EXEC command.

show hosts *hostname*

Syntax Description

hostname	Specifies the host name of the server to display.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show hosts** command.

```
Switch# show hosts

Default domain is CISCO.COM
Name/address lookup uses domain service
Name servers are 255.255.255.255
Host              Flag        Age   Type       Address(es)
SLAG.CISCO.COM    (temp, OK)  1     IP         131.108.4.10
CHAR.CISCO.COM    (temp, OK)  8     IP         192.31.7.50
CHAOS.CISCO.COM   (temp, OK)  8     IP         131.108.1.115
DIRT.CISCO.COM    (temp, EX)  8     IP         131.108.1.111
DUSTBIN.CISCO.COM (temp, EX)  0     IP         131.108.1.27
DREGS.CISCO.COM   (temp, EX)  24    IP         131.108.1.30
```

Table 18-24 describes the significant fields shown in the display.

Table 18-24 show hosts Field Descriptions

Field	Description
Flag	A temporary entry is entered by a name server; the switch removes the entry after 72 hours of inactivity. An entry marked perm is entered by a configuration command and is not timed out. Entries marked OK are considered valid. Entries with question marks (??) are suspect and subject to revalidation. Entries marked EX are expired.
Age	Indicates the number of hours since the switch last referred to the cache entry.
Type	Identifies the type of address, for example, IP, CLNS, or X.121. If you have used the **ip hp-host** global configuration command, the **show hosts** command displays these host names as type HP-IP.
Address(es)	Shows the address of the host. One host may have up to eight addresses.

Related Commands

Command	Description
clear host	Deletes entries from the host-name-and-address cache.

show ima interface

To display the IMA interface, IMA group, and ATM layer hardware configuration, use the **show ima interface** EXEC command.

show ima interface [{**atm** | **atm-p**} {*card*/*subcard*/*port* | *card*/*subcard*/*imagroup*} [**detailed**]]

Syntax Description

atm	Specifies an ATM interface.
atm-p	Specifies an ATM-P interface.
card/subcard/port	Specifies the card, subcard, and port number for the ATM or ATM-P interface.
*card/subcard/***ima***group*	Specifies the card, subcard, and IMA group number (0 to 3) for the ATM interface.
detailed	Displays more detailed information; must be the last keyword of the command.

Command Modes

EXEC

Command History

Release	Modification
12.0(4a)W5(11a)	New command. Originally **show ima interface (Catalyst 8510 MSR and LightStream 1010)**

Usage Guidelines

The **show ima interface** command has two specific display types, the IMA group information display and the IMA port adapter hardware information display.

The IMA group ATM layer information display is shown using the **ima** keyword and IMA group number instead of the port number in the hardware interface description.

Note If no ATM keyword is entered, the **show ima interface** command displays all IMA interfaces that are present in the system.

Note This command is only supported on systems equipped with FC-PFQ.

Examples

The following example shows how to use the **show ima interface** command with no interface variables to display the ATM layer information for all IMA groups in tabular mode.

```
Switch# show ima interface
ATM0/0/ima1 is up
        Group Index    = 1
        State: NearEnd = operational, FarEnd = operational
        FailureStatus  = noFailure
IMA Group Current Configuration:
        MinNumTxLinks = 2    MinNumRxLinks = 2
```

```
        DiffDelayMax  = 25   FrameLength   = 128
        NeTxClkMode   = common(ctc)  CTC_Reference_Link = ATM0/0/0
        TestLink      = 0    TestPattern   = 0
        TestProcStatus     = operating  GTSM change timestamp = 990618150733
IMA Link Information:
Link           Physical Status        NearEnd Rx Status       Test Status
-----          ---------------        -----------------      ---------------
ATM0/0/0       up                     active                 operating
ATM0/0/1       up                     active                 operating
ATM0/0/2       up                     active                 operating
```

The following example shows how to use the **show ima interface** command to display the ATM layer information for a specific IMA group in tabular mode.

```
Switch# show ima interface atm 0/0/ima1
ATM0/0/ima1 is up
        Group Index    = 1
        State: NearEnd = operational, FarEnd = operational
        FailureStatus  = noFailure
IMA Group Current Configuration:
        MinNumTxLinks = 2    MinNumRxLinks = 2
        DiffDelayMax  = 25   FrameLength   = 128
        NeTxClkMode   = common(ctc)  CTC_Reference_Link = ATM0/0/0
        TestLink      = 0    TestPattern   = 0
        TestProcStatus     = operating  GTSM change timestamp = 990618150733
IMA Link Information:
Link           Physical Status        NearEnd Rx Status       Test Status
-----          ---------------        -----------------      ---------------
ATM0/0/0       up                     active                 operating
ATM0/0/1       up                     active                 operating
ATM0/0/2       up                     active                 operating
```

Examples

The following example shows how to use the **show ima interface** command to display the ATM layer information for the IMA group in **detailed** mode.

```
Switch# show ima interface atm 0/0/ima1 detailed
ATM0/0/ima1 is up
        Group Index    = 1
        State: NearEnd = operational, FarEnd = operational
        FailureStatus  = noFailure
IMA Group Current Configuration:
        MinNumTxLinks = 2    MinNumRxLinks = 2
        DiffDelayMax  = 25   FrameLength   = 128
        NeTxClkMode   = common(ctc)  CTC_Reference_Link = ATM0/0/0
        TestLink      = 0    TestPattern   = 0
        TestProcStatus     = operating  GTSM change timestamp = 990618150733
Detailed group Information:
        Symmetry        = symmetricOperation
        FeTxClkMode     = common(ctc)
        RxFrameLength   = 128
        TxTimingRefLink = 0     RxTimingRefLink = 2
        TxImaId         = 1     RxImaId         = 1
        NumTxCfgLinks   = 3     NumRxCfgLinks   = 3
        NumTxActLinks   = 3     NumRxActLinks   = 3
        LeastDelayLink  = 2     DiffDelayMaxObs = 0
Group counters:
        NeNumFailures   = 1     FeNumFailures   = 1
```

```
        UnAvailSecs     = 2     RunningSecs     = 345032
IMA Detailed Link Information:
ATM0/0/0 is up
        RowStatus = active
        IfIndex   = 5           GroupIndex = 1
        State:
                NeTx = active   NeRx = active
                FeTx = active   FeRx = active
        FailureStatus:
                NeRx = noFailure        FeRx = noFailure
        TxLid           = 0     RxLid           = 2
        RxTestPattern    = 64   TestProcStatus   = operating
        RelativeDelay    = 0
IMA Link counters :
        ImaViolations    = 1
        NeSevErroredSecs = 1    FeSevErroredSecs = 1
        NeUnavailSecs    = 0    FeUnAvailSecs    = 0
        NeTxUnusableSecs = 2    NeRxUnUsableSecs = 1
        FeTxUnusableSecs = 2    FeRxUnusableSecs = 2
        NeTxNumFailures  = 0    NeRxNumFailures  = 0
        FeTxNumFailures  = 0    FeRxNumFailures  = 0
ATM0/0/1 is up
        RowStatus = active
        IfIndex   = 6           GroupIndex = 1
        State:
                NeTx = active   NeRx = active
                FeTx = active   FeRx = active
        FailureStatus:
                NeRx = noFailure        FeRx = noFailure
        TxLid           = 1     RxLid           = 3
        RxTestPattern    = 64   TestProcStatus   = operating
        RelativeDelay    = 2
IMA Link counters :
        ImaViolations    = 1
        NeSevErroredSecs = 0    FeSevErroredSecs = 1
        NeUnavailSecs    = 0    FeUnAvailSecs    = 0
        NeTxUnusableSecs = 1    NeRxUnUsableSecs = 1
        FeTxUnusableSecs = 1    FeRxUnusableSecs = 1
        NeTxNumFailures  = 0    NeRxNumFailures  = 0
        FeTxNumFailures  = 0    FeRxNumFailures  = 0
ATM0/0/2 is up
        RowStatus = active
        IfIndex   = 7           GroupIndex = 1
        State:
                NeTx = active   NeRx = active
                FeTx = active   FeRx = active
        FailureStatus:
                NeRx = noFailure        FeRx = noFailure
        TxLid           = 2     RxLid           = 4
        RxTestPattern    = 64   TestProcStatus   = operating
        RelativeDelay    = 0
IMA Link counters :
        ImaViolations    = 1
        NeSevErroredSecs = 1    FeSevErroredSecs = 1
        NeUnavailSecs    = 0    FeUnAvailSecs    = 0
        NeTxUnusableSecs = 2    NeRxUnUsableSecs = 2
        FeTxUnusableSecs = 1    FeRxUnusableSecs = 1
        NeTxNumFailures  = 0    NeRxNumFailures  = 0
        FeTxNumFailures  = 0    FeRxNumFailures  = 0
```

Examples

The following example shows how to use the **show ima interface** command to display the specific ATM interface hardware configuration in **detailed** mode.

```
Switch# show ima interface atm 0/0/0 detailed
ATM0/0/0 is up
        RowStatus = active
        IfIndex   = 5           GroupIndex = 1
        State:
                NeTx = active   NeRx = active
                FeTx = active   FeRx = active
        FailureStatus:
                NeRx = noFailure        FeRx = noFailure
        TxLid           = 0    RxLid           = 2
        RxTestPattern    = 64   TestProcStatus   = operating
        RelativeDelay    = 0
IMA Link counters :
        ImaViolations    = 1
        NeSevErroredSecs = 1    FeSevErroredSecs = 1
        NeUnavailSecs    = 0    FeUnAvailSecs    = 0
        NeTxUnusableSecs = 2    NeRxUnUsableSecs = 1
        FeTxUnusableSecs = 2    FeRxUnusableSecs = 2
        NeTxNumFailures  = 0    NeRxNumFailures  = 0
        FeTxNumFailures  = 0    FeRxNumFailures  = 0
```

Examples

The following example shows how to use the **show ima interface** command to display the specific ATM interface hardware configuration.

```
Switch# show ima interface atm 0/0/0
ATM0/0/0 is up
        RowStatus = active
        IfIndex   = 5           GroupIndex = 1
        State:
                NeTx = active   NeRx = active
                FeTx = active   FeRx = active
        FailureStatus:
                NeRx = noFailure        FeRx = noFailure
        TxLid           = 0    RxLid           = 2
        RxTestPattern    = 64   TestProcStatus   = operating
        RelativeDelay    = 0
IMA Link counters :
        ImaViolations    = 1
        NeSevErroredSecs = 1    FeSevErroredSecs = 1
        NeUnavailSecs    = 0    FeUnAvailSecs    = 0
        NeTxUnusableSecs = 2    NeRxUnUsableSecs = 1
        FeTxUnusableSecs = 2    FeRxUnusableSecs = 2
        NeTxNumFailures  = 0    NeRxNumFailures  = 0
        FeTxNumFailures  = 0    FeRxNumFailures  = 0
```

Table 18-25 describes some key fields in the **show ima interface** command displays.

Table 18-25 show ima interface Field Descriptions

Field	Description
MinNumTxLinks	Minimum number of transmit links configured for the IMA group to function.
MinNumRxLinks	Minimum number of receive links configured for the IMA group to function.
DiffDelayMax	Maximum differential delay configured for the IMA group.
FrameLength	Frame length configured for the IMA group.

Table 18-25 show ima interface Field Descriptions (continued)

Field	Description
NeTxClkMode	Near-end transmit clock mode configured for the IMA group.
TestProcStatus	Test procedure status configured for the IMA group.

Related Commands

Command	Description
show atm interface	Displays ATM-specific information about an ATM interface.
show interfaces	Displays the interface configuration, status, and statistics.

show interfaces

To display the interface configuration, status, and statistics, use the **show interfaces** command.

show interfaces {*type* [*card/subcard/port*[**:***cgn*] |*card/subcard/***ima***group*]}

Syntax Description

type	Specifies one of the interface types listed in Table 18-25.
card/subcard/port	Specifies the card, subcard, and port number of the ATM, ATM-P, CBR, or Ethernet interface.
:cgn	Specifies the channel-group number (identifier).
*card/subcard/***ima***group*	Specifies the card, subcard, and IMA group number of the ATM interface.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command. Originally **show interface**.

Usage Guidelines

Table 18-26 shows the interface types for the **show interfaces** EXEC command.

Table 18-26 Interface Types for the show interfaces Command

Type	Description
accounting	Shows the ATM accounting interface information.
atm	Specifies the ATM interface.
atm-p	Specifies the ATM pseudo interface.
cbr	Specifies the CBR interface.
ethernet	Specifies the main Ethernet interface (0).
serial	Specifies a serial interface, such as a channelized Frame Relay interface.

At Cisco, implementation of Frame Relay supports the following three LMI types: Cisco, ANSI Annex D, and ITU-T Q.933 Annex A. The LMI type is set per interface and is shown in the output of the **show interfaces** command. The default LMI type is Cisco.

Examples

The following is sample output from the **show interfaces** command. In this example, CRC is the number of correctable and uncorrectable input HCS errors.

Input and output packets are the number of terminated cells received or transmitted over the interface for physical ports. For the route processor port, the number represents AAL5 packets plus the terminating OAM cells received or transmitted.

```
Switch# show interfaces
Main-ATM0 is up, line protocol is up
  Hardware is ATMS2000 switch fabric
  Internet address is 1.2.2.2 255.0.0.0
  MTU 4470 bytes, BW 10000000 Kbit, DLY 0 usec, rely 255/255, load 1/255
  NSAP address: 47.00918100000000000CA7CE01.0003BBE42A06.00
  Encapsulation ATM, loopback not set, keepalive not set
  Encapsulation(s):
  2048 maximum active VCs, 0 VCs per VP, 0 current VCCs
  VC idle disconnect time: 300 seconds
  Signalling vc = 32, vpi = 0, vci = 5
  UNI Version = 3.0, Link Side = user
  Last input 0:00:02, output 0:00:02, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Output queue: 0/64/0 (size/threshold/drops)
     Conversations  0/0 (active/max active)
     Reserved Conversations 0/0 (allocated/max allocated)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     8977 packets input, 566317 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     8981 packets output, 475993 bytes, 0 underruns
5 output errors, 0 collisions, 0 interface resets, 0 restarts
     0 output buffer failures, 0 output buffers swapped out
Ethernet0 is up, line protocol is up
  Hardware is SonicT, address is 0002.bbe4.2a00 (bia 0002.bbe4.2a00)
  Internet address is 172.20.40.43 255.255.255.0
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input 0:00:03, output 0:00:04, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 2000 bits/sec, 2 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     70468 packets input, 29650832 bytes, 0 no buffer
     Received 70458 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 input packets with dribble condition detected
     1140 packets output, 359630 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets, 0 restarts
     0 output buffer failures, 0 output buffers swapped out
```

Table 18-27 lists the keyword field descriptions for the **show interfaces** command.

Table 18-27 show interfaces serial Field Descriptions

Field	Description
MTU	Number of maximum transmission units.
BW	Number of bandwidth (kbps).
Dly	Number of station delay parameter (used by IGRP).
relay	Number of reliability coefficient.
load	Number of load (IGRP).
last input	Amount of time since last input in the following format: *hh:mm:ss.*
last output	Amount of time since last output in the following format: *hh:mm:ss.*
output hang	Time of last reset for output failure.
output queue	Size of output queue or default size of queue.
drops	Number of all output drops.
packets input	Number of all packets received since last reset.
bytes	Number of all bytes received since last reset.
no buffers	Number of all drops because of no buffers.
broadcasts, runts, giants	Not applicable if this is an ATM interface.
input errors	Number of damaged packets received.
crc	Number of packets received with correctable and uncorrectable input HCS errors.
frame	Number of packets with framing and alignment errors.
overrun, ignored, abort	Not applicable if this is an ATM interface.

Examples

The following example is sample output from the **show interfaces serial** command for a serial interface with Cisco LMI enabled.

```
Switch# show interfaces serial 0/1/0:5
Serial0/1/0:5 is up, line protocol is up
    Hardware is FRPAM-SERIAL
    MTU 4096 bytes, BW 1536 Kbit, DLY 0 usec, rely 229/255, load 14/255
    Encapsulation FRAME-RELAY, loopback not set, keepalive set (10 sec)
    LMI enq sent  0, LMI stat recvd 0, LMI upd recvd 0
    LMI enq recvd 8010, LMI stat sent  8010, LMI upd sent  0, DCE LMI up
    LMI DLCI 1023  LMI type is CISCO  frame relay DCE
    Last input never, output never, output hang never
    Last clearing of "show interface" counters never
    Input queue: 0/75/0 (size/max/drops); Total output drops: 0
    Queueing strategy: weighted fair
    Output queue: 0/64/0 (size/threshold/drops)
       Conversations  0/1 (active/max active)
       Reserved Conversations 0/0 (allocated/max allocated)
    5 minute input rate 67000 bits/sec, 786 packets/sec
    5 minute output rate 85000 bits/sec, 786 packets/sec
       32556459 packets input, 421648869 bytes, 0 no buffer
       Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
       690040 input errors, 425237 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
       32130599 packets output, 466708295 bytes, 36921560 underruns
```

```
     3094283652 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
     28 carrier transitions
  Timeslots(s) Used: 1-24 on T1 5
  Frames Received with:
   DE set: 0, FECN set :4294879164, BECN set: 0
  Frames Tagged :
   DE: 0, FECN: 615698146 BECN: 0
  Frames Discarded Due to Alignment Error: 0
  Frames Discarded Due to Illegal Length: 0
  Frames Received with unknown DLCI: 0
  Frames with illegal Header : 0
  Transmit Frames with FECN set :0,  BECN Set :0
  Transmit Frames Tagged FECN : 3463814532 BECN : 3469839556
  Transmit Frames Discarded due to No buffers : 0
```

Examples

The following is sample output from the **show interfaces atm** command for an IMA group interface.

```
Switch# show interfaces atm 0/0/ima1
ATM0/0/ima1 is up, line protocol is up
  Hardware is imapam_t1_ima
  MTU 4470 bytes, sub MTU 4470, BW 1500 Kbit, DLY 0 usec, rely 255/255, load 1/2
55
  Encapsulation ATM, loopback not set, keepalive not supported
  Last input 00:00:01, output 00:00:01, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)
     Conversations  0/0/256 (active/max active/max total)
     Reserved Conversations 0/0 (allocated/max allocated)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     16253 packets input, 861409 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     16168 packets output, 856904 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

Related Commands

Command	Description
show atm interface	Displays ATM-specific information about an ATM interface.
show ima interface	Displays the IMA interface, IMA group, and ATM layer hardware configuration.

show ip access-lists

To display the contents of all current IP access lists, use the **show ip access-list** EXEC command.

show ip access-list [*access-list-number* | *access-list-name*]

Syntax Description

access-list-number	Number of the IP access list to display. This is a decimal number from 1 to 199.
access-list-name	Name of the IP access list to display.

Defaults

Displays all standard and extended IP access lists.

Command Modes

EXEC

Command History

Release	Modification

Usage Guidelines

The **show ip access-list** command provides output identical to the **show access-lists** command, except that it is IP-specific and allows you to specify a particular access list.

Examples

The following example is sample output from the **show ip access-list** command.

```
Switch# show ip access-list

Extended IP access list 101
   deny udp any any eq ntp
   permit tcp any any
   permit udp any any eq tftp
   permit icmp any any
   permit udp any any eq domain
```

show ip accounting

To display the active accounting or checkpointed database or to display access-list violations, use the **show ip accounting** EXEC command.

show ip accounting [**access-violations** | **checkpoint** | **output-packets**]

Syntax Description

access-violations	Shows the access violation in the accounting database.
checkpoint	Displays the checkpointed database.
output-packets	Displays information pertaining to packets that passed access control and were successfully routed.

Defaults

If neither the **output-packets** nor **access-violations** keywords are specified, **show ip accounting** displays information pertaining to packets that passed access control and were successfully routed.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

If you do not specify any keywords, the **show ip accounting** command displays information about the active accounting database.

To display IP access violations, use the **access-violations** keyword with the command. If you do not specify the keyword, the command defaults to displaying the number of packets that have passed access lists and were routed.

To use the **show ip accounting** command, you must first enable ip accounting mode on a per-interface basis.

Examples

The following example is sample output from the **show ip accounting** command.

```
Switch# show ip accounting

   Source           Destination              Packets               Bytes
 131.108.19.40    192.67.67.20                   7                 306
 131.108.13.55    192.67.67.20                  67                2749
 131.108.2.50     192.12.33.51                  17                1111
 131.108.2.50     130.93.2.1                     5                 319
 131.108.2.50     130.93.1.2                   463               30991
 131.108.19.40    130.93.2.1                     4                 262
 131.108.19.40    130.93.1.2                    28                2552
 131.108.20.2     128.18.6.100                  39                2184
 131.108.13.55    130.93.1.2                    35                3020
 131.108.19.40    192.12.33.51                1986               95091
 131.108.2.50     192.67.67.20                 233               14908
 131.108.13.28    192.67.67.53                 390               24817
```

```
131.108.13.55    192.12.33.51              214669            9806659
131.108.13.111   128.18.6.23                27739            1126607
131.108.13.44    192.12.33.51               35412            1523980
192.31.7.21      130.93.1.2                    11               824
131.108.13.28    192.12.33.2                   21              1762
131.108.2.166    192.31.7.130                 797            141054
131.108.3.11     192.67.67.53                   4               246
192.31.7.21      192.12.33.51               15696            695635
192.31.7.24      192.67.67.20                  21               916
131.108.13.111   128.18.10.1                   16              1137
```

Examples

The following example is sample output from the **show ip accounting access-violations** command. The output pertains to packets that failed access lists and were not switched.

```
Switch# show ip accounting access-violations

Source DestinationPacketsBytesACL
131.108.19.40 192.67.67.20 7 306 77
131.108.13.55    192.67.67.20 67 2749185
131.108.2.50 192.12.33.51171111140
131.108.2.50 130.93.2.1 5319140
131.108.19.40 130.93.2.1426277
Accounting data age is 41
```

Table 18-28 describes the fields shown in the displays.

Table 18-28 show ip accounting (and access-violations) Field Descriptions

Field	Description
Source	Source address of the packet.
Destination	Destination address of the packet.
Packets	Number of packets transmitted from the source address to the destination address. With the **access-violations** keyword, the number of packets transmitted from the source address to the destination address that violated an access control list.
Bytes	Sum of the total number of bytes (IP header and data) of all IP packets transmitted from the source address to the destination address. With the **access-violations** keyword, the total number of bytes transmitted from the source address to the destination address that violated an access-control list.
ACL	Number of the access list of the last packet transmitted from the source to the destination that failed an access list filter.

Related Commands

Command	Description
clear ip accounting	Used to delete the cache table entries; however, this command or some of its parameters might not function as expected.
alias	This command or some of its parameters might not function as expected.
alias	This command or some of its parameters might not function as expected.
alias	This command or some of its parameters might not function as expected.
alias	This command or some of its parameters might not function as expected.

show ip aliases

To display the switch's IP addresses mapped to TCP ports (aliases) and SLIP addresses, which are treated similarly to aliases, use the **show ip aliases** EXEC command.

show ip aliases

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

Catalyst 8510 MSR and LightStream 1010

To distinguish a SLIP address from a normal alias address, the command output uses the form SLIP TTY1 for the port number, where 1 is the auxiliary port.

Examples

Catalyst 8540 MSR

The following example is sample output from the **show ip aliases** command. The display lists the IP address and corresponding port number.

```
Switch# show ip aliases
IP Address    Port
131.108.29.245
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show ip aliases** command. The output lists the IP address and corresponding port number.

```
Switch# show ip aliases
IP Address    Port
131.108.29.245  SLIP TTY1
```

Related Commands

Command	Description
show line	Displays terminal line parameters.

show ip arp

To display the ARP cache, where SLIP addresses appear as permanent ARP table entries, use the **show ip arp** EXEC command.

show ip arp [*interface-type card/subcard/port* | *hostname* | *mac-addr*]

Syntax Description

interface-type	Specifies an interface type as **atm**, **atm-p**, **cbr**, **ethernet**, or **null**.
card/subcard/port	Identifies the interface specified in *interface-type*.
hostname	Specifies the IP address or host name of the ARP entry.
mac-addr	Specifies the 48-bit hardware address of the ARP entry.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

ARP establishes correspondences between network addresses (an IP address, for example) and LAN hardware addresses (Ethernet addresses). A record of each correspondence is kept in a cache for a predetermined amount of time and then discarded.

Examples

The following example is sample output from the **show ip arp** command.

```
Switch# show ip arp
Protocol  Address          Age (min)     Hardware Addr  Type   Interface
Internet  171.69.193.21          112     VCD#0000        ARPA   Ethernet0
Internet  172.20.40.43             -     0002.bbe4.2a00  ARPA   Ethernet0
```

Table 18-29 describes the significant fields shown in the display.

Table 18-29 show ip arp Field Displays

Field	Description
Protocol	Protocol for the network address in the Address field.
Address	The network address that corresponds to the Hardware Addr.
Age (min)	Age, in minutes, of the cache entry.
Hardware Addr	LAN hardware address of a MAC address that corresponds to the network address.

Table 18-29 show ip arp Field Displays (continued)

Field	Description
Type	Type of encapsulation: ARPA—Ethernet SNAP—RFC 1042 SAP—IEEE 802.3
Interface	Interface to which this address mapping is assigned.

show ip interface

To display the usability status of interfaces configured for IP, use the **show ip interface** EXEC command.

show ip interface [*interface-type* | *card/subcard/port*] [**brief**]

Syntax Description

interface-type	Specifies an interface type as **atm**, **atm-p**, **cbr**, **ethernet**, **null**, **serial**, or **tunnel**.
card/subcard/port	Card, subcard, and port number for the specified interface type.
brief	Displays a brief summary of IP status and configuration for all interfaces.

Command Modes

EXEC

Command History

Release	Modifcation
11.1(4)	New command

Usage Guidelines

A switch automatically enters a directly connected route in the routing table if the interface is usable. A usable interface is one through which the switch can send and receive packets. If the switch determines that an interface is not usable, it removes the directly connected routing entry from the routing table. Removing the entry allows the switch to use dynamic routing protocols to determine backup routes to the network (if any).

If the interface can provide two-way communication, the line protocol is marked “up.” If the interface hardware is usable, the interface is marked “up.”

If you specify an optional interface type, you will see only information on that specific interface.

If you specify no optional arguments, you will see information on all the interfaces.

Examples

The following example is sample output from the **show ip interface** command.

```
Switch# show ip interface

Ethernet0 is up, line protocol is up
  Internet address is 192.195.78.24, subnet mask is 255.255.255.240
  Broadcast address is 255.255.255.255
  Address determined by non-volatile memory
  MTU is 1500 bytes
  Helper address is not set
  Secondary address 131.192.115.2, subnet mask 255.255.255.0
  Directed broadcast forwarding is enabled
  Multicast groups joined: 224.0.0.1 224.0.0.2
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
```

```
  ICMP unreachables are always sent
  ICMP mask replies are never sent
  IP fast switching is enabled
  IP fast switching on the same interface is disabled
  IP SSE switching is disabled
RouterDiscovery is disabled
  IP output packet accounting is disabled
  IP access violation accounting is disabled
  TCP/IP header compression is disabled
  Probe proxy name replies are disabled
```

Table 18-30 describes the fields shown in the display.

Table 18-30 show ip interface Field Descriptions

Field	Description
Ethernet 0 is up	If the interface hardware is usable, the interface is marked "up." For an interface to be usable, both the interface hardware and line protocol must be up.
line protocol is up	If the interface can provide two-way communication, the line protocol is marked "up." For an interface to be usable, both the interface hardware and line protocol must be up.
Broadcast address	Shows the broadcast address.
Address determined by ...	Indicates how the IP address of the interface was determined.
MTU	Shows the MTU value set on the interface.
Helper address	Shows a helper address if one has been set.
Secondary address	Shows a secondary address if one has been set.
Directed broadcast forwarding	Indicates whether directed broadcast forwarding is enabled.
Multicast groups joined	Lists the multicast groups in which this interface is a member.
Outgoing access list	Indicates whether the interface has an outgoing access list set.
Inbound access list	Indicates whether the interface has an incoming access list set.
Proxy ARP	Indicates whether Proxy ARP is enabled for the interface.
Security level	Specifies the IPSO security level set for this interface.
ICMP redirects	Specifies whether redirects are sent on this interface.
ICMP unreachables	Specifies whether unreachable messages are sent on this interface.
ICMP mask replies	Specifies whether mask replies are sent on this interface.
IP fast switching	Specifies whether fast switching is enabled for this interface.
IP SSE switching	Specifies whether IP SSE switching is enabled.
Router Discovery	Specifies whether the discovery process has been enabled for this interface.
IP output packet accounting	Specifies whether IP accounting is enabled for this interface and the threshold (maximum number of entries).

Table 18-30 show ip interface Field Descriptions (continued)

Field	Description
TCP/IP header compression	Indicates whether compression is enabled or disabled.
Probe proxy name	Indicates whether HP Probe proxy name replies are generated.

show ip masks

To display the masks used for network addresses and the number of subnets using each mask, use the **show ip masks** EXEC command.

show ip masks *ip-address*

Syntax Description

ip-address	Network address for which a mask is required.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **show ip masks** command is useful for debugging when variable-length subnet masks are used. It shows the number of masks associated with the network and the number of routes for each mask.

Examples

The following example is sample output from the **show ip masks** command.

```
Switch# show ip masks 131.108.0.0

Mask            Reference count
255.255.255.255 2
255.255.255.0   3
255.255.0.0     1
```

show ip redirects

To display the address of a default gateway and the address of hosts for which a redirect has been received, use the **show ip redirects** EXEC command.

show ip redirects [*ip-address*]

Syntax Description

ip-address	IP address of network to display.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show ip redirects** command.

```
Switch# show ip redirects

Default gateway is 160.89.80.29

Host              Gateway           Last Use    Total Uses  Interface
131.108.1.111     160.89.80.240         0:00             9  Ethernet0
128.95.1.4        160.89.80.240         0:00             4  Ethernet0
```

Related Commands

Command	Description
ip route	Used to establish static routes.

show ip route summary

To display summary information about entries in the routing table, use the **show ip route summary** EXEC command.

show ip route summary

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show ip route summary** command.

```
Switch# show ip route summary

Route Source    Networks    Subnets     Overhead    Memory (bytes)
connected       0           3           126         360
static          1           2           126         360
igrp 109        747         12          31878       91080
internal        3                                   360
Total           751         17          32130       92160
```

Table 18-31 describes the fields shown in the display.

Table 18-31 show ip route summary Field Descriptions

Field	Description
Route Source	Routing protocol name, or **connected**, **static**, or **internal**. If **internal**, those routes that are in the primary routing table merely as markers to hold subnet routes. These routes are not owned by any routing protocol. There should be one of these internal routes for each subnetted network in the routing table.
Networks	The number of Class A, B, or C networks that are present in the routing table for each route source.
Subnets	The number of subnets that are present in the routing table for each route source, including host routes.
Overhead	Any additional memory involved in allocating the routes for the particular route source other than the memory specified under “Memory.”
Memory	The number of bytes allocated to maintain all the routes for the particular route source.

Related Commands

Command	Description
show ip interface	Displays the usability status of interfaces configured for IP.

show ip sockets

To display current information about open IP sockets, use the **show ip sockets** EXEC command.

show ip sockets

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show ip sockets** EXEC command.

```
Switch# show ip sockets
Proto    Remote      Port      Local       Port  In Out Stat TTY OutputIF
 17 0.0.0.0            0 --any--           67   0   0    1   0
 17 0.0.0.0          123 172.20.40.93     123   0   0    1   0
 17 0.0.0.0            0 172.20.40.93     161   0   0    1   0
```

show ip tcp header-compression

To display statistics about TCP header compression, use the **show ip tcp header-compression** EXEC command.

show ip tcp header-compression [*type*]

Syntax Description

type	Displays the buffers assigned to an input interface. You must specify an **atm**, **atm-p**, **cbr**, **ethernet**, **null**, **serial**, or **tunnel** interface.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show ip tcp header-compression** command.

```
Switch# show ip tcp header-compression

TCP/IP header compression statistics:
  Interface Aux 1: (passive, compressing)
    Rcvd:    4060 total, 2891 compressed, 0 errors
             0 dropped, 1 buffer copies, 0 buffer failures
    Sent:    4284 total, 3224 compressed,
             105295 bytes saved, 661973 bytes sent
             1.15 efficiency improvement factor
    Connect: 16 slots, 1543 long searches, 2 misses, 99% hit ratio
             Five minute miss rate 0 misses/sec, 0 max misses/sec
```

Table 18-32 describes the significant fields shown in the display.

Table 18-32 show ip tcp header-compression Field Descriptions

Field	Description
Rcvd:	
total	Total number of TCP packets received.
compressed	Total number of TCP packets compressed.
errors	Unknown packets.
dropped	Number of packets dropped due to invalid compression.
buffer copies	Number of packets that had to be copied into bigger buffers for decompression.
buffer failures	Number of packets dropped due to a lack of buffers.
Sent:	
total	Total number of TCP packets sent.

Table 18-32 show ip tcp header-compression Field Descriptions (continued)

Field	Description
compressed	Total number of TCP packets compressed.
bytes saved	Number of bytes reduced.
bytes sent	Number of bytes sent.
efficiency improvement factor	Improvement in line efficiency because of TCP header compression.
Connect:	
number of slots	Size of the cache.
long searches	Number of times the software had to look to find a match.
misses	Number of times a match could not be made. If your output shows a large miss rate, the number of allowable simultaneous compression connections may be too small.
hit ratio	Percentage of times the software found a match and was able to compress the header.
Five minute miss rate	Calculates the miss-rate over the previous 5 minutes for a longer-term (and more accurate) look at miss rate trends.
max misses/sec	Maximum value of the previous field.

Related Commands

Command	Description
ip tcp synwait-time	Sets a period of time that the switch waits while attempting to establish a TCP connection before it times out.

show ip traffic

To display statistics about IP traffic, use the **show ip traffic** EXEC command.

show ip traffic

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show ip traffic** command.

```
Switch# show ip traffic

IP statistics:
  Rcvd: 98 total, 98 local destination
        0 format errors, 0 checksum errors, 0 bad hop count
        0 unknown protocol, 0 not a gateway
        0 security failures, 0 bad options
  Frags:0 reassembled, 0 timeouts, 0 too big
        0 fragmented, 0 couldn't fragment
  Bcast:38 received, 52 sent
  Sent: 44 generated, 0 forwarded
        0 encapsulation failed, 0 no route
ICMP statistics:
  Rcvd: 0 checksum errors, 0 redirects, 0 unreachable, 0 echo
        0 echo reply, 0 mask requests, 0 mask replies, 0 quench
        0 parameter, 0 timestamp, 0 info request, 0 other
  Sent: 0 redirects, 3 unreachable, 0 echo, 0 echo reply
        0 mask requests, 0 mask replies, 0 quench, 0 timestamp
        0 info reply, 0 time exceeded, 0 parameter problem
UDP statistics:
  Rcvd: 56 total, 0 checksum errors, 55 no port
  Sent: 18 total, 0 forwarded broadcasts
TCP statistics:
  Rcvd: 0 total, 0 checksum errors, 0 no port
  Sent: 0 total
EGP statistics:
  Rcvd: 0 total, 0 format errors, 0 checksum errors, 0 no listener
  Sent: 0 total
IGRP statistics:
  Rcvd: 73 total, 0 checksum errors
  Sent: 26 total
HELLO statistics:
  Rcvd: 0 total, 0 checksum errors
  Sent: 0 total
ARP statistics:
  Rcvd: 20 requests, 17 replies, 0 reverse, 0 other
  Sent: 0 requests, 9 replies (0 proxy), 0 reverse
Probe statistics:
```

```
  Rcvd: 6 address requests, 0 address replies
0 proxy name requests, 0 other
  Sent: 0 address requests, 4 address replies (0 proxy)
        0 proxy name replies
```

Table 18-33 describes the significant fields shown in the display.

Table 18-33 show ip traffic Field Descriptions

Field	Description
format errors	A gross error in the packet format, such as an impossible Internet header length.
bad hop count	Occurs when a packet is discarded because its TTL field was decremented to zero.
encapsulation failed	Usually indicates that the switch had no ARP request entry and therefore did not send a datagram.
no route	Counted when the switch discards a datagram that it did not know how to route.
proxy name reply	Counted when the switch sends an ARP or Probe Reply on behalf of another host. The display shows the number of probe proxy requests received and the number of responses sent.

show ipc

Use the show ipc command to display IPC information.

show ipc {**nodes** | **ports** [**open**] | **queue** | **status**} [| {**begin** | **exclude** | **include**} *expression*]

Syntax Description

nodes	Show participating nodes
ports	Show local IPC ports.
open	Optional keyword used to display open ports only.
queue	Show the IPC retransmission queue.
status	Show status of local IPC server.
begin	Optional keyword orders the output display to begin with the line matching the *expression* variable.
exclude	Optional keyword orders the output display to exclude lines matching the *expression* variable.
include	Optional keyword orders the output display to include lines matching the *expression* variable.
expression	Expression in the output to use as a reference point.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(10)W5(18)	Introduced into this manual. Originally part of the Catalyst 6000 IOS command set.

Usage Guidelines

TBD..

Examples

The following example shows how to display participating nodes:

```
Switch# show ipc nodes
There are 3 nodes in this IPC realm.
   ID     Type                 Name                      Last  Last
                                                         Sent  Heard

   10000 Local      IPC Master                             0      0
       0 ATM-VC     Primary                                0      0
   20000 ATM-VC     Secondary                              39     5483
```

Examples

The following example shows how to display local IPC ports:

```
Switch# show ipc ports
There are 15 ports defined.

Port ID        Type       Name
   10000.1     unicast    IPC Master:Zone
   10000.2     unicast    IPC Master:Echo
   10000.3     unicast    IPC Master:Control
   10000.4     unicast    Primary:ehsa msgs
   20000.3     unicast    Secondary:Control
   20000.8     unicast    Slave : TTY Client Port
   20000.9     unicast    Secondary RFS Server Port
   20000.A     unicast    Secondary Old RFS Server Port
   20000.4     unicast    Secondary Services Port
   20000.5     unicast    Cougar EHSA Secondary IPC Port
   20000.6     unicast    Secondary:Netclkd Port
   20000.7     unicast    Secondary:ehsa msgs
   10000.5     unicast    Cougar EHSA Primary IPC Port
     port_index = 0  seat_id = 0x20000    last sent = 0     last heard = 0
     port_index = 1  seat_id = 0x20000    last sent = 0     last heard = 0
     port_index = 2  seat_id = 0x20000    last sent = 0     last heard = 0
     port_index = 3  seat_id = 0x20000    last sent = 0     last heard = 0

   10000.6     unicast    Primary:Netclkd Port
     port_index = 0  seat_id = 0x20000    last sent = 0     last heard = 0

   10000.7     unicast    Master : TTY Server Port
     port_index = 0  seat_id = 0x20000    last sent = 0     last heard = 0
```

The following example shows how to display open IPC ports:

```
Switch# show ipc ports open
There are 3 ports defined.

Port ID        Type       Name
   20000.4     unicast    Secondary Services Port
     port_index = 0  last sent = 5440  last heard = 0

   20000.6     unicast    Secondary:Netclkd Port
     port_index = 0  last sent = 0     last heard = 0

   20000.9     unicast    Secondary RFS Server Port
     port_index = 0  last sent = 19    last heard = 0
```

The following example shows how to display the contents of the IPC retransmission queue:

```
Switch# show ipc queue
There are 0 IPC messages waiting for acknowledgement in the transmit queue.
There are 0 IPC messages waiting for a response.
There are 0 IPC messages waiting for additional fragments.
There are 0 IPC messages currently on the IPC inboundQ.
There are 0 messages currently in use by the system.
```

Examples

The following example shows how to display the status of the local IPC server:

```
Switch# show ipc status
IPC System Status:

This processor is the IPC master server.

1000 IPC message headers in cache
227997 messages in, 222402 out, 217056 delivered to local port,
5486 acknowledgements received, 5484 sent,
0 NACKS received, 0 sent,
0 messages dropped on input, 0 messages dropped on output
0 no local port, 0 destination unknown, 0 no transport
0 missing callback or queue, 0 duplicate ACKs, 2 retries,
0 message timeouts.
0 ipc_output failures, 0 mtu failures,
0 msg alloc failed, 0 emer msg alloc failed, 0 no origs for RPC replies
0 pak alloc failed, 0 memd alloc failed
0 no hwq, 0 failed opens, 0 hardware errors
No regular dropping of IPC output packets for test purposes
```

show lane

To display global and per-VCC LANE information for all the LANE components configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane** EXEC command.

show lane [**interface atm** *card/subcard/port*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
subinterface-number	Subinterface number.
elan-name	Name of emulated LAN. Maximum length is 32 characters.
brief	Displays the global information, but not the per-VCC information.

Command Modes

EXEC

Command History

Release	Modification
11.(4)	New command

Usage Guidelines

Entering the **show lane** command is equivalent to entering the **show lane config**, **show lane server**, **show lane bus**, and **show lane client** commands. The **show lane** command shows all LANE-related information except the **show lane database** information.

Examples

The following example is sample output of the **show lane** command.

```
Switch# show lane
LE Client ATM0  ELAN name: alpha  Admin: up  State: operational
Client ID: 2
HW Address: 0041.0b0a.2c82   Type: ethernet            Max Frame Size: 1516
ATM Address: 47.00918100000000410B0A2C81.001122334455.00

 VCD  rxFrames  txFrames  Type       ATM Address
   0         0         0  configure  47.333300000000000000000000.000111222333.00
 255         1         2  direct     47.333300000000000000000000.001122334455.00
 256         1         0  distribute 47.333300000000000000000000.001122334455.00
 257         0         0  send       47.333300000000000000000000.000000111111.00
 258         0         0  forward    47.333300000000000000000000.000000111111.00

LE Client ATM0.5  ELAN name: alpha5  Admin: up  State: operational
Client ID: 2
HW Address: 0041.0b0a.2c82   Type: ethernet            Max Frame Size: 1516
ATM Address: 47.00918100000000410B0A2C81.001122334455.05

 VCD  rxFrames  txFrames  Type       ATM Address
   0         0         0  configure  47.333300000000000000000000.000111222333.00
 259         1         5  direct     47.333300000000000000000000.001122334455.05
 260         7         0  distribute 47.333300000000000000000000.001122334455.05
```

```
261         0        13  send       47.333300000000000000000000.000000111111.05
262        19         0  forward    47.333300000000000000000000.000000111111.05
VCD  rxFrames  txFrames  Type       ATM Address
264        22        12  data       47.333300000000000000000000.000011112222.05
```

Table 18-34 describes the significant fields in the sample display.

Table 18-34 show lane Command Field Descriptions

Field	Description
LE Client	Interface on which the LANE configuration server is configured. Identifies the following lines as applying to the LANE configuration server. These lines are also displayed in output from the **show lane lecs** command.
config table	Name of the database associated with the LANE configuration server.
State	State of the configuration server: down or operational. If down, a "down reasons" field indicates why it is down. The reasons include the following: NO-config-table, NO-nsap-address, NO-config-pvc, and NO-interface-up.
ATM Address	ATM address or addresses of this configuration server.
LE Server	Identifies the following lines as applying to the LANE server. These lines are also displayed in output from the **show lane server** command.
ATM x/x/x.x	Interface or subinterface this LANE server is on.
ELAN name	Name of the emulated LAN served by this LE server.
State	Status of this LANE server. Possible states for a LANE server include down, waiting_ILMI, waiting_listen, up_not_registered, operational, and terminating.
Type	Type of emulated LAN.
Max Frame Size	Maximum frame size on this type of LAN.
ATM Address	ATM address of this server.
Config Server ATM addr	The ATM address used to reach the LANE configuration server.
control distribute: VCD 20, 2 members, 6 packets	Virtual circuit descriptor of the Control Distribute VCC.
proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)	Status of the LANE client at the other end of the Control Distribute VCC.
lecid	Identifier for the LANE client at the other end of the Control Distribute VCC.
ST	Status of the LANE client at the other end of the Control Distribute VCC. Possible states are Init, Conn, Waiting, Adding, Joined, Operational, Reject, and Term.
VCD	Virtual channel descriptor used to reach the LANE client.
pkts	Number of packets sent by the LANE server on the Control Distribute VCC to the LANE client.
Hardware Addr	MAC-layer address of the LANE client.

Table 18-34 show lane Command Field Descriptions (continued)

Field	Description
ATM Address	ATM address of the LANE client.
LE BUS	Identifies the following lines as applying to the LANE broadcast-and-unknown server. These lines are also displayed in output from the **show lane bus** command.
ATM x/x/x.x	Interface or subinterface this LANE broadcast-and-unknown server is on.
ELAN name	Name of the emulated LAN served by this broadcast-and-unknown server.
State	Status of this LANE client. Possible states include down and operational.
Type	Type of emulated LAN.
Max Frame Size	Maximum frame size on this type of LAN.
ATM Address	ATM address of this LANE broadcast-and-unknown server.
data forward: vcd 22, 2 members, 10 packets	Virtual channel descriptor of the Data Forward VCC, number of LANE clients attached to the VCC, and the number of packets transmitted on the VCC.
lecid	Identifier assigned to each LANE client on the Data Forward VCC.
VCD	Virtual channel descriptor used to reach the LANE client.
Pkts	Number of packets sent by the broadcast-and-unknown server to the LANE client.
ATM Address	ATM address of the LANE client.
LE Client	Identifies the following lines as applying to a LANE client. These lines are also displayed in output from the **show lane client** command.
ATM x/x/x.x	Interface or subinterface this LANE client is on.
ELAN name	Name of the emulated LAN to which this client belongs.
State	Status of this LANE client. Possible states include initialState, lecsConnect, configure, join, busConnect, and operational.
HW Address	MAC address, in dotted hexadecimal notation, assigned to this LANE client.
Type	Type of emulated LAN.
Max Frame Size	Maximum frame size on this type of LAN.
ATM Address	ATM address of this LANE client.
VCD	Virtual channel descriptor for each of the VCCs established for this LANE client.
rxFrames	Number of frames received on the VCC.
txFrames	Number of frames transmitted on the VCC.
Type	Type of VCC; same as the SVC and PVC types. Possible VCC types are configure, direct, distribute, send, forward, and data.
ATM Address	ATM address of the LANE component at the other end of the VCC.

show lane bus

To display detailed LANE information for the broadcast-and-unknown server configured on an interface or any of its interfaces, on a specified subinterface, or on an emulated LAN, use the **show lane bus** EXEC command.

show lane bus [**interface atm** *card/subcard/port*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
subinterface-number	Subinterface number.
elan-name	Name of the emulated LAN. Maximum length is 32 characters.
brief	Keyword used to display the global information but not the per-VCC information.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show lane bus** command.

```
Switch# show lane bus interface atm 3/0/0.1

interface atm 3/0/0.1
type Ethernet name: pubsAAL5-SDU length:1516
max frame age: 2 secondsrelayed frames/sec: 116
NSAP: 45.000001415555121f.yyyy.zzzz.0800.200c.1002.01
lecidvcdcntNSAP
*8065945.000001415555121f.yyyy.zzzz.0800.200c.1002.01
1819945.000001415555121f.yyyy.zzzz.0800.200c.1000.01
5894145.000001415555122f.yyyy.zzzz.0800.200c.1100.01
69910145.000001415555124f.yyyy.zzzz.0800.200c.1300.01
```

Table 18-35 describes the significant fields in the sample display.

Table 18-35 show lane bus Command Field Descriptions

Field	Description
interface	Interface or subinterface for which information is displayed.
type	Type of emulated LAN interface.
name	Name of the emulated LAN.
MTU	Maximum transmission unit (packet) size on the emulated LAN.

Table 18-35 show lane bus Command Field Descriptions (continued)

Field	Description
AAL5-SDU	Maximum number of bytes in a LANE SDU encapsulated in an ATM AAL5 frame. This length includes a 2-byte marker and a full Ethernet-like frame from the destination MAC address field through the last byte of data. It does not include the Ethernet CRC or FRC, which is not present on emulated LAN frames. The number does not include the 8-byte AAL5 trailer in the last ATM cell of the frame, or the padding between the last data byte and the 8-byte trailer.
max frame age	After receiving a frame over Multicast Send VCC, the broadcast-and-unknown server must transmit the frame to all relevant Multicast Forward VCCs within this number of seconds. When the time expires, the server discards the frame.
NSAP	ATM address of this broadcast-and-unknown server.
lecid	Unique identifier of the LANE client at the other end of this VCC.
vcd	Virtual circuit descriptor that uniquely identifies this VCC.
cnt	For Multicast Send VCC, the number of packets sent from the client to the broadcast-and-unknown server. For Multicast Forward VCC, the number of packets sent from the broadcast-and-unknown server clients.
NSAP	For Multicast Send VCC, the ATM address of the LANE client at the other end of this VCC. For Multicast Forward VCC, the ATM address of the broadcast-and-unknown server.

show lane client

To display global and per-VCC LANE information for all the LANE clients configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane client** EXEC command.

show lane client [**interface atm** *card/subcard/port*[**.***subinterface-number*] | **name** *elan-name*] [**brief** | **detail**]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
subinterface-number	Subinterface number.
elan-name	Name of the emulated LAN. Maximum length is 32 characters.
brief	Keyword used to display the global information but not the per-VCC information.
detail	Keywork used to display backup server connection information.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show lane client** command.

```
Switch# show lane client
LE Client ATM0  ELAN name: alpha  Admin: up  State: operational
Client ID: 2
HW Address: 0041.0b0a.2c82   Type: ethernet            Max Frame Size: 1516
ATM Address: 47.00918100000000410B0A2C81.001122334455.00

 VCD  rxFrames  txFrames  Type       ATM Address
   0         0         0  configure  47.33330000000000000000000.000111222333.00
 255         1         2  direct     47.33330000000000000000000.001122334455.00
 256         1         0  distribute 47.33330000000000000000000.001122334455.00
 257         0         0  send       47.33330000000000000000000.000000111111.00
 258         1         0  forward    47.33330000000000000000000.000000111111.00

LE Client ATM0.5  ELAN name: alpha5  Admin: up  State: operational
Client ID: 2
HW Address: 0041.0b0a.2c82   Type: ethernet            Max Frame Size: 1516
ATM Address: 47.00918100000000410B0A2C81.001122334455.05

 VCD  rxFrames  txFrames  Type       ATM Address
   0         0         0  configure  47.33330000000000000000000.000111222333.00
 259         1         5  direct     47.33330000000000000000000.001122334455.05
 260         7         0  distribute 47.33330000000000000000000.001122334455.05
 261         0        13  send       47.33330000000000000000000.000000111111.05
 262        20         0  forward    47.33330000000000000000000.000000111111.05
 VCD  rxFrames  txFrames  Type       ATM Address
 264        22        12  data       47.33330000000000000000000.000011112222.05
```

Table 18-36 describes the significant fields in the sample display.

Table 18-36 show lane client Command Field Descriptions

Field	Description
Interface	Interface or subinterface for which information is displayed.
Name	Name of the emulated LAN.
MAC	MAC address of this LANE client.
type	Type of emulated LAN, Ethernet, or Token Ring.
MTU	Maximum transmission unit (packet) size on the emulated LAN.
AAL5-SDU length	Maximum number of bytes in a LANE SDU encapsulated in an AAL5 frame. This length includes a 2-byte marker and a full Ethernet-like frame from the destination MAC address field through the last byte of data. It does not include an Ethernet CRC (or FRC), which is not present on emulated LAN frames. The number does not include the 8-byte AAL5 trailer in the last ATM cell of the frame, or the padding between the last data byte and the 8-byte trailer.
NSAP	ATM address of this LANE client.
VCD	Virtual channel descriptor that uniquely identifies this VCC.
rxFrames	Number of packets received.
txFrames	Number of packets transmitted.
Type	Type of VCC; same as the SVC and PVC types. Possible VCC types are configure, direct, distribute, send, forward, and data.[1]
NSAP	ATM address of the LANE component at the other end of this VCC.

1. The Configure Direct VCC is shown in this display as *configure*. The Control Direct VCC is shown as *direct*; the Control Distribute VCC is shown as *distribute*. The Multicast Send VCC and Multicast Forward VC are shown as *send* and *forward*, respectively. The data Direct VCC is shown as *data*.

show lane config

To display global LANE information for the configuration server configured on an interface, use the **show lane config** EXEC command.

show lane config [**interface atm** *card*/*subcard*/*port*] [**brief**]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
brief	Keyword used to display the global information, but not the per-VCC information.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show lane config** command on a configuration server with two ATM addresses.

```
Switch# show lane config
LE Config Server ATM 1/0/0 config table: table State: operational
ATM Address: 39.000000000000000000000000.000000000500.00
ATM Address: 39.000000000000000000000000.000000000500.01
cumulative total number of unrecognized packets received so far:0
cumulative total number of config requests received so far: 10
cumulative total number of config failures so far: 0
```

The following example shows an operational server even though the addresses are not completely registered. The first address in not registered with the ILMI, as indicated by the ilmi-state. The second address is not registered with either the ILMI or the ATM signalling subsystem, as indicated by the atmsig-state.

```
Switch# show lane config
LE Config Server ATM 1/0/0 config table: table State: operational
ATM Address: 39.000000000000000000000000.000000000500.00 ilmi-
ATM Address: 39.000000000000000000000000.000000000500.01 ilmi- atmsig-
cumulative total number of unrecognized packets received so far:0
cumulative total number of config requests received so far: 10
cumulative total number of config failures so far: 0
```

The following example displays some physical connectivity problems with the result that the configuration server ATM address is undetermined. Either the prefix was not obtained, or it is not there. As a result, the address cannot be computed and you see the message "EXACT ADDRESS NOT YET SET (NO PREFIX?)" in the display.

```
Switch# show lane config
LE Config Server ATM 1/0/0 config table: table State: operational
ATM Address: EXEACT ADDRESS NOT YET SET (NO PREFIX ?) ilmi- atmsig-
   actual user specified form:...
cumulative total number of unrecognized packets received so far:0
cumulative total number of config requests received so far: 0
cumulative total number of config failures so far: 0
```

Table 18-37 describes the significant fields in the sample displays.

Table 18-37 show lane config Command Field Descriptions

Field	Description
LE Config Server	Major interface on which the LANE configuration server is configured.
config-table	Name of the database associated with the LANE configuration server.
State	State of the configuration server: down or operational. If down, the reasons field indicates why it is down. The reasons include the following: NO-config, NO-nsap-address, and No-interface-up.
ATM address	ATM address of this configuration server.

show lane database

To display the database of the configuration server, use the **show lane database** EXEC command.

show lane database [*name*]

Syntax Description

name	Specific database name.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Defaults

Shows all databases.

Examples

The following example is sample output from the **show lane database** command.

```
Switch# show lane database
config-table: engandmkt - bound to interface/s: atm 1/0/0
default ELAN: none
ELAN eng: les NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1001.01
  LEC MAC 0800.200c.1100
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1000.01
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1300.01
ELAN mkt: les NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1001.02
  LEC MAC 0800.200c.1100
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1000.02
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1300.02
```

Table 18-38 describes the significant fields in the sample display.

Table 18-38 show lane database Command Field Descriptions

Field	Description
config-table	Name of current database.
default ELAN	Default name, if one is established.
ELAN	Name of the emulated LAN whose data is reported in the line and the next three lines.
LEC MAC	MAC addresses of an individual LANE client in the emulated LAN. This display includes a separate line for every LANE client in this emulated LAN.
LEC NSAP	ATM addresses of all LANE clients in the emulated LAN.

show lane default-atm-addresses

To display the automatically assigned ATM address of each LANE component in a switch router or on a specified interface or subinterface, use the **show lane default-atm-addresses** EXEC command.

show lane default-atm-addresses [**interface atm** *card/subcard/port.subinterface-number*]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
.*subinterface-number*	Specifies the number of the subinterface.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

You do not need any of the LANE components running on this switch before using this command.

Examples

The following example is sample output from the **show lane default-atm-addresses** command for the ATM 1/0/0 when all LANE components are located on that interface.

```
Switch# show lane default-atm-addresses interface atm 1/0/0
interface ATM1/0/0:
LANE Client:47.00000000000000000000000.00000C304A98.**
LANE Server:47.00000000000000000000000.00000C304A99.**
LANE Bus:47.00000000000000000000000.00000C304A9A.**
LANE Config Server:47.00000000000000000000000.00000C304A9B.00
note: ** is the subinterface number byte in hex
```

Table 18-39 describes the significant fields shown in the display.

Table 18-39 show lane default-atm-addresses Field Descriptions

Field	Description
interface	Displays the specified interface.
LANE Client	Displays the ATM address of the LANE client on the interface.
LANE Server	Displays the ATM address of the LANE server on the interface.
LANE Bus	Displays the ATM address of the LANE broadcast-and-unknown server on the interface.
LANE Config Server	Displays the ATM address of the LANE configuration server on the interface.

show lane le-arp

To display the LANE ARP table of the LANE client configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane le-arp** EXEC command.

show lane le-arp [**interface atm** *card/subcard/port*[**.***subinterface-number*] | **name** *elan-name*]

Syntax Description

card/subcard/port	Card, subcard, and port number of the ATM interface.
.*subinterface-number*	Specifies the number of the subinterface.
elan-name	Name of the emulated LAN. Maximum length is 32 characters.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output of the **show lane le-arp** command.

```
Switch# show lane le-arp
Hardware Addr   ATM Address                                  VCD  Interface
0000.0c52.3bc8  47.33330000000000000000000.000011112222.05 264  ATM0.5
```

Table 18-40 describes the significant fields shown in the display.

Table 18-40 show lane le-arp Field Descriptions

Field	Description
Hardware Addr	MAC address, in dotted hexadecimal notation, assigned to the LANE component at the other end of this VCD.
ATM Address	ATM address of the LANE component at the other end of this VCD.
VCD	Virtual channel descriptor.
Interface	Interface or subinterface used to reach the specified component.

show lane name

To show the LAN emulation ARP server, use the **show lane name** EXEC command.

show lane name *elan-name* [**brief**]

Syntax Description

elan-name	Specifies the name for the emulated LAN.
brief	Displays all the information about the LANE except the connection client information.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

show lane server

To display global information for the LANE server configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane server** EXEC command.

show lane server [**interface atm** *card/subcard/port*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

Syntax Description

card/subcard/port	Card, subcard, and port number for the ATM interface.
.*subinterface-number*	Specifies the number for the subinterface.
elan-name	Name of the emulated LAN. Maximum length is 32 characters.
brief	Keyword used to display the global information but not the per-VCC information.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show lane server** command.

```
Switch# show lane server interface atm 3/0/0.1

interface atm 3/0/0.1name: pubs
type: Ethernet MTU:1500AAL5-SDU length:1516
NSAP: 45.000001415555121f.yyyy.zzzz.0800.200c.1001.01
lecid/
proxyvcdcntNSAP
*7533045.000001415555121f.yyyy.zzzz.0800.200c.1001.01
1763345.000001415555121f.yyyy.zzzz.0800.200c.1000.01
5/P871545.000001415555122f.yyyy.zzzz.0800.200c.1100.01
6/P955345.000001415555124f.yyyy.zzzz.0800.200c.1300.01
```

Table 18-41 describes the significant fields in the sample display.

Table 18-41 show lane server Command Field Descriptions

Field	Description
interface	Interface or subinterface on which this LANE server is configured.
name	Name of emulated LAN.
type	Type of emulated LAN interface.
MTU	Maximum transmission unit (packet) size on the emulated LAN.

Table 18-41 show lane server Command Field Descriptions (continued)

Field	Description
AAL5-SDU	Maximum number of bytes in a LANE SDU encapsulated in an AAL5 frame. This length includes a 2-byte marker and a full Ethernet-like frame from the destination MAC address field through the last byte of data. It does not include the Ethernet CRC or FRC, which is not present on emulated LAN frames. The number does not include the 8-byte AAL5 trailer in the last ATM cell of the frame, nor the padding between the last data byte and the 8-byte trailer.
NSAP	ATM address of this broadcast-and-unknown server.
lecid	Unique identifier of the LANE client at the other end of this VCC.
proxy	When a LANE client joins an emulated LAN, it includes a proxy bit that tells the LANE server that the LANE client does not guarantee to register all its MAC address-ATM address pairs with the LANE server. The Cisco Systems LANE clients must set the proxy bit. Workstation LANE clients, directly attached to ATM, do not set the proxy.
vcd	Virtual circuit descriptor that uniquely identifies this VCC.
cnt	For Multicast Send VCC, the number of packets sent from the client to the broadcast-and-unknown server. For Multicast Forward VCC, the number of packets sent from the broadcast-and-unknown server clients.
NSAP	For Multicast Send VCC, the ATM address of the LANE client at the other end of this VCC. For Multicast Forward VCC, the ATM address of the broadcast-and-unknown server.

show line

To display terminal line parameters, use the **show line** EXEC command.

Catalyst 8540 MSR

show line [*line-num* | **console 0** | **vty** *vty-line-num*]

Catalyst 8510 MSR and LightStream 1010

show line [*line-num* | **aux 0** | **console 0** | **vty** *vty-line-num*]

Syntax Description

line-num	Absolute line number of the terminal line.
aux 0	Displays parameters for the auxiliary line. (Catalyst 8510 MSR and LightStream 1010)
console 0	Displays parameters for the primary terminal line.
vty-line-num	VTY line number.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following sample output from the **show line** command shows line 2 as a virtual terminal with a transmit and receive rate of 9600 bps. The modem state, and the terminal screen width and length are also displayed.

Overruns occur when the UART serving the line receives a byte but has nowhere to put it because previous bytes were not taken from the UART by the host route processor. The byte is lost, and the overrun count increases when the route processor next looks at the UART status.

```
Switch# show line 2
 Tty Typ     Tx/Rx     A Modem  Roty AccO AccI  Uses    Noise   Overruns
   2 VTY   9600/9600   -    -      -    -    -     0        0        0/0

Line 2, Location: "", Type: ""
Length: 24 lines, Width: 80 columns
Baud rate (TX/RX) is 9600/9600
Status: No Exit Banner
Capabilities: none
Modem state: Idle
Special Chars: Escape  Hold  Stop  Start  Disconnect  Activation
                ^^x    none   -     -       none
Timeouts:      Idle EXEC    Idle Session   Modem Answer  Session   Dispatch
               0:10:00        never                        none     not set
Session limit is not set.
Time since activation: never
Editing is enabled.
History is enabled, history size is 10.
```

```
Full user help is disabled
Allowed transports are telnet.  Preferred is telnet.
No output characters are padded
No special data dispatching characters
```

Table 18-42 describes the fields shown in the display.

Table 18-42 show line Field Descriptions

Field	Description
Tty	Line number. In this case, 17.
Typ	Type of line. In this case, a virtual terminal line (vty), which is active, in asynchronous mode denoted by the preceding "A." Possible values include: CTY—Console AUX—Auxiliary port (Catalyst 8510 MSR and LightStream 1010) TTY—Asynchronous terminal port lpt—Parallel printer
Tx/Rx	Transmit rate/receive rate of the line.
A	Indicates whether or not autobaud has been configured for the line. A value of "F" indicates that autobaud has been configured; a hyphen (-) indicates that it has not been configured.
Modem	Types of modem signals configured for the line. Possible values include: callin callout cts-req DTR-Act inout RIisCD
Roty	Rotary group configured for the line.
AccO, AccI	Output or Input access list number configured for the line.
Uses	Number of connections established to or from the line since the system was restarted.
Noise	Number of times noise has been detected on the line since the system was restarted.
Overruns	Hardware (UART) overruns or software buffer overflows, both defined as the number of overruns or overflows that occurred on the specified line since the system was restarted. Hardware overruns are buffer overruns; the UART chip has received bits from the software faster than it can process them. A software overflow occurs when the software has received bits from the hardware faster than it can process them.
Line	Current line.
Location	Location of the current line.
Type	Type of line, as specified by the **line** global configuration command.

Table 18-42 show line Field Descriptions (continued)

Field	Description
Length	Length of the terminal or screen display.
Width	Width of the terminal or screen display.
Baud rate (TX/RX)	Transmit rate/receive rate of the line.
Status	State of the line: ready or not, connected or disconnected, active or inactive, exit banner or no exit banner, async interface active or inactive.
Capabilities	Current terminal capabilities. In this case, the line is usable as an asynchronous interface.
Modem state	Modem control state. This field should always read READY.
Special characters	Current settings that were input by the user (or taken by default) from the following global configuration commands: • **escape-character** • **hold-character** • **stop-character** • **start-character** • **disconnect-character** • **activation-character**
Timeouts	Current settings that were input by the user (or taken by default) from the following global configuration commands: **exec-timeout** **session-timeout** **dispatch-timeout** **modem answer-timeout**
Session limit	Maximum number of sessions.
Time since activation	Last time **start_process** was run.
Editing	Whether or not command line editing is enabled.
History	Current history length, set by the user (or taken by default) from the **history** configuration command.
Full user help	Whether or not full user help is enabled, set by the user (or taken by default) from the **help** line configuration command.
Transport methods	Current set transport method, set by the user (or taken by default) from the **transport preferred** line configuration command.
Character padding	Current set padding, set by the user (or taken by default) from the **padding** line configuration command.
Data dispatching characters	Current dispatch character set by the user (or taken by default) from the **dispatch-character** line configuration command.
Line protocol	Definition of the specified line's protocol and address.
Output, Input Packets	Number of output and input packets queued on this line.
Group codes	AT group codes.

show location

To display the system location, use the **show location** EXEC command.

show location

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

Use this command to display information for analyzing and evaluating the system.

show logging

To display the state of logging to the syslog, use the **show logging** EXEC command.

show logging

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command displays the state of syslog error and event logging, including host addresses, and whether console logging is enabled. This command also displays SNMP configuration parameters and protocol activity.

Examples

The following example is sample output from the **show logging** command.

```
Switch# show logging
Syslog logging: enabled
     Console logging: disabled
     Monitor logging: level debugging, 266 messages logged.
     Trap logging: level informational, 266 messages logged.
     Logging to 131.108.2.238
```

Table 18-43 describes the significant fields shown in the display.

Table 18-43 show logging Field Descriptions

Field	Description
Syslog logging	When enabled, system logging messages are sent to a UNIX host that acts as a syslog server; that is, it captures and saves the messages.
Console logging	If enabled, states the level; otherwise, this field displays disabled.
Monitor logging	Minimum level of severity required for a log message to be sent to a monitor terminal (not the console).
Trap logging	Minimum level of severity required for a log message to be sent to a syslog server.

show memory

To show statistics about switch memory, including memory free pool statistics, use the **show memory** EXEC command.

show memory [*type*] [**allocating process**] [**dead**] [**free**] [**pci**]

Syntax Description

type	Memory type to display (see Table 18-44). If *type* is not specified, statistics for all memory types present in the switch are displayed.
allocating-process	Displays allocating process name.
dead	Displays memory owned by dead processes.
free	Displays free memory statistics.
pci	Displays PCI memory statistics.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

You should use the **summary** option to limit the amount of information presented.

Table 18-44 lists the types of memory statistics that you specify in the **show memory** *type* EXEC command.

Table 18-44 show memory Type Options

Type	Description
address	Displays memory starting at 0 through 4294967294.
allocating-process	Shows allocating process name.
dead	Displays memory owned by dead processes.
failures alloc	Displays memory allocation failures.
fast	Displays fast memory statistics.
free	Displays free memory statistics.
io	Displays IO memory statistics.
multibus	Displays multibus memory statistics.
pci	Displays PCI memory statistics.
processor	Displays processor memory statistics.
summary	Displays summary of memory usage per allocated PC.

Examples

The following example is sample output from the **show memory** command.

```
Switch# show memory
              Head  FreeList    Total(b)     Used(b)     Free(b)  Largest(b)
Processor  6059E050  603F96C8    10887088     3249548     7637540     7601484
     Fast  6057E050  603FA454      131072       43444       87628       87280

          Processor memory

 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What
6059E050   1056 0        6059E498   1                   6001F4B4  List Elements
6059E498   2656 6059E050 6059EF20   1                   6001F4B4  List Headers
6059EF20   6000 6059E498 605A06B8   1                   60020628  *Init*
605A06B8   6000 6059EF20 605A1E50   1                   60020628  *Init*
605A1E50    168 605A06B8 605A1F20   1                   6002FBEC  *Init*
605A1F20   2548 605A1E50 605A293C   1                   600324B4  TTY data
605A293C   2000 605A1F20 605A3134   1                   600353B0  TTY Input Buf
605A3134    512 605A293C 605A335C   1                   600353E4  TTY Output Buf
605A335C   6000 605A3134 605A4AF4   1                   60020628  *Init*
605A4AF4   1056 605A335C 605A4F3C   1                   6001F4B4  messages
605A4F3C   1032 605A4AF4 605A536C   1                   6005D99C  *Init*
605A536C     52 605A4F3C 605A53C8   1                   60063034  ILMI Request
605A53C8  12528 605A536C 605A84E0   0  608B666 0        600441E0  (coalesced)
605A84E0   2548 605A53C8 605A8EFC   1                   60060C68  *Init*
605A8EFC     84 605A84E0 605A8F78   1                   60063280  Init
605A8F78     84 605A8EFC 605A8FF4   1                   60063280  Init
605A8FF4     84 605A8F78 605A9070   1                   60063280  Init
605A9070   3456 605A8FF4 605A9E18   1                   6001F4B4  Reg Service
```

The following example is sample output from the **show memory free** command.

```
Switch# show memory free
Head  FreeList    Total(b)     Used(b)     Free(b)  Largest(b)
Processor  6059E050  603F96C8    10887088     3249536     7637552     7601484
     Fast  6057E050  603FA454      131072       43444       87628       87280

Processor memory

 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What

             24    Free list 1
608B4724     36 608B46F8 608B4770   0  0       608198D 60069ED4  Exec
608198DC     24 608198B0 6081991C   0  608B472 608B3E4 60069ED4  Exec
608B3E48     52 608B3E10 608B3EA4   0  608198D 0       6006A0FC  Exec

             88    Free list 2

            104    Free list 3
608B60B4    112 608B6084 608B614C   0  0       0       60034890  (coalesced)

            116    Free list 4

            120    Free list 5

            124    Free list 6

            152    Free list 7
Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What
608B3D08    204 608B3CD0 608B3DFC   0  0       0       60034890  (coalesced)
```

```
            216    Free list 8
608B5BD0    248 608B5B98 608B5CF0   0  0       0       60034890  (coalesced)

            264    Free list 9

            280    Free list 10
608BA45C    296 608BA430 608BA5AC   0  0       0       60034890  (coalesced)

            344    Free list 11

            384    Free list 12

            408    Free list 13

            472    Free list 14

            672    Free list 15
608BA848    712 608BA690 608BAB38   0  0       0       0         (fragment)

            760    Free list 16
 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What

           1144    Free list 17

           1500    Free list 18

           1684    Free list 19
608BAD50   1740 608BACFC 608BB444   0  0       0       0         (coalesced)

           2000    Free list 20

           3000    Free list 21

           4256    Free list 22

           4680    Free list 23

           5000    Free list 24

           5184    Free list 25
608BB514   7588 608BB4C0 608BD2E0   0  0       0       6006D054  (coalesced)

           9376    Free list 26
 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What

          10000    Free list 27
608B6664  12528 608B661C 608B977C   0  0       605A53C 0         (coalesced)
605A53C8  12528 605A5380 605A84E0   0  608B666 0       600441E0  (coalesced)

          18184    Free list 28

          20000    Free list 29

          32768    Free list 30

          65536    Free list 31

         131072    Free list 32

         262144    Free list 33
608C028C7601484 608BD398 0          0  0       0       60067AC8  (coalesced)

Total:   7637552
```

```
          Fast memory

 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What

             24    Free list 1
6057E050     36 603FA214 6057E09C   0  0       6057F6F 0         (fragment)
6057F6F8     28 6057E0B0 6057F73C   0  6057E05 60580D9 0         (fragment)
60580D98     28 6057F750 60580DDC   0  6057F6F 6058243 0         (fragment)
60582438     28 60580DF0 6058247C   0  60580D9 60582CA 0         (fragment)
60582CA4     48 60582490 60582CFC   0  6058243 60582F2 0         (fragment)
60582F24     48 60582D10 60582F7C   0  60582CA 605830A 0         (fragment)
605830A4     48 60582F90 605830FC   0  60582F2 6058475 0         (fragment)
60584758     28 60583110 6058479C   0  605830A 60585DF 0         (fragment)
60585DF8     28 605847B0 60585E3C   0  6058475 6058749 0         (fragment)
60587498     28 60585E50 605874DC   0  60585DF 0       0         (fragment)

             88    Free list 2

            152    Free list 3

            216    Free list 4

            280    Free list 5

            344    Free list 6
 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What

            408    Free list 7

            472    Free list 8

           1500    Free list 9

           2000    Free list 10

           3000    Free list 11

           5000    Free list 12

          10000    Free list 13

          20000    Free list 14

          32768    Free list 15

          65536    Free list 16
60588B38  87280 605874F0 0          0  0       0       0         (fragment)

 Address  Bytes Prev.    Next     Ref  PrevF   NextF   Alloc PC  What
         131072    Free list 17

         262144    Free list 18

Total:     87628
```

The display of **show memory free** contains the same types of information as the **show memory** display, except that only free memory is displayed, and the information is displayed, in order, for each free list.

The first section of the display includes summary statistics about the activities of the system memory allocator.

Table 18-45 describes significant fields shown in the first section of the display.

Table 18-45 show memory Field Descriptions—First Section

Field	Description
Head	Hexadecimal address of the head of the memory allocation chain.
Free List	Hexadecimal address of the base of the free list.
Total (b)	Sum of used bytes plus free bytes.
Used (b)	Amount of memory in use.
Free (b)	Amount of memory not in use.
Largest (b)	Size of largest available free block.

The second section of the display is a block-by-block listing of memory use. Table 18-46 describes the significant fields in the second section of the display.

Table 18-46 Characteristics of Each Block of Memory—Second Section

Field	Description
Address	Hexadecimal address of the block.
Bytes	Size of the block, in bytes.
Prev.	Address of the previous block (should match the Address field on previous line).
Next	Address of the next block (should match the address on the next line).
Ref	Reference count for that memory block, indicating how many different processes are using that block of memory.
PrevF	Address of the previous free block (if free).
NextF	Address of the next free block (if free).
Alloc PC	Address of the system call that allocated the block.
What	Name of process that owns the block, or “(fragment)” if the block is a fragment, or “(coalesced)” if the block was coalesced from adjacent free blocks.

The **show memory io** command displays the free IO memory blocks. This command quickly shows how much unused IO memory is available.

The following example is sample output from the **show memory io** command.

```
Switch# show memory io
Address   Bytes Prev.   Next     Ref  PrevF   NextF   Alloc PC  What
6132DA0   59264 6132664 6141520  0    0      600DDEC  3FCF0     *Packet Buffer*
600DDEC     500 600DA4C 600DFE0  0   6132DA0 600FE68 0
600FE68     376 600FAC8 600FFE0  0   600DDEC 6011D54 0
6011D54     652 60119B4 6011FEO  0   600FE68 6013D54 0
614FCA0     832 614F564 614FFE0  0   601FD54 6177640 0
6177640 2657056 6172E90 0        0   614FCA0 0       0
Total: 2723244
```

show ncdp path root

To display the NCDP path from the current node to its root clock source, use the **show ncdp path root** command.

show ncdp path root

When this command is executed, a PDU is built and sent towards its root clock source. As the PDU traverses nodes in the network, the NCDP entity on each node adds path information to the PDU. When the PDU reaches the node with the root clock source, it is routed back to the originating node. When the PDU is received by the originating node, the accumulated path information is displayed.

Syntax Description

This command has no keywords or arguments.

Defaults

Disabled

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

The operation of this command is asynchronous, and thus the PDU or response PDU could be dropped within the network, causing this command to fail.

Examples

```
Switch# show ncdp path root
Ncdp:name         :low-sodium
Ncdp:address      :4700918100000000603E7B6E0100603E7B6E0100
Ncdp:hop count    :0
Ncdp:clock source :BITS 0

Ncdp:name         :ls1010-b
Ncdp:address      :4700918100000000E0F751CC0100E0F751CC0100
Ncdp:hop count    :1
Ncdp:clock source :ATM0/1/3

Ncdp:name         :ls1010-c
Ncdp:address      :4700918100000000E0F751CD0100E0F751CD0100
Ncdp:hop count    :2
Ncdp:clock source :ATM0/1/0
```

Related Commands

Command	Description
debug ncdp	Displays NCDP errors, events, and packet information.
ncdp (interface)	Enables NCDP and configures the network clocking hardware at the interface level.
show ncdp ports	Displays NCDP information at the port level.
show ncdp sources	Displays all of the NCDP clock sources configured on the node and their attributes.
show ncdp status	Displays NCDP status information.
show ncdp timers	Displays NCDP information for the node-level timers.

show ncdp ports

To display NCDP information at the port level, use the **show ncdp ports** command.

show ncdp ports {*port_number* | {atm | cbr} *card/subcard/port* **| all}**

Syntax Description

port_number	Displays NCDP information for the given port.
card/subcard/port	Displays NCDP information for the given ATM interface.
all	Displays NCDP information for all ports.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

Use this command to show NCDP information at the port and interface level.

Examples

The following example is sample output from the **show ncdp ports** command.

```
Switch# show ncdp ports 14
 port data --(14)-----ATM3/1/1--------------
 port_id                          : 14
 state                            : forwarding
 admin weight                     : 10
 root vector priority             : 1
 root vector stratum level        : 4
 root vector prs id               : 255
 root vector switch stratum level  : 4
 root vector address              : 4700918100000000E0F75D040100E0F75D040100
 designated_cost                  : 0
 hop_count                        : 0
 switch vector priority           : 1
 switch vector stratum level      : 4
 switch vector prs id             : 255
 switch vector switch stratum level: 4
 switch vector address            : 4700918100000000E0F75D040100E0F75D040100
 designated_port                  : 7
 topology_change_acknowledge      : 0
 tx_sequence_number               : 628
 rx_sequence_number               : 1212285
 config_pending                   : 0
 health                           : unknown
```

Related Commands

Command	Description
debug ncdp	Displays NCDP errors, events, and packet information.
national reserve (Catalyst 8510 MSR and LightStream 1010)	Selects the national bits for E1 IMA interfaces.
ncdp (interface)	Enables NCDP and configure the network clocking hardware at the interface level.
show ncdp path root	Displays the NCDP path from the current node to its root clock source
show ncdp sources	Displays all of the NCDP clock sources configured on the node and their attributes.
show ncdp status	Displays NCDP status information.
show ncdp timers	Displays NCDP information for the node-level timers.

show ncdp sources

To display all of the NCDP clock sources configured on the node and their attributes, use the **show ncdp sources** command.

show ncdp sources

Syntax Description

This command has no arguments or keywords.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

Use this command to display NCDP clock sources configured on the node and their attributes.

Examples

The following example is sample output from the **show ncdp sources** command.

```
Switch# show ncdp sources
 = ncdp clock source information ==========================
 Source type: Normal port (ATM0/1/3, 26, DOWN) (health: unknown)
   Priority             : 1
   Stratum level        : 3e
   Prs id               : 0
   Switch stratum level : 4
   Address              : 4700918100000000400B0A2A8100400B0A2A8100

 Source type: ASP free running
   Priority             : 128
   Stratum level        : 4
   Prs id               : 255
   Switch stratum level : 4
   Address              : 4700918100000000400B0A2A8100400B0A2A8100
```

Related Commands

Command	Description
debug ncdp	Displays NCDP errors, events, and packet information.
national reserve (Catalyst 8510 MSR and LightStream 1010)	Selects the national bits for E1 IMA interfaces.
ncdp (interface)	Enables NCDP and configures the network clocking hardware at the interface level.

Command	Description
show ncdp path root	Displays the NCDP path from the current node to its root clock source.
show ncdp ports	Displays NCDP information at the port level.
show ncdp status	Displays NCDP status information.
show ncdp timers	Displays NCDP information for the node-level timers.

show ncdp status

To display NCDP status information, use the **show ncdp status** command.

show ncdp status

Syntax Description

This command has no arguments or keywords.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

Use this command to display NCDP status information on the local node.

Examples

The following example is sample output from the **show ncdp status** command.

```
LS1010# show ncdp status
 = ncdp switch information ==== enabled ==============
 revertive
 root clock source priority:      1
 root clock source stratum level: 4
 root clock source prs id:        255
 stratum level of root switch:    4
 clocking root address:           47009181000000000E0F75D040100E0F75D040100
 hop count:                       1
 root path cost:                  10
 root port:                       14 <ATM3/1/1>
 max age:                         20
 hello time:                      500
 priority      of best source:    128
 stratum level of best source:    4
 prs id        of best source:    255
 switch stratum level:            4
 address:                         470091810000000000400B0A2A8100400B0A2A8100
 switch max age:                  11
 switch hello time:               500
 switch hold time:                500
 max diameter:                    11
 converged root count:            1181224
 converged:                       1
 total timer events:              1524768
 total queue events:              1195449
 rx config messages:              1195449
 tx config messages:              332043
```

```
rx tcn messages:                1
tx tcn messages:                6
rx non-participant messages:    14
rx unknown messages:            0
```

Related Commands

Command	Description
debug ncdp	Displays NCDP errors, events, and packet information.
national reserve (Catalyst 8510 MSR and LightStream 1010)	Selects the national bits for E1 IMA interfaces.
ncdp (interface)	Enables NCDP and configures the network clocking hardware at the interface level.
show ncdp path root	Displays the NCDP path from the current node to its root clock source.
show ncdp ports	Displays NCDP information at the port level.
show ncdp sources	Displays all of the NCDP clock sources configured on the node and their attributes.
show ncdp timers	Displays NCDP information for the node-level timers.

show ncdp timers

To display NCDP information for the node-level timers, use the **show ncdp timers** command.

show ncdp timers

Syntax Description

This command has no arguments or keywords.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

Use this command to display NCDP information for the node-level timers.

Examples

The following example is sample output from the **show ncdp timers** command.

```
LS1010# show ncdp timers
 = ncdp switch timer information ==========================
 hello   events          : 714
 tcn     events          : 0
 topo    events          : 1
 port    events          : 4
 msg_age events          : 0
 hold    events          : 332061
 ncdp    events          : 1195205
```

Related Commands

Command	Description
debug ncdp	Displays NCDP errors, events, and packet information.
national reserve (Catalyst 8510 MSR and LightStream 1010)	Selects the national bits for E1 IMA interfaces.
ncdp (interface)	Enables NCDP and configures the network clocking hardware at the interface level.
show ncdp path root	Displays the NCDP path from the current node to its root clock source.
show ncdp ports	Displays NCDP information at the port level.
show ncdp sources	Displays all of the NCDP clock sources configured on the node and their attributes.
show ncdp status	Displays NCDP status information.

show network-clocks

To show which ports are designated as network clock sources, use the **show network-clocks** EXEC command.

show network-clocks

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command also displays what is configured at each priority, and the current priority of the functioning clock.

Examples

Catalyst 8540 MSR

The following is sample output from the **show network-clocks** EXEC command for anATM switch router.

```
Switch# show network-clocks
Network clocking information:
-------------------------------------
Source switchover mode:    non-revertive
Netclkd state:             Active
Source selection method:   provisioned
NCLKM hardware status:     installed & usable
NCLKM status:              software enabled
Primary   clock source:    BITS 0 in T1 mode
Secondary clock source:    not configured
Present   clock source:    BITS 0 in T1 mode Locking
```

Catalyst 8510 MSR and LightStream 1010

The following is sample output from the **show network-clocks** EXEC command for an ATM switch router.

```
Switch# show network-clocks
clock configuration is NON-Revertive
Priority 1 clock source: No clock
Priority 2 clock source: No clock
Priority 3 clock source: No clock
Priority 4 clock source: No clock
Priority 5 clock source: System clock
Current clock source:System clock, priority:5
```

Related Commands

Command	Description
network-clock-select	Allows the recovered clock to specify a particular port to provide network clocking.

show ntp associations

To show the status of NTP associations, use the **show ntp associations** EXEC command.

show ntp associations [**detail**]

Syntax Description

detail	Shows detailed information about each NTP association.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

Detailed descriptions of the information displayed by this command can be found in the NTP specification (RFC 1305).

The following example is sample output from the **show ntp associations** command.

```
Switch# show ntp associations
     address         ref clock     st  when  poll reach  delay  offset    disp
 ~160.89.32.2      160.89.32.1       5    29  1024  377     4.2   -8.59     1.6
+~131.108.13.33    131.108.1.111     3    69   128  377     4.1    3.48     2.3
*~131.108.13.57    131.108.1.111     3    32   128  377     7.9   11.18     3.6
* master (synced), # master (unsynced), + selected, - candidate, ~ configured
```

Table 18-47 describes the significant fields shown in the display.

Table 18-47 show ntp associations Field Descriptions

Field	Description
address	Address of the peer.
ref clock	Address of the peer reference clock.
st	Peer stratum.
when	Time since the last NTP packet was received from the peer.
poll	Polling interval (seconds).
reach	Peer reachability (bit string, in octal).
delay	Round-trip delay to the peer (milliseconds).
offset	Relative time of the peer's clock to the local clock (milliseconds).
disp	Dispersion.
The first character of the line can be one or more of the following:	
*	Synchronized to this peer.
#	Almost synchronized to this peer.
+	Peer selected for possible synchronization.

Table 18-47 show ntp associations Field Descriptions (continued)

Field	Description
-	Peer is a candidate for selection.
~	Peer is statically configured.

The following example is sample output of the **show ntp associations detail** command.

```
Switch# show ntp associations detail
160.89.32.2 configured, insane, invalid, stratum 5
ref ID 160.89.32.1, time AFE252C1.6DBDDFF2 (00:12:01.428 PDT Fri Apr 4 1997)
our mode active, peer mode active, our poll intvl 1024, peer poll intvl 64
root delay 137.77 msec, root disp 142.75, reach 376, sync dist 215.363
delay 4.23 msec, offset -8.587 msec, dispersion 1.62
precision 2**19, version 3
org time AFE252E2.3AC0E887 (00:12:34.229 PDT Fri Apr 4 1997)
rcv time AFE252E2.3D7E464D (00:12:34.240 PDT Fri Apr 4 1997)
xmt time AFE25301.6F83E753 (00:13:05.435 PDT Fri Apr 4 1997)
filtdelay =     4.23    4.14    2.41    5.95    2.37    2.33    4.26    4.33
filtoffset =   -8.59   -8.82   -9.91   -8.42  -10.51  -10.77  -10.13  -10.11
filterror =     0.50    1.48    2.46    3.43    4.41    5.39    6.36    7.34

131.108.13.33 configured, selected, sane, valid, stratum 3
ref ID 131.108.1.111, time AFE24F0E.14283000 (23:56:14.078 PDT Sun Jul 4 1993)
our mode client, peer mode server, our poll intvl 128, peer poll intvl 128
root delay 83.72 msec, root disp 217.77, reach 377, sync dist 264.633
delay 4.07 msec, offset 3.483 msec, dispersion 2.33
precision 2**6, version 3
org time AFE252B9.713E9000 (00:11:53.442 PDT Fri Apr 4 1997)
rcv time AFE252B9.7124E14A (00:11:53.441 PDT Fri Apr 4 1997)
xmt time AFE252B9.6F625195 (00:11:53.435 PDT Fri Apr 4 1997)
filtdelay =     6.47    4.07    3.94    3.86    7.31    7.20    9.52    8.71
filtoffset =    3.63    3.48    3.06    2.82    4.51    4.57    4.28    4.59
filterror =     0.00    1.95    3.91    4.88    5.84    6.82    7.80    8.77

131.108.13.57 configured, our_master, sane, valid, stratum 3
ref ID 131.108.1.111, time AFE252DC.1F2B3000 (00:12:28.121 PDT Mon Jul 5 1993)
our mode client, peer mode server, our poll intvl 128, peer poll intvl 128
root delay 125.50 msec, root disp 115.80, reach 377, sync dist 186.157
delay 7.86 msec, offset 11.176 msec, dispersion 3.62
precision 2**6, version 2
org time AFE252DE.77C29000 (00:12:30.467 PDT Fri Apr 4 1997)
rcv time AFE252DE.7B2AE40B (00:12:30.481 PDT Fri Apr 4 1997)
xmt time AFE252DE.6E6D12E4 (00:12:30.431 PDT Fri Apr 4 1997)
filtdelay =    49.21    7.86    8.18    8.80    4.30    4.24    7.58    6.42
filtoffset =   11.30   11.18   11.13   11.28    8.91    9.09    9.27    9.57
filterror =     0.00    1.95    3.91    4.88    5.78    6.76    7.74    8.71
```

Table 18-48 describes the significant fields shown in the display.

Table 18-48 show ntp associations detail Field Descriptions

Field	Descriptions
configured	Peer was statically configured.
dynamic	Peer was dynamically discovered.
our_master	Local machine is synchronized to this peer.
selected	Peer is selected for possible synchronization.

Table 18-48 show ntp associations detail Field Descriptions (continued)

Field	Descriptions
candidate	Peer is a candidate for selection.
sane	Peer passes basic sanity checks.
insane	Peer fails basic sanity checks.
valid	Peer time is believed to be valid.
invalid	Peer time is believed to be invalid.
leap_add	Peer is signalling that a leap second is added.
leap-sub	Peer is signalling that a leap second is subtracted.
unsynced	Peer is not synchronized to any other machine.
ref ID	Address of the machine to which peer is synchronized.
time	Last time stamp peer received from its master.
our mode	Our mode relative to peer (active/passive/client/server/bdcast/bdcast client).
peer mode	Peer's mode relative to us.
our poll ivl	Our poll interval to the peer.
peer poll ivl	Peer's poll interval to us.
root delay	Delay along the path to the root (ultimate stratum 1 time source).
root disp	Dispersion of the path to the root.
reach	Peer reachability (bit string in octal).
sync dist	Peer synchronization distance.
delay	Round-trip delay to the peer.
offset	Offset of the peer clock relative to our clock.
dispersion	Dispersion of the peer clock.
precision	Precision of the peer clock (in Hz).
version	NTP version number that peer is using.
org time	Originate time stamp.
rcv time	Receive time stamp.
xmt time	Transmit time stamp.
filtdelay	Round-trip delay, in milliseconds, of each sample.
filtoffset	Clock offset, in milliseconds, of each sample.
filterror	Approximate error of each sample.

show ntp status

To show the status of NTP, use the **show ntp status** EXEC command.

show ntp status

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show ntp status** command.

```
Switch# show ntp status
Clock is synchronized, stratum 4, reference is 131.108.13.57
nominal freq is 250.0000 Hz, actual freq is 249.9990 Hz, precision is 2**19
reference time is AFE2525E.70597B34 (00:10:22.438 PDT Fri Apr 4 1997)
clock offset is 7.33 msec, root delay is 133.36 msec
root dispersion is 126.28 msec, peer dispersion is 5.98 msec
```

Table 18-49 shows the significant fields in the display.

Table 18-49 show ntp status Field Descriptions

Field	Description
synchronized	System is synchronized to an NTP peer.
unsynchronized	System is not synchronized to any NTP peer.
stratum	NTP stratum of this system.
reference	Address of the peer to which the unit is synchronized.
nominal freq	Nominal frequency of the system hardware clock.
actual freq	Measured frequency of the system hardware clock.
precision	Precision of this system's clock (in Hz).
reference time	Reference time stamp.
clock offset	Offset of our clock to synchronized peer.
root delay	Total delay along the path to the root clock.
root dispersion	Dispersion of the root path.
peer dispersion	Dispersion of the synchronized peer.

show ppp multilink

To display bundle information for the multilink PPP bundles, use the **show ppp multilink** EXEC command.

show ppp multilink

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output when no bundles are on a system.

```
impulse# show ppp multilink
No active bundles
```

The following example is sample output when a single multilink PPP bundle (named *rudder*) is on a system.

```
systema# show ppp multilink
Bundle rudder, 3 members, first link is BRI0: B-channel 1
0 lost fragments, 8 reordered, 0 unassigned, sequence 0x1E/0x1E rcvd/sent
```

The following example is sample output when two active bundles are on a system. Subsequent bundles would be displayed below the previous bundle.

```
impulse# show ppp multilink
Bundle rudder, 3 members, first link is BRI0: B-Channel 1
  0 lost fragments, 8 reordered, 0 unassigned, sequence 0x1E/0x1E rcvd/sent
Bundle dallas, 4 members, first link is BRI2: B-Channel 1
  0 lost fragments, 28 reordered, 0 unassigned, sequence 0x12E/0x12E rcvd/sent
```

The following example shows output when a stack group was created. On stack group member *systema* on stack group *stackq*, multilink PPP bundle *hansolo* has bundle interface Virtual-Access4. Two child interfaces are joined to this bundle interface. The first is a local PRI channel (serial 0:4), and the second is an interface from stack group member *systemb.*

```
systema# show ppp multilink
Bundle hansolo 2 members, Master link is Virtual-Access4
0 lost fragments, 0 reordered, 0 unassigned, 100/255 load
0 discarded,  0 lost received, sequence 40/66 rcvd/sent
members 2
 Serial0:4
 systemb:Virtual-Access6    (1.1.1.1)
```

show privilege

To display your current level of privilege, use the **show privilege** EXEC command.

show privilege

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show privilege** command. The current privilege level is 15.

```
Switch# show privilege
Current privilege level is 15
```

Related Commands

Command	Description
enable password	Cisco IOS command removed from this manual.

show processes

To display information about the active processes, use the **show processes** EXEC command.

show processes [**cpu**]

Syntax Description

cpu	Displays utilization statistics. Displays detailed route processor utilization statistics. (Catalyst 840 MSR)

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example is sample output from the **show processes** command.

```
Switch# show processes
CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%
 PID QTy       PC Runtime (ms)    Invoked   uSecs    Stacks TTY Process
   1 M*         0         2156       3194     67510408/12000  0 Exec
   2 Lst 6001EFF0         4532       2266    2000 5808/6000   0 Check heaps
   3 Mst 6004867C            0          2       0 5680/6000   0 Timers
   4 Lwe 600804C0          908       7752     117 5404/6000   0 ARP Input
   5 Mwe 601A05A4            0          1       0 2712/3000   0 OIR Handler
   6 HE  6022A61C            0          1       0 5840/6000   0 ATM OAM input
   7 LE  6022BDA0            0          1       0 5852/6000   0 ATM ARP Input
   8 Lsp 6019F048            0      13593       0 5792/6000   0 Aal5 Reassembly
   9 Mwe 600E0344            0       6798       0 5524/6000   0 CDP Protocol
  10 Lwe 6011C744            0          1       0 5680/6000   0 Probe Input
  11 Mwe 6011C038            0          1       0 5716/6000   0 RARP Input
  12 Hwe 6010B7A0          660       3449     19110648/12000  0 IP Input
  13 Mwe 60138A70            0      13593       0 5764/6000   0 TCP Timer
  14 Lwe 6013A674            0          3       0 5640/6000   0 TCP Protocols
  15 Mwe 6026CE40            0          4       0 5696/6000   0 ATM-RT Background
  16 Mwe 60117C78            0          1       0 5544/6000   0 BOOTP Server
  17 Lsi 6016B72C            0       1133       0 5788/6000   0 IP Cache Ager
  18 Hwe 602691B8           28          9    3111 5032/6000   0 ILMI Input
  19 Mwe 60263284            8          5    1600 5268/6000   0 ILMI Request
  20 Mwe 60263338            4          5     800 5176/6000   0 ILMI Response
  21 Lwe 602522E4            0          1       0 5828/6000   0 Resource Mgmt ba
 22 Mwe 602496F8            0          2       0 5680/6000   0 ATMCORE OAM Proc
  23 Mwe 6024CA90            0          2       0 5684/6000   0 ATMCORE OAM Ping
  24 Mwe 60203D50            0          7       0 5680/6000   0 ATMSIG Timer
  25 Mwe 6022528C            0       4534       0 5132/6000   0 SSCOP Input
  26 Mwe 6022555C            0       2266       0 5176/6000   0 SSCOP Output
  27 Mst 60225924            0          3       0 5252/6000   0 SSCOP Timer
  28 Mwe 602024D4            0          2       0 5680/6000   0 ATMSIG Input
  29 Mwe 602028E8            0          3       0 5364/6000   0 ATMSIG Output
  30 Mwe 60238488            0          2       0 5688/6000   0 ATM Soft VC Time
  31 Mwe 602923B8            0          2       0 5286/6000   0 IISP router
  32 Cwe 60012040            0          1       0 5720/6000   0 Critical Bkgnd
  33 Mwe 60011E68           36          2   18000 4720/6000   0 Net Background
  34 Lwe 600424F8            0          9       0 5544/6000   0 Logger
```

```
 35 Msp 600204E4            4      67968       0 5088/6000   0 TTY Background
 36 Hwe 6001235C         2100      62468      33 2708/3000   0 Net Input
 37 Msp 60011D98        13584       1133   11989 5120/6000   0 Per-minute Jobs
```

Examples

The following example is sample output from the **show processes cpu** command.

```
Switch# show processes cpu
CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%
 PID  Runtime(ms)  Invoked  uSecs    5Sec   1Min   5Min TTY Process
   1        2180     3212    678   0.00%  0.03%  0.07%   0 Exec
   2        4536     2268   2000   0.00%  0.00%  0.00%   0 Check heaps
   3           0        2      0   0.00%  0.00%  0.00%   0 Timers
   4         912     7787    117   0.00%  0.00%  0.00%   0 ARP Input
   5           0        1      0   0.00%  0.00%  0.00%   0 OIR Handler
   6           0        1      0   0.00%  0.00%  0.00%   0 ATM OAM input
   7           0        1      0   0.00%  0.00%  0.00%   0 ATM ARP Input
   8           0    13605      0   0.00%  0.00%  0.00%   0 Aal5 Reassembly Tim
   9           0     6804      0   0.00%  0.00%  0.00%   0 CDP Protocol
  10           0        1      0   0.00%  0.00%  0.00%   0 Probe Input
  11           0        1      0   0.00%  0.00%  0.00%   0 RARP Input
  12         660     3452    191   0.00%  0.00%  0.00%   0 IP Input
  13           0    13605      0   0.00%  0.00%  0.00%   0 TCP Timer
  14           0        3      0   0.00%  0.00%  0.00%   0 TCP Protocols
  15           0        4      0   0.00%  0.00%  0.00%   0 ATM-RT Background
  16           0        1      0   0.00%  0.00%  0.00%   0 BOOTP Server
  17           0     1134      0   0.00%  0.00%  0.00%   0 IP Cache Ager
  18          28        9   3111   0.00%  0.00%  0.00%   0 ILMI Input
  19           8        5   1600   0.00%  0.00%  0.00%   0 ILMI Request
  20           4        5    800   0.00%  0.00%  0.00%   0 ILMI Response
  21           0        1      0   0.00%  0.00%  0.00%   0 Resource Mgmt backg
 PID  Runtime(ms)  Invoked  uSecs    5Sec   1Min   5Min TTY Process
  22           0        2      0   0.00%  0.00%  0.00%   0 ATMCORE OAM Process
  23           0        2      0   0.00%  0.00%  0.00%   0 ATMCORE OAM Ping Rc
  24           0        7      0   0.00%  0.00%  0.00%   0 ATMSIG Timer
  25           0     4538      0   0.00%  0.00%  0.00%   0 SSCOP Input
  26           0     2268      0   0.00%  0.00%  0.00%   0 SSCOP Output
  27           0        3      0   0.00%  0.00%  0.00%   0 SSCOP Timer
  28           0        2      0   0.00%  0.00%  0.00%   0 ATMSIG Input
  29           0        3      0   0.00%  0.00%  0.00%   0 ATMSIG Output
  30           0        2      0   0.00%  0.00%  0.00%   0 ATM Soft VC Timer
  31           0        2      0   0.00%  0.00%  0.00%   0 IISP router
  32           0        1      0   0.00%  0.00%  0.00%   0 Critical Bkgnd
  33          36        2  18000   0.00%  0.00%  0.00%   0 Net Background
  34           0        9      0   0.00%  0.00%  0.00%   0 Logger
  35           4    68023      0   0.00%  0.00%  0.00%   0 TTY Background
  36        2100    62522     33   0.00%  0.00%  0.00%   0 Net Input
  37       13596     1134  11989   0.00%  0.01%  0.00%   0 Per-minute Jobs
```

Table 18-50 describes the significant fields shown in the two displays.

Table 18-50 show processes Field Descriptions

Field	Description
utilization for five seconds	CPU utilization for the last 5 seconds, 1 minute, and 5 minutes.
route processor utilization for five seconds (Catalyst 8540 MSR)	CPU utilization for the last 5 seconds, 1 minute, and 5 minutes.
PID	Process ID.

Table 18-50 show processes Field Descriptions (continued)

Field	Description
Q	Process queue priority. Possible values are: H (high), M (medium), L (low).
Ty	Scheduler test. Possible values: * (currently running), E (waiting for an event), S (ready to run, voluntarily relinquished processor), rd (ready to run, wakeup conditions occurred), we (waiting for an event), sa (sleeping until an absolute time), si (sleeping for a time interval), sp (sleeping for a time interval [alternate call]), st (sleeping until a timer expires), hg (hung; the process never executes again), xx (dead; the process has terminated, but has not yet been deleted).
PC	Current program counter.
Runtime (ms)	CPU time the process has used, in milliseconds.
Invoked	Number of times the process has been invoked.
uSecs	Microseconds of CPU time for each process invocation.
Stacks	Low water mark/total stack space available (in bytes).
TTY	Terminal that controls the process.
Process	Name of process.
five seconds	CPU utilization by task in last 5 seconds (in hundredths of seconds).
one minute	CPU utilization by task in last minute (in hundredths of seconds).
five minutes	CPU utilization by task in last 5 minutes (in hundredths of seconds).

Note Because the network server has a 4-ms clock resolution, run times are considered reliable only after a large number of invocations or a reasonable, measured run time.

show processes memory

To show memory utilization, use the **show processes memory** EXEC command.

show processes memory

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example is sample output from the **show processes memory** command.

```
Switch# show processes memory
Total: 10887088, Used: 3249408, Free: 7637680
 PID  TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0    0      45016        300      32056          0          0 *Init*
   0    0        300      38640        300          0          0 *Sched*
   0    0    1649012     107596    2956340    1715216          0 *Dead*
   1    0     254992     253508      14144          0          0 Exec
   2    0          0          0       6660          0          0 Check heaps
   3    0         92         92       6660          0          0 Timers
   4    0         92          0       6752          0          0 ARP Input
   5    0         92          0       3752          0          0 OIR Handler
   6    0          0          0       6660          0          0 ATM OAM input
   7    0          0          0       6660          0          0 ATM ARP Input
   8    0          0          0       6660          0          0 Aal5 Reassemblk
   9    0        332         92       6900          0          0 CDP Protocol
  10    0        228          0       6888          0          0 Probe Input
  11    0         92          0       6752          0          0 RARP Input
  12    0        204          0      12864          0          0 IP Input
  13    0          0          0       6660          0          0 TCP Timer
  14    0        728          0       7388          0          0 TCP Protocols
  15    0        184         92       6752          0          0 ATM-RT Backgrod
  16    0        528          0       7188          0          0 BOOTP Server
  17    0          0          0       6660          0          0 IP Cache Ager
  18    0      37576      37056       6788          0          0 ILMI Input
  19    0      10164       8360       6752          0          0 ILMI Request
  20    0       1688       6956       6844          0          0 ILMI Response
  21    0          0          0       6660          0          0 Resource Mgmt d
  22    0        184         92       6752          0          0 ATMCORE OAM Prs
  23    0        184         92       6752          0          0 ATMCORE OAM Pis
  24    0         92         92       6660          0          0 ATMSIG Timer
  25    0        184         92       6752          0          0 SSCOP Input
  26    0        184         92       6752          0          0 SSCOP Output
  27    0         92         92       6660          0          0 SSCOP Timer
  28    0        184         92       6752          0          0 ATMSIG Input
  29    0        796       1512       7364          0          0 ATMSIG Output
  30    0         92         92       6660          0          0 ATM Soft VC Tir
  31    0        628         92       7196          0          0 IISP router
  32    0        128          0       6844          0          0 Critical Bkgnd
```

```
 33    0      24440      11224       8028          0          0 Net Background
 34    0        184         92       6752          0          0 Logger
 35    0      17236       2964       6844          0          0 TTY Background
 36    0        184          0       3844          0          0 Net Input
 37    0          0          0       6660          0          0 Per-minute Jobs
                                  3249012 Total
```

Table 18-51 describes the significant fields shown in the display.

Table 18-51 show processes memory Field Descriptions

Field	Description
Total	Total amount of memory held.
PID	Process ID.
TTY	Terminal that controls the process.
Allocated	Sum of all memory that the process has requested from the system.
Freed	How much memory a process has returned to the system.
Holding	Allocated memory minus freed memory. A value can be negative when it has freed more than it was allocated.
Process	Process name.
Init	System initialization.
Sched	The scheduler.
Dead	Processes (as a group) that are now dead.

show protocols

To display the configured protocols, use the **show protocols** EXEC command.

show protocols [*type card/subcard/port*]

Syntax Description

type	Specifies an interface type as **atm**, **atm-p**, **cbr**, **ethernet**, or **null**.
card/subcard/port	Specifies the card, subcard and port numbers for the *interface-type*.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New document

Usage Guidelines

This command shows the global and interface-specific status of any configured IP protocol.

Examples

The following example is sample output from the **show protocols** command.

```
Switch# show protocols
Global values:
ATM0 is up, line protocol is up
  Internet address is 1.2.2.2 255.0.0.0
Ethernet0 is up, line protocol is up
  Internet address is 172.20.40.43 255.255.255.0
ATM3/0/0 is up, line protocol is up
ATM3/0/1 is down, line protocol is down
ATM3/0/2 is down, line protocol is down
ATM3/0/3 is up, line protocol is up
```

show redundancy (Catalyst 8540 MSR)

To list all redundancy-related information, use the **show redundancy** EXEC command.

show redundancy

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

This command is available on the primary route processor only.

Examples

The following example shows how to list redundancy information for an ATM switch router.

```
Switch# show redundancy
Primary
-------
Slot:                          a4/0/0
Uptime:                        4 minutes
Image:                         Version 11.3(19980716:020138)
[kartik-ehsa-integ
107]
Last Running Config. Sync:     4 minutes
Last Startup Config. Sync:     4 minutes
Last Restart Reason:           Normal boot
Secondary
---------
Slot:                          a8/0/0
Uptime:                        4 minutes
Image:                         Version 11.3(19980716:020138)
```

Related Commands

Command	Description
main-cpu (Catalyst 8540 MSR)	
redundancy (Catalyst 8540 MSR)	Switches to the redundancy mode.

show registry

To show the function registry information, use the **show registry** EXEC command.

show registry [*registry-name* [*registry-num*] [**brief**]] [**brief** | **statistics**]

Syntax Description

registry-name	Name of the registry to examine.
registry-num	Number of the registry to examine.
brief	Displays limited functions and services information.
statistics	Displays function registry statistics.

Defaults

Brief

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show registry** command.

```
Switch# show registry atm 0
Registry objects: 1799  bytes: 213412

--
Registry 23: ATM Registry
  Service 23/0:
      Stub service with 5 arguments
            0x6025E890
  Service 23/1:
      Stub service with 4 arguments
            0x602649A0
  Service 23/2:
      Stub service with 3 arguments
            0x60264B20
  Service 23/3:
      Stub service with 1 argument
            0x60263790
  Service 23/4:
      Stub service with 1 argument
            0x60261C30
  Service 23/5:
      Stub service with 1 argument
            0x60261CC0
  Service 23/6:
Stub service with 1 argument
            0x60261E78
  Service 23/7:
      Stub service with 2 arguments
            0x60262038
```

```
  Service 23/8:
      Stub service with 1 argument
            0x602620C0
  Service 23/9:
      Stub service with 2 arguments
            0x6023F610
  Service 23/10:
      List service with 1 argument
            0x602677A4
            0x60212F0C
            0x60233CA4
  Service 23/11:
      Stub service with 1 argument
  Service 23/12:
      Case service with 1 argument, 7 maximum cases
         3  0x6027CFCC
         6  0x602120B8
    default 0x60211BA8
Service 23/13:
      Stub service with 1 argument
            0x602650C0
  Service 23/14:
      Stub service with 1 argument

--
Registry 25: ATM routing Registry
  Service 25/0:
      List service with 2 arguments
            0x60268A50
```

Examples

The following example is sample output of a brief **show display** command.

```
Switch# show registry atm 3/0/0 brief
Registry objects: 1799  bytes: 213412

--
Registry 23: ATM Registry
  Service 23/0:
  Service 23/1:
  Service 23/2:
  Service 23/3:
  Service 23/4:
  Service 23/5:
  Service 23/6:
  Service 23/7:
  Service 23/8:
  Service 23/9:
  Service 23/10:
  Service 23/11:
  Service 23/12:
  Service 23/13:
  Service 23/14:

--
Registry 25: ATM routing Registry
  Service 25/0:
```

show reload

To display the reload status on the switch, use the **show reload** EXEC command.

show reload

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

Use **show reload** command to display a pending software reload.

Examples

The following **show reload** command represents a reload scheduled for 12:00 a.m. (midnight) on Saturday, April 20, 1998.

```
Switch# show reload
Reload scheduled for 00:00:00 PDT Sat April 20 1998 (in 12 hours and 12 minutes)
```

Related Commands

Command	Description
reload	Cisco IOS command removed from this manual. See Appendix D.

show rhosts

To display information about current remote hosts, use the **show rhosts** EXEC command.

show rhosts

Syntax Description

This command has no keywords or arguments

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

Use this command to display information about current users on the remote host. The information shows the local user, the host address, and the remote user.

Examples

The following example is sample output from the **show rhosts** EXEC command.

```
Switch# show rhosts
Local user   Host            Remote user
jhunt          171.69.194.9    jhunt
```

show rif

To display the current contents of the RIF cache, use the **show rif** privileged EXEC command.

show rif

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example is sample output from the **show rif** command:

```
Switch# show rif
Codes: * interface, - static, + remote
Hardware Addr  How   Idle (min)  Routing Information Field
5A00.0000.2333 atm0               3   08B0.0101.2201.0FF0
5B01.0000.4444 -                  -   -
0000.1403.4800 atm0               0   -
0000.2805.4C00 atm0               *   -
0000.2807.4C00 atm0               *   -
0000.28A8.4800 atm0               0   -
0077.2201.0001 atm0               10   0830.0052.2201.0FF0
```

In the display, entries marked with an asterisk (*) are the interface addresses of the router. Entries marked with a dash (-) are static entries. Entries with a number indicate cached entries. If the RIF timeout is set to a value other than the default of 15 minutes, the timeout is displayed at the top of the display. Table 18-52 describes the significant fields shown in the display.

Table 18-52 show rif Field Descriptions

Field	Description
Hardware Addr	MAC address for this entry.
How	Describes how the RIF has been learned. Possible values are atm0 or “-”.
Idle (min)	Indicates how long (in minutes) since the last response was received directly from this node.
Routing Information Field	RIF number.

Related Commands

Command	Description
multiring	Enables collection and use of RIF information on a subinterface.
rif	Used to enter static source-route information into the routing information field (RIF) cache.

show rmon alarms

To display the contents of the switch's RMON alarm table, use the **show rmon alarms** EXEC command.

show rmon alarms

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

For additional information, refer to the RMON MIB described in RFC 1757.

You must have first enabled RMON on the interface, and configured RMON alarms to display alarm information with the **show rmon alarms** command.

Examples

The following example is sample output from the **show rmon alarms** command.

```
Switch# show rmon alarms
Alarm 2 is active, owned by manager1
 Monitors ifEntry.1.1 every 30 seconds
 Taking delta samples, last value was 0
 Rising threshold is 15, assigned to event 12
 Falling threshold is 0, assigned to event 0
 On startup enable rising or falling alarm
```

Table 18-53 describes the fields shown in the display.

Table 18-53 show rmon alarms Field Descriptions

Field	Description
Alarm 2 is active, owned by manager1	Unique index into the alarmTable, showing the alarm status is active, and the owner of this row, as defined in the RMON alarmTable.
Monitors ifEntry.1.1	Object identifier of the particular variable to be sampled. Equivalent to alarmVariable in RMON.
every 30 seconds	Interval in seconds over which the data is sampled and compared with the rising and falling thresholds. Equivalent to alarmInterval in RMON.
Taking delta samples	Method of sampling the selected variable and calculating the value to be compared against the thresholds. Equivalent to alarmSampleType in RMON.

Table 18-53 show rmon alarms Field Descriptions (continued)

Field	Description
last value was	Value of the statistic during the last sampling period. Equivalent to alarmValue in RMON.
Rising threshold is	Threshold for the sampled statistic. Equivalent to alarmRising Threshold in RMON.
assigned to event	Index of the eventEntry that is used when a rising threshold is crossed. Equivalent to alarmRisingEventIndex in RMON.
Falling threshold is	Threshold for the sampled statistic. Equivalent to alarmFallingThreshold in RMON.
assigned to event	Index of the eventEntry that is used when a falling threshold is crossed. Equivalent to alarmFallingEventIndex in RMON.
On startup enable rising or falling alarm	Alarm that may be sent when this entry is first set to valid. Equivalent to alarmStartupAlarm in RMON.

Related Commands

Command	Description
rmon alarm	Cisco IOS command removed from this manual. See Appendix D.

show rmon events

To display the contents of the switches RMON event table, use the **show rmon events** EXEC command.

show rmon events

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

For additional information, refer to the RMON MIB described in RFC 1757.

You must have first enabled RMON on the interface, and configured RMON events to display alarm information with the **show rmon events** command.

Examples

The following example is sample output from the **show rmon events** command.

```
Switch# show rmon events
Event 12 is active, owned by manager1
 Description is interface-errors
 Event firing causes log and trap to community rmonTrap, last fired 00:00:00
```

Table 18-54 describes the fields shown in the display.

Table 18-54 show rmon events Field Descriptions

Field	Description
Event 12 is active, owned by manager 1	Unique index into the eventTable, showing the event status is active, and the owner of this row, as defined in the eventTable of RMON.
Description is interface-errors	Type of event, in this case an interface error.
Event firing causes log and trap	Type of notification that the switch makes about this event. Equivalent to eventType in RMON.
community rmonTrap	If an SNMP trap is sent, it is sent to the SNMP community specified by this octet string. Equivalent to eventCommunity in RMON.
last fired	Last time the event was generated.

Related Commands

Command	Description
rmon event	Cisco IOS command removed from this manual. See Appendix D.

show running-config

To display the configuration information currently running on the terminal, use the **show running-config** EXEC command. This command replaces the **write terminal** command.

show running-config

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	Modified: Replaced **write terminal**.

Usage Guidelines

Use this command in conjunction with the **show startup-config** command to compare the information in running memory to the information stored in a location specified by the *config_file* environment variable. This variable specifies the configuration file used for initialization (startup). Use the **bert (Catalyst 8510 MSR and LightStream 1010)** command in conjunction with the **copy running-config startup-config** command to set the *config_file* environment variable.

Examples

The following example shows how to display the running configuration.

```
Switch# show running-config
Building configuration...

Current configuration:
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Switch
!
boot host tftp dplatz/dummy.cfg 172.20.52.3
boot network tftp dplatz/dummy.cfg 172.20.52.3
boot system tftp dplatz/dummy.cfg 172.20.52.3
boot system flash cat8540m-wp-mz.120-2.5.W5.7.20
logging buffered 4096 debugging
enable password lab
!
no facility-alarm core-temperature major
no facility-alarm core-temperature minor
redundancy
 main-cpu
  sync config startup
  sync config running
no ip subnet-zero
ip host-routing
```

```
!
atm address 47.0091.8100.0000.0090.2156.d801.0090.2156.d801.00
atm address 47.0091.8100.0000.0040.0b0a.c501.0040.0b0a.c501.00
atm router pnni
 no aesa embedded-number left-justified
 node 1 level 56 lowest
  redistribute atm-static
!
!
lane database x
sgcp
!
!
interface Tunnel0
 no ip address
 no ip directed-broadcast
!
interface ATM0
 no ip address
 no ip directed-broadcast
 atm service-class 8 wrr-weight 15
 atm maxvp-number 0
!
interface Ethernet0
 ip address 172.20.52.11 255.255.255.224
 no ip directed-broadcast
!
interface Async1
 no ip address
 no ip directed-broadcast
 hold-queue 10 in
!
ip default-gateway 172.20.52.1
ip classless
!
!
atm pnni explicit-path identifier 1 name LS1010.path enable
 next-node LS1010 port 81901001
 next-node dallas
 next-node NewLs1010
!
atm pnni explicit-path identifier 2 name newpath enable
!
atm pnni explicit-path identifier 5 name test enable
!
line con 0
 no exec
 exec-timeout 0 0
 transport input none
line aux 0
 exec-timeout 0 0
line vty 0 4
 exec-timeout 0 0
 password lab
 no login
!
end
```

Related Commands

Command	Description
bert (Catalyst 8510 MSR and LightStream 1010)	Checks the bit errors on a line for a specified interval.
copy running-config	Copies the switch's running configuration file to another destination.
copy startup-config	Copies the switch's startup configuration file to another destination.
show startup-config	Shows the configuration file pointed to by the *config_file* environment variable.

show sessions

To display information about open Telnet or rlogin connections, use the **show sessions** EXEC command.

show sessions

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

This command displays the host name, address, number of unread bytes for the user to receive, idle time, and connection name.

Examples

The following example is sample output from the **show sessions** command.

```
Switch# show sessions
Conn Host                Address          Byte    Idle  Conn Name
   1 MATHOM              192.31.7.21         0       0  MATHOM
*  2 CHAFF               131.108.12.19       0       0  CHAFF
```

Table 18-55 describes the significant fields shown in the display.

Table 18-55 show sessions Field Descriptions

Field	Description
Conn	Name or address of the remote host to which the connection is made.
Host	Remote host to which the switch is connected through a Telnet session.
Address	IP address of the remote host.
Byte	Number of unread bytes displayed for the user to receive.
Idle	Interval (in minutes) since data was last sent on the line.
Conn Name	Assigned name of the connection.

Related Commands

Command	Description
resume	switch to another open Telnet, LAT, or PAD session
where	Cisco IOS command removed from this manual. See Appendix D.

show sgcp

To display global configuration, operational state, and a summary of connection activity for SGCP, use the **show sgcp** EXEC command.

show sgcp

Syntax Description

This command has no arguments or keywords.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

This command shows the global configuration, operational state, and a summary of connection activity.

Examples

The following example shows how to display the global configuration, operational state, and a summary of connection activity.

```
Switch# show sgcp
SGCP Admin State ACTIVE, Oper State ACTIVE
SGCP call-agent: none  , SGCP graceful-shutdown enabled? FALSE
SGCP request timeout 2000, SGCP request retries 6
74 CES endpoint connections created
74 CES endpoints in active connections
```

Table 18-56 lists the field descriptions for the **show sgcp** command.

Related Commands

Command	Description
sgcp	Enables the operation of the SGCP to interconnect ATM CES interface circuits on a switch.
sgcp call-agent	Sends SGCP response packets to a predetermined IP address and UDP port.
sgcp graceful-shutdown	Shuts down SGCP operation.
sgcp request retries	Specifies the number of times the ATM switch sends an SGCP request to the call agent without receiving a response and before ceasing to retry.
sgcp request timeout	Specifies the time the ATM switch waits after sending an SGCP request to the call agent before considering the request lost.
show sgcp connection	Displays a global list of SGCP connections or a single interface based on a related keyword.
show sgcp endpoint	Displays CES circuit endpoints that might or might not have connections created.
show sgcp statistics	Displays global statistics pertaining to SGCP activity.

show sgcp connection

To display a global list of SGCP connections or a single interface based on a related keyword, use the **show sgcp connection** EXEC command.

show sgcp connection [**interface cbr** *card/subcard/port*]

Syntax Description

card/subcard/port	Specifies the card, subcard and port numbers for the CBR interface.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

If you show the allocated SGCP connections, it is easier to determine which single endpoints to display.

Examples

The following example shows how to display the global list of SGCP connections.

```
Switch> show sgcp connection
Conn Endpt         Soft VC State         Call ID
CBR1.1.0/1         Dest- active VC       1564abc
CBR1.1.0/2         Src - active VC       123372c
CBR1.1.0/3         Dest- active VC       12343bc
CBR1.1.0/4         Src - active VC       1238926
CBR1.1.0/5         Dest- active VC       1003abc
CBR1.1.0/6         Src - active VC       12596dc
CBR1.1.0/7         Dest- active VC       124567c
CBR1.1.0/8         Src - active VC       14322bc
CBR1.1.0/9         Dest- active VC       120095c
CBR1.1.0/10        Src - active VC       129999c
CBR1.1.0/11        Dest- active VC       167776c
CBR1.1.0/12        Src - active VC       123456c
CBR1.1.0/14        Dest- active VC       1278764
CBR1.1.0/15        Src - active VC       123424c
CBR1.1.0/16        Dest- active VC       122345c
```

Related Commands

Command	Description
sgcp	Enables the operation of the SGCP to interconnect ATM CES interface circuits on a switch.
show sgcp endpoint	Displays CES circuit endpoints that might or might not have connections created.

show sgcp endpoint

To display CES circuit endpoints that might or might not have connections created, use the **show sgcp endpoint** EXEC command.

show sgcp endpoint [**interface cbr** *card/subcard/port* [*endpoint_val*]]

Syntax Description

card/subcard/portl	Specifies the card, subcard, and port numbers for the CBR interface.
endpoint_val	CES circuit ID: • T1 = 1 to 24 • E1 = 1 to 31

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

This command displays the endpoints that might be eligible for SGCP connections. The ATM switch router displays endpoints that follow:

- Are assigned a single time slot
- Do not have a PVC or soft PVC defined

Examples

The following example shows all CES circuits eligible to be SGCP endpoints.

```
Switch> show sgcp endpoint
Endpt         Timeslots Conn State           Call ID
CBR1.1.0/1         1    no connection
CBR1.1.0/2         1    no connection
CBR1.1.0/3         1    no connection
CBR1.1.0/4         1    no connection
CBR1.1.0/5         1    no connection
CBR1.1.0/6         1    no connection
CBR1.1.0/7         1    no connection
CBR1.1.0/8         1    no connection
CBR1.1.0/9         1    no connection
CBR1.1.0/10        1    no connection
CBR1.1.0/11        1    active
CBR1.1.0/12        1    no connection
CBR1.1.0/14        1    active            1234abc
CBR1.1.0/15        1    active            1234abc
CBR1.1.0/16        1    active            1234abc
CBR1.1.0/17        1    active            1234abc
CBR1.1.0/18        1    active            1234abc
```

```
CBR1.1.0/19        1    active            1234abc
CBR1.1.0/20        1    active            1234abc
CBR1.1.0/21        1    active            1234abc
CBR1.1.0/22        1    active            1234abc
CBR1.1.0/23        1    active            1234abc
CBR1.1.0/24        1    active            1234abc
```

The following example shows a particular CES circuit SGCP endpoint.

```
Switch> show sgcp endpoint interface c1/1/0 1
 Call ID:    Conn ID:    CES VC state: no VC
 Conn Mode none    , Conn State no connection
 CreateConn rx 554, successful 552, failed 2
 DeleteConn rx 554, successful 554, failed 0
 ModifyConn rx 0, successful 0, failed 0
 DeleteConn tx 2, successful 2, failed 0
 Peer RELEASE rx 0, Net RELEASE rx 0
```

Table 18-56 lists possible strings that appear with the **show sgcp endpoint** command.

Table 18-56 Possible Strings with show sgcp endpoint

Field	Possible Strings
CES VC states:	no VC waiting VC initiating VC active VC tearing down VC
Connection states:	no connection created-passive created-initiator active ca delete pending waiting delete rsp waiting ca delete
Connection modes:	none SendOnly RecvOnly SendRecv Inactive Loopback ContTest

Related Commands

Command	Description
sgcp	Enables the operation of the SGCP to interconnect ATM CES interface circuits on a switch.
show sgcp	Displays global configuration, operational state, and a summary of connection activity for SGCP.
show sgcp connection	Displays a global list of SGCP connections or a single interface based on a related keyword.

show sgcp statistics

To display global statistics pertaining to SGCP activity, use the **show sgcp statistics** EXEC command.

show sgcp statistics

Syntax Description

This command has no arguments or keywords.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(3c)W5(9)	New command

Usage Guidelines

Because circuit endpoint structures can be lost when you change interface circuit configuration, global statistics are useful once endpoint statistics are unavailable.

Examples

The following example displays global statistics for SGCP.

```
Switch# show sgcp stat
 UDP pkts rx 104517, tx 104874
 Unrecognized rx pkts 0, SGCP message parsing errors 0
 Duplicate SGC rsp tx 18
 CreateConn rx 53677, successful 48954, failed 4723
 DeleteConn rx 50808, successful 48872, failed 1936
 ModifyConn rx 20, successful 20, failed 0
 DeleteConn tx 357, successful 6, failed 351
 Peer RELEASE rx 24442, Net RELEASE rx 0
```

Table 18-57 lists field descriptions for the **show sgcp statistics** command.

Table 18-57 sgcp statistics Field Descriptions

Field	Description
UDP pkts rx	Number of UDP packets SGCP received.
UDP pkts tx	Number of UDP packets SGCP transmitted.
Unrecognized rx pkts	Number of packets that did not have a recognizable SGCP header.
SGCP message parsing errors	Number of packets that had an SGCP header, but had other parsing errors.

Table 18-57 sgcp statistics Field Descriptions (continued)

Field	Description
Duplicate SGCP rsp tx	This counter increments if an SGCP request is received that duplicates one for which a response exists in the response cache and a duplicate response is sent.
CreateConn rx	Total number of CreateConnection SGCP packets received.
CreateConn successful	Total number of CreateConnection requests to which SGCP positively responded.
CreateConn failed	Total number of CreateConnection requests to which SGCP responded negatively.
DeleteConn rx	Total number of DeleteConnection SGCP packets received, or retries were exceeded.
DeleteConn successful	Total number of DeleteConnection requests to which SGCP responded positively.
DeleteConn failed	Total number of DeleteConnection requests to which SGCP responded negatively.
ModifyConn rx	Total number of ModifyConnection SGCP packets received.
ModifyConn successful	Total number of ModifyConnection requests to which SGCP responded positively.
ModifyConn failed	Total number of ModifyConnection requests to which SGCP responded negatively.
DeleteConn tx	Total number of DeleteConnection SGCP packets transmitted.
Peer RELEASE rx	Total number of RELEASE messages received from the circuit peer.
Net RELEASE rx	Total number of network-generated RELEASE messages received.

Related Commands

Command	Description
sgcp	Enables the operation of the SGCP to interconnect ATM CES interface circuits on a switch.
show sgcp	Displays global configuration, operational state, and a summary of connection activity for SGCP.
show sgcp connection	Displays a global list of SGCP connections or a single interface based on a related keyword.
show sgcp endpoint	Displays CES circuit endpoints that might or might not have connections created.

show snmp

To check the status of communications between the SNMP agent and SNMP manager, use the **show snmp** EXEC command.

show snmp

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command provides counter information for RFC 1213 SNMP operations. It also displays the chassis ID string defined with the **snmp-server chassis-id** command.

Examples

The following example is sample output from the **show snmp** command.

```
Switch# show snmp
Chassis: SN#TS02K229
167 SNMP packets input
    0 Bad SNMP version errors
    0 Unknown community name
    0 Illegal operation for community name supplied
    0 Encoding errors
    167 Number of requested variables
    0 Number of altered variables
    0 Get-request PDUs
    167 Get-next PDUs
    0 Set-request PDUs
167 SNMP packets output
    0 Too big errors (Maximum packet size 484)
    0 No such name errors
    0 Bad values errors
    0 General errors
    167 Get-response PDUs
    0 SNMP trap PDUs
```

Related Commands

Command	Description
snmp-server community	Cisco IOS command removed from this manual. See Appendix D.

show sscop

To show SSCOP details for all ATM interfaces, use the **show sscop** EXEC command.

show sscop

Syntax Description

This command has no keywords or arguments

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show sscop** command.

```
Switch# show sscop atm 3/0/0
SSCOP details for interface ATM3/0/0
   Current State = Data Transfer Ready
   Send Sequence Number: Current = 2, Maximum = 9
   Send Sequence Number Acked = 3
   Rcv Sequence Number: Lower Edge = 2, Upper Edge = 2, Max = 9
   Poll Sequence Number = 1876, Poll Ack Sequence Number = 2
   Vt(Pd) = 0
   Connection Control: timer = 1000
   Timer currently Inactive
   Keep Alive Timer = 30000
   Current Retry Count = 0, Maximum Retry Count = 10
      Statistics -
      Pdu's Sent = 0, Pdu's Received = 0, Pdu's Ignored = 0
      Begin = 0/1, Begin Ack = 1/0, Begin Reject = 0/0
      End = 0/0, End Ack = 0/0
      Resync = 0/0, Resync Ack = 0/0
      Sequenced Data = 2/0, Sequenced Poll Data = 0/0
      Poll = 1591/1876, Stat = 0/1591, Unsolicited Stat = 0/0
      Unassured Data = 0/0, Mgmt Data = 0/0, Unknown Pdu's = 0
```

Table 18-58 describes the fields shown in the display. Interpreting this output requires an understanding of the SSCOP; it is usually displayed by Cisco technicians to help diagnose network problems.

Table 18-58 show sscop Field Descriptions

Field	Description
SSCOP details for interface	Interface card, subcard, and port.
Current State	SSCOP state for the interface.
Send Sequence Number	Current and maximum send sequence number.
Send Sequence Number Acked	Sequence number of packets already acknowledged.

Table 18-58 show sscop Field Descriptions (continued)

Field	Description
Rcv Sequence Number	Sequence number of packets received.
Poll Sequence Number	Current poll sequence number.
Poll Ack Sequence Number	Poll sequence number already acknowledged.
Vt (Pd)	Number of SD frames sent that trigger sending a Poll frame.
Connection Control	Timer used for establishing and terminating SSCOP.
Keep Alive Timer	Timer used to send keepalives on an idle interface.
Current Retry Count	Current count of the retry counter.
Maximum Retry Count	Maximum value the retry counter can take.
PDUs Sent	Total number of SSCOP frames sent.
PDUs Received	Total number of SSCOP frames received.
PDUs Ignored	Number of invalid SSCOP frames ignored.
Begin	Number of Begin frames sent/received.
Begin Ack	Number of Begin ACK frames sent/received.
Begin Reject	Number of Begin Reject frames sent/received.
End	Number of End frames sent/received.
End Ack	Number of End ACK frames sent/received.
Resync	Number of Resync frames sent/received.
Resync Ack	Number of Resync ACK frames sent/received.
Sequenced Data	Number of Sequenced Data frames sent/received.
Sequenced Poll Data	Number of Sequenced Poll Data frames sent/received.
Poll	Number of Poll frames sent/received.
Stat	Number of Stat frames sent/received.
Unsolicited Stat	Number of Unsolicited Stat frames sent/received.
Unassured Data	Number of Unassured Data frames sent/received.
Mgmt Data	Number of Mgmt Data frames sent/received.
Unknown PDUs	Number of Unknown PDU frames sent/received.

show stacks

To monitor the stack utilization of processes and interrupt routines, use the **show stacks** EXEC command. The display includes the reason for the last system reboot.

show stacks *number*

Syntax Description

number	Shows the detail for a specific process (enable mode only).

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

If the system was reloaded because of a system failure, a saved system stack trace is displayed. This information is useful to Cisco engineers for troubleshooting purposes.

Examples

The following example is sample output from the **show stacks** command following a system failure.

```
Switch# show stacks
Minimum process stacks:
Free/Size  Name
5724/6000  Autoinstall
5192/6000  Setup
11528/12000  BootP Resolver
10504/12000  Init

Interrupt level stacks:
Level    Called Unused/Size  Name
  1        9137   4460/6000  Switch Interrupt
  2       71781   5292/6000  Ethernet Interrupt
  3           0   5676/6000  OIR interrupt
  4           0   6000/6000  PCMCIA Interrupt
  5      326900   5624/6000  Console Uart
  6           0   6000/6000  Error Interrupt
  7    34179793   5668/6000  NMI Interrupt Handle
```

show startup-config

To show the configuration file pointed to by the *config_file* environment variable, use the **show startup-config** EXEC command. This command replaces the **show configuration** command.

show startup-config

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command. Originally **show configuration**.
12.0(3c)W5(9)	Modified: Changed to **show startup-config**.

Usage Guidelines

The **show startup-config** command shows the configuration file specified by the *config_file* environment variable. The switch informs you whether the displayed configuration is a complete configuration or a distilled version. A distilled configuration is one that does not contain access lists.

Examples

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The following example is sample output from the **show startup-config** command.

```
Switch# show startup-config
Using 1288 out of 129016 bytes
!
version xx.x
no service pad
service udp-small-servers
service tcp-small-servers
!
hostname Switch3
!
boot bootldr bootflash:/home/cyadaval/xxxxxx-i-m.bin.Z
!
atm address 47.0091.8100.0000.0000.0ca7.ce01.0000.0ca7.ce01.00
!
interface ATM0
 ip address 1.2.2.2 255.0.0.0
 no ip route-cache
 map-group ab
 atm maxvp-number 0
!
interface Ethernet0
 ip address 172.20.40.43 255.255.255.0
 no ip route-cache
!
interface ATM3/0/0
 no atm auto-link-determination
 no atm address-registration
```

```
 atm uni type public side user
!
interface ATM3/1/0
 no keepalive
!
interface ATM3/1/1
 no keepalive
!
interface ATM3/1/2
 no keepalive
 atm pvc 0 100 rx-cttr 1 tx-cttr 1 interface  ATM3/1/1 0 100
 atm pvp 1 rx-cttr 1 tx-cttr 1
 atm pvp 2 rx-cttr 1 tx-cttr 1
 atm pvp 3 rx-cttr 1 tx-cttr 1
!
interface ATM3/1/2.1 point-to-point
 atm maxvp-number 0
!
interface ATM3/1/2.2 point-to-point
 atm maxvp-number 0
!
interface ATM3/1/2.3 point-to-point
 atm maxvp-number 0
!
interface ATM3/1/3
 no keepalive
 atm pvc 0 200 rx-cttr 1 tx-cttr 1 interface  ATM0 0 200  encap aal5snap
!
ip domain-name cisco.com
ip name-server 198.92.30.32
!
map-list ab
 ip 1.1.1.1 atm-vc 200
!
line con 0
 exec-timeout 0 0
line vty 0
 password Switch
 login
line vty 1 4
 login
!
end
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show startup-config** command.

```
Switch# show startup-config
Using 1288 out of 129016 bytes
!
version xx.x
no service pad
service udp-small-servers
service tcp-small-servers
!
hostname Switch3
```

```
!
boot bootldr bootflash:/home/cyadaval/xxxxxx-i-m.bin.Z
!
atm address 47.0091.8100.0000.0000.0ca7.ce01.0000.0ca7.ce01.00
!
interface ATM0
 ip address 1.2.2.2 255.0.0.0
 no ip route-cache
 map-group ab
 atm maxvp-number 0
!
interface Ethernet0
 ip address 172.20.40.43 255.255.255.0
 no ip route-cache
!
interface ATM3/0/0
 no atm auto-link-determination
 no atm address-registration
 atm uni type public side user
!
interface ATM3/1/0
 no keepalive
!
interface ATM3/1/1
 no keepalive
!
interface ATM3/1/2
 no keepalive
 atm pvc 0 100 rx-cttr 1 tx-cttr 1 interface  ATM3/1/1 0 100
 atm pvp 1 rx-cttr 1 tx-cttr 1
 atm pvp 2 rx-cttr 1 tx-cttr 1
 atm pvp 3 rx-cttr 1 tx-cttr 1
!
interface ATM3/1/2.1 point-to-point
 atm maxvp-number 0
!
interface ATM3/1/2.2 point-to-point
 atm maxvp-number 0
!
interface ATM3/1/2.3 point-to-point
 atm maxvp-number 0
!
interface ATM3/1/3
 no keepalive
 atm pvc 0 200 rx-cttr 1 tx-cttr 1 interface  ATM0 0 200  encap aal5snap
!
ip domain-name cisco.com
ip name-server 198.92.30.32
!
map-list ab
 ip 1.1.1.1 atm-vc 200
!
line con 0
 exec-timeout 0 0
line aux 0
 transport input all)
line vty 0
 password Switch
 login
line vty 1 4
 login
!
end
```

Examples

The following example is partial sample output from the **show startup-config** command when the configuration file is compressed.

```
Switch# show startup-config
Using 21542 out of 65536 bytes, uncompressed size = 142085 bytes
!
version 11.2
service compress-config
!
hostname rose
!
boot system flash gs7-k.sthormod_clean
boot system rom
```

Related Commands

Command	Description
copy running-config	Copies the switch's running configuration file to another destination.
description	Cisco IOS command removed from this manual. See Appendix D.
service compress-config	Cisco IOS command removed from this manual. SeeAppendix D .
show bootflash:	Displays information about the bootflash: file system.
show running-config	Displays the configuration information currently running on the terminal.

show subsys

To display the subsystem information, use the **show subsys** EXEC command.

show subsys [**class** *class* | **name** *name*]

Syntax Description

class	Specifies the subsystem class to display. Valid entries are **driver**, **kernel**, **library**, **management**, **protocol**, and **registry**.
name	Specifies the name of a subsystem to display.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

Catalyst 8540 MSR

The following example is sample output from the **show subsys** command.

```
Switch# show subsys

                   Class         Version   Required Subsystems
static_map         Kernel      1.000.001
arp                Kernel      1.000.001
ether              Kernel      1.000.001
compress           Kernel      1.000.001
alignment          Kernel      1.000.002
monvar             Kernel      1.000.001
slot               Kernel      1.000.001
oir                Kernel      1.000.001
atm                Kernel      1.000.001
ip_addrpool_sys    Library     1.000.001
chat               Library     1.000.001
dialer             Library     1.000.001
flash_services     Library     1.000.001
ip_localpool_sys   Library     1.000.001   ip_addrpool_sys
nvram_common       Driver      1.000.001
route processor    Driver      1.000.001
sonict             Driver      1.000.001
oc3suni            Driver      1.000.001
oc12suni           Driver      1.000.001
ds3suni            Driver      1.000.001
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show subsys** command.

```
Switch# show subsys

                    Class         Version   Required Subsystems
static_map          Kernel      1.000.001
arp                 Kernel      1.000.001
ether               Kernel      1.000.001
compress            Kernel      1.000.001
alignment           Kernel      1.000.002
monvar              Kernel      1.000.001
slot                Kernel      1.000.001
oir                 Kernel      1.000.001
atm                 Kernel      1.000.001
ip_addrpool_sys     Library     1.000.001
chat                Library     1.000.001
dialer              Library     1.000.001
flash_services      Library     1.000.001
ip_localpool_sys    Library     1.000.001   ip_addrpool_sys
nvram_common        Driver      1.000.001
ASP                 Driver      1.000.001
sonict              Driver      1.000.001
oc3suni             Driver      1.000.001
oc12suni            Driver      1.000.001
ds3suni             Driver      1.000.001
```

show switch fabric (Catalyst 8540 MSR)

To show the details of the switch fabric for an ATM switch router, use the **show switch fabric** EXEC command.

show switch fabric

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
12.0(4a)W5(11a)	New command

Usage Guidelines

This command shows the details of all MSCs in one display. It also displays the condition of the entire ATM switch router.

Examples

The following example shows how to display information about the fabric of an ATM switch router.

```
Switch# show switch fabric
MMC Switch Fabric (idb=0x60848BE0)

  Key: Rej. Cells  - # cells rejected due to lack of resources
                          or policing (16-bit)
       Inv. Cells    - # good cells that came in on a non-existent conn.
       Mem Buffs     - # cell buffers currently in use
       RX Cells      - # rx cells (16-bit)
       TX Cells      - # tx cells (16-bit)
       Rx HEC        - # cells Received with HEC errors
       Tx PERR       - # cells with memory parity errors

  MSC#     Rej. Cells    Inv. Cells    Mem. Buffs    Rx Cells     Tx Cells     R x HEC
Tx PErr
 -----    -----------   ------------   -----------  -----------  ----------   ----------
----------
 MSC 0:           0              0          0          0          0          0
0
 MSC 1:           0              0          0          0          0          0
0
 MSC 2:           0              0          0          0          0          0
0
 MSC 3:           0              0          0          0          0          0
0
 MSC 4:           0              0          0          0          0          0
0
 MSC 5:           0              0          0          0          0          0
0
 MSC 6:           0              0          0          0          0          0
0
```

```
 MSC 7:           0              0          0          0          0          0
0

 Switch Fabric Statistics

      Rejected Cells: 0
      Invalid Cells: 0
      Memory Buffers: 0
      Rx Cells: 0
      Tx Cells: 0
      RHEC: 0
      TPE: 0
# marker intrs = 0
# marker list entries = 0
# ivcs used = 0
# ovcs used = 0
     ivcs used for MSC 0 = 0
     ivcs used for MSC 1 = 0
     ivcs used for MSC 2 = 0
     ivcs used for MSC 3 = 0
     ivcs used for MSC 4 = 0
     ivcs used for MSC 5 = 0
     ivcs used for MSC 6 = 0
     ivcs used for MSC 7 = 0
     ovcs used for MSC 0 = 0
     ovcs used for MSC 1 = 0
     ovcs used for MSC 2 = 0
     ovcs used for MSC 3 = 0
     ovcs used for MSC 4 = 0
     ovcs used for MSC 5 = 0
     ovcs used for MSC 6 = 0
     ovcs used for MSC 7 = 0
#     vpts used for MSC 0 = 0
#     vpts used for MSC 1 = 0
#     vpts used for MSC 2 = 0
#     vpts used for MSC 3 = 0
#     vpts used for MSC 4 = 0
#     vpts used for MSC 5 = 0
#     vpts used for MSC 6 = 0
#     vpts used for MSC 7 = 0
# vpts used = 0
# vpt ovcs used = 0
 port   type   status  RXcells TXcells RHEC   TPE
 0/0/0 155MBPS xytrpm 0x0000 0x0000 0x0000
 0/0/1 155MBPS xytrpm 0x0000 0x0000 0x0000
 0/0/2 155MBPS xytrpm 0x0000 0x0000 0x0000
 0/0/3 155MBPS xytrpm 0x0000 0x0000 0x0000

Switch#
```

Related Commands

Command	Description
show controllers	Displays information about a physical port device.
show switch module (Catalyst 8540 MSR)	Displays interface, Max vpi-bits, and status information per switch module.

show switch module (Catalyst 8540 MSR)

To display interface, Max vpi-bits, and status information per switch module, use the **show switch module** EXEC command.

show switch module [**interface | atm]** *card*/*subcard*/*port*

Syntax Description

module	Specifies a module.
interface	Specifies an interface type.
atm	Specifies an ATM interface.
card/*subcard*/*port*	Identifies the card, subcard, and port number of the interface.

Defaults

None

Command Modes

EXEC

Command History

Release	Modification
12.0(4a)W5(11a)	New command

Usage Guidelines

None

Examples

The following example shows the interface, Max vpi-bits, and status information per switch module:

```
Switch# show switch module
Module ID  Interface  Maxvpi-bits  State
----------------------------------------
2            ATM2/0/0   8           DOWN
========================================
3            ATM2/0/1   8           DOWN
========================================
4            ATM9/0/0   8           DOWN
========================================
5           ATM10/0/0   8        UP-LPBK
            ATM10/0/2   8           DOWN
            ATM10/0/1   8           DOWN
            ATM10/0/3   8           DOWN
========================================
6           ATM11/0/0   8           DOWN
========================================
7           ATM12/0/0   8             UP
            ATM12/0/2   8           DOWN
            ATM12/0/1   8           DOWN
            ATM12/0/3   8           DOWN
========================================
```

The following example shows how to display interface, Max vpi-bits, and status information for interface atm 10/0/0:

```
Switch# show switch module interface atm10/0/0
Module ID  Interface  Maxvpi-bits  State
---------------------------------------
5           ATM10/0/0   8        UP-LPBK
            ATM10/0/2   8           DOWN
            ATM10/0/1   8           DOWN
            ATM10/0/3   8           DOWN
=======================================
```

The following example shows how to display interface, Max vpi-bits, and status information for module 0:

```
Switch# show switch module module-id 0
Module ID  Interface  Maxvpi-bits  State
---------------------------------------
0            ATM0/0/0   8             UP
             ATM0/0/4   8           DOWN
             ATM0/0/1   8           DOWN
             ATM0/0/5   8           DOWN
             ATM0/0/2   8             UP
             ATM0/0/6   8           DOWN
             ATM0/0/3   8             UP
             ATM0/0/7   8           DOWN
=======================================
```

Related Commands

Command	Description
show switch fabric (Catalyst 8540 MSR)	Displays the details of the switch fabric for an ATM switch router.
show controllers	Displays information about a physical port device.

show tacacs

To show current TACACS+ server statistics, use the **show tacacs** EXEC command.

show tacacs

Syntax Description

This command has no keywords or arguments.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

Use this command to display information for analyzing and evaluating the TACACS+ server.

show tag-switching atm-tdp bindings

To display the requested entries from the ATM TDP tag binding database, use the **show tag-switching atm-tdp bindings** privileged EXEC command.

show tag-switching atm-tdp bindings [*ip-address* {*mask* | *length*}] [**local-tag** | **remote-tag** *vpi vci*] [**neighbor atm** *card/subcard/port*] [**remote-tag** *vpi vci*]

Syntax Description

ip-address	Destination prefix.
mask	Destination netmask prefix.
length	Netmask length, in the range of 1 to 32.
local-tag *vpi vci*	Selects tag values assigned by this switch.
neighbor atm *card/subcard/port*	Selects tags assigned by a neighbor on the specified ATM interface.
remote-tag *vpi vci*	Selects tag values assigned by another switch.

Defaults

Displays all database entries.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The display output can show the entire database or a subset of entries based on the prefix, the VC tag value, or an assigning interface.

Examples

The following example shows the display from the **show tag-switching atm-tdp bindings** command.

```
Switch# show tag-switching atm-tdp bindings
Destination: 13.0.0.0/8
    Tailend Switch ATM0/1/0 1/33 Active -> Terminating Active
    Tailend Switch ATM0/1/0 1/34 Active -> Terminating Active
    Tailend Switch ATM0/0/0.10 10/33 Active -> Terminating Active
 Destination: 11.0.0.0/8
    Transit ATM0/1/0 1/45 Active -> ATM0/0/0.10 10/33 Active
 Destination: 128.1.0.0/16
    Transit ATM0/1/0 1/46 Active -> ATM0/0/0.10 10/34 Active
 Destination: 167.1.0.0/16
    Transit ATM0/0/0.10 10/34 Active -> ATM0/1/0 1/36 Active
```

Table 18-59 show tag-switching atm-tdp bindings Field Descriptions

Field	Description
Destination: 10.16.0.16/32	Destination IP address/length of netmask
Tailend Switch	VC type: • Tailend—VC that terminates at this switch • Headend—VC that originates at this switch • Transit—VC that passes through this switch
ATM1/0/1	ATM interface
1/35	VPI/VCI
Active	TVC state: • Active—Set up and working • Bindwait—Waiting for response

Related Commands

Command	Description
show tag-switching atm-tdp summary	Displays summary information on ATM tag bindings.

show tag-switching atm-tdp capability

To display the ATM TDP tag capabilities for all interfaces, use the **show tag-switching atm-tdp capability** privileged EXEC command.

show tag-switching atm-tdp capability

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example shows the display from the **show tag-switching atm-tdp capability** command.

```
Switch# show tag-switching atm-tdp capability

VPI           VCI           Alloc   Odd/Even VC Merge
ATM0/1/0       Range         Range         Scheme  Scheme   IN   OUT
  Negotiated   [1 - 1]       [33 - 1023]   UNIDIR           -    -
  Local        [1 - 1]       [33 - 16383]  UNIDIR           NO   NO
  Peer         [1 - 1]       [33 - 1023]   UNIDIR           -    -

               VPI           VCI           Alloc   Odd/Even VC Merge
ATM0/0/0.10    Range         Range         Scheme  Scheme   IN   OUT
  Negotiated   [10 - 10]     [33 - 16383]  UNIDIR           -    -
  Local        [10 - 10]     [33 - 16383]  UNIDIR           NO   NO
  Peer         [10 - 10]     [33 - 16383]  UNIDIR           -    -
```

Related Commands

Command	Description
tag-switching atm control-vc	Configures the VPI/VCI to be used for the initial link to the tag switching peer.

show tag-switching atm-tdp summary

To display summary information on ATM tag bindings, use the **show tag-switching atm-tdp summary** privileged EXEC command.

show tag-switching atm-tdp summary

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example displays output from the **show tag-switching atm-tdp summary** command.

```
Switch# show tag-switching atm-tdp summary
Total number of destinations: 40

TC-ATM bindings summary
interface      total   active  local   remote  Bwait   Rwait   IFwait
ATM0/0/0       21      21      10      11      0       0       0
ATM0/0/1       21      21      11      10      0       0       0
ATM0/0/2       49      49      31      18      0       0       0
ATM0/0/3       45      45      31      14      0       0       0
ATM0/1/0       6       6       0       6       0       0       0
ATM0/1/2       64      64      34      30      0       0       0
ATM0/1/0.18    20      20      10      10      0       0       0
ATM0/1/0.19    25      25      13      12      0       0       0
ATM0/1/1.51    15      15      9       6       0       0       0
ATM0/1/1.52    3       3       1       2       0       0       0
```

Table 18-61 describes the show tag-switching atm-tdp summaries.

Table 18-60 show tag-switching atm-tdp summary Field Descriptions

Field	Description
Total number of destinations	Number of known destination address prefixes.
interface	Name of an interface with associated ATM tag bindings.
total	Total number of ATM tags on this interface.
active	Number of ATM tags in an “active” state, ready to use for data transfer.
local	Number of ATM tags on this interface assigned by this tag switch.
remote	Number of ATM tags on this interface assigned by the neighbor tag switch.
Bwait	Number of bindings waiting for a tag assignment from the neighbor tag switch.

Table 18-60 show tag-switching atm-tdp summary Field Descriptions (continued)

Field	Description
Rwait	Number of TVCs waiting for remote resources because the neighbor has run out of VC space.
IFwait	Number of TVCs waiting for response from the tag ATM API. For the ATM switch router, this value is always 0.

Related Commands

Command	Description
show tag-switching atm-tdp bindings	Displays the requested entries from the ATM TDP tag binding database.

show tag-switching interfaces

To display information about interfaces where tag switching is enabled, use the **show tag-switching interface** privileged EXEC command.

show tag-switching interfaces [*type card*/*subcard*/*port* | **all**] [**detail**]

Syntax Description

type	Specifies one of the interface types listed in Table 18-61.
card/*subcard*/*port*	Specifies the card, subcard, and port number of the interface.
detail	Displays detailed tag switching information by interface.

Defaults

Displays tag switching information for all interfaces.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

Displays information about the requested interface or all interfaces where tag switching is enabled.

Table 18-61 Interface Types for the show tag-switching interfaces Command

Type	Description
atm	Specifies the ATM interface.
atm-p	Specifies the ATM pseudo interface.
cbr	Specifies the CBR interface.
ethernet	Specifies the Ethernet interface (0).
null	Specifies the null interface.
serial	Specifies the serial interface.
tunnel	Specifies the tunnel interface.

Examples

The following example shows the display from the **show tag-switching interfaces** command.

```
Switch# show tag-switching interface
Interface              IP    Tunnel   Operational
ATM0/0/0               Yes   No       Yes         (ATM tagging)
ATM0/0/1               Yes   No       Yes         (ATM tagging)
ATM0/0/2               Yes   No       Yes         (ATM tagging)
ATM0/0/3               Yes   No       Yes         (ATM tagging)
ATM0/1/0               Yes   No       Yes         (ATM tagging)
ATM0/1/0.18            Yes   No       Yes         (ATM tagging)
ATM0/1/0.19            Yes   No       Yes         (ATM tagging)
```

```
ATM0/1/1.51            Yes   No       Yes         (ATM tagging)
ATM0/1/1.52            Yes   No       Yes         (ATM tagging)
ATM0/1/2               Yes   No       Yes         (ATM tagging)
```

Tag-switching interface descriptions are provided in Table 18-62.

Table 18-62 show tag-switching interface Field Descriptions

Field	Description
Interface	Interface name.
IP	Whether the interface is configured to tag IP packets.
Tunnel	Whether a tunnel is configured through this interface.
Operational	Whether packets are being tagged.

The following example shows the display from the **show tag-switching interfaces** command for a single interface using the **detail** option.

```
Switch# show tag interfaces atm 0/0/1 detail
Interface ATM0/0/1:
        IP tagging enabled
        TSP Tunnel tagging not enabled
        Tagging operational
        MTU = 8940
        ATM tagging: Tag VPI range = 2 - 5, Control VC = 6/32
```

Related Commands

Command	Description
tag-switching ip (interface)	Enables tag switching of IPv4 packets on an interface.

show tag-switching tdp discovery

To display the status of the TDP discovery process, use the **show tag-switching tdp discovery** privileged EXEC command.

show tag-switching tdp discovery

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example shows the display from the **show tag-switching tdp discovery** command. The interfaces over which TDP discovery is running follow.

```
Switch# show tag-switching tdp discovery
Local TDP Identifier:
    172.20.40.161:0
TDP Discovery Sources:
    Interfaces:
        ATM0/1/0: xmit/recv
            TDP Id: 172.20.40.164:1
        ATM0/0/0.10: xmit/recv
            TDP Id: 172.20.40.163:1
```

Table 18-63 show tag-switching tdp discovery Field Descriptions

Field	Description
Local TDP Identifier	TDP identifier for the local switch. A TDP identifier is a 6-byte quantity displayed as *IP address:number.* The Cisco convention is to use a switch identification for the first 4 bytes of the TDP identifier, and integers starting with 0 for the last 2 bytes.
Interfaces	Interfaces engaging in TDP discovery activity: xmit indicates that the interface is transmitting TDP discovery Hello packets; recv indicates that the interface is receiving TDP discovery Hello packets.

Related Commands

Command	Decription
show tag-switching tdp neighbor	Displays the status of TDP sessions.

show tag-switching tdp neighbor

To display the status of TDP sessions, use the **show tag-switching tdp neighbor** privileged EXEC command.

show tag-switching tdp neighbor [*ip-addres type card/subcard/port*] [**detail**]

Syntax Description

ip-address	Specifies the IP address of the neighbor.
type	Specifies one of the interface types listed in Table 18-64.
card/subcard/port	Specifies the card, subcard, and port number of the interface.
detail	Displays detailed TDP neighbor information by interface.

Defaults

Displays information about all TDP neighbors.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

The neighbor information branch can give information about all TDP neighbors or can be limited to the following:

- The neighbor with a specific IP address
- TDP neighbors accessible over a specific interface

Displays information about the requested interface or all interfaces where tag switching is enabled.

Table 18-64 Interface Types for the show tag-switching tdp neighbor Command

Type	Description
atm	Specifies the ATM interface.
atm-p	Specifies the ATM pseudo interface.
cbr	Specifies the CBR interface.
ethernet	Specifies the Ethernet interface (0).
null	Specifies the null interface.
serial	Specifies the serial interface.
tunnel	Specifies the tunnel interface.

Examples

The following example shows the display from the **show tag-switching tdp neighbor** command.

```
Switch# show tag-switching tdp neighbor
Peer TDP Ident: 1.0.12.12:2; Local TDP Ident 1.0.11.11:2
        TCP connection: 1.0.12.12.11008 - 1.0.11.11.711
        State: Oper; PIEs sent/rcvd: 2199/2198; Downstream on demand
        Up time: 02:31:58
        TDP discovery sources:
          ATM0/0/1
Peer TDP Ident: 1.0.12.12:8; Local TDP Ident 1.0.11.11:7
        TCP connection: 1.0.12.12.11015 - 1.0.11.11.711
        State: Oper; PIEs sent/rcvd: 2119/2130; Downstream on demand
        Up time: 02:31:39
        TDP discovery sources:
          ATM0/1/0.19
Peer TDP Ident: 1.0.12.12:7; Local TDP Ident 1.0.11.11:6
        TCP connection: 1.0.12.12.11016 - 1.0.11.11.711
        State: Oper; PIEs sent/rcvd: 2120/2119; Downstream on demand
        Up time: 02:31:38
        TDP discovery sources:
          ATM0/1/0.18
```

Table 18-65 show tag-switching tdp neighbor Field Descriptions

Field	Description
Peer TDP Ident	TDP identifier of the neighbor (peer) for this session.
Local TDP Ident	TDP identifier for the local tag switch for this session.
TCP connection	Specifies the TCP connection used to support the TDP session. The format for displaying the TCP connection is: *peer I address.peer port* *local IP address.local port*
State	State of the TDP session. Generally this is Oper (operational); or transient.
PIEs sent/rcvd	Number of TDP PIEs sent to and from the session peer, including transmission and receipt of periodic keepalive PIEs required to maintain the TDP session.
Downstream	Indicates that the downstream method of tag distribution is being used for this TDP session. When this method is being used, a tag switch advertises all of its locally assigned (incoming) tags to its TDP peer (subject to any configured access list restrictions).
Downstream on demand	Indicates that the downstream on-demand method of tag distribution is being used for this TDP session. When this method is being used, a tag switch advertises its locally assigned (incoming) tags to its TDP peer only when the peer asks for them.
Up time	Length of time the TDP session has existed.
TDP Discovery Sources	Source(s) of TDP discovery activity that led to the establishment of this TDP session.
Addresses bound to peer TDP Ident	The known interface addresses of the TDP session peer. These are addresses that might appear as “next hop” addresses in the local routing table, and are used to maintain the TFIB.

Related Commands

Command	Description
show tag-switching tdp discovery	Displays the status of the TDP discovery process.

show tag-switching tdp parameters

To display available TDP parameters, use the **show tag-switching tdp parameters** privileged EXEC command.

show tag-switching tdp parameters

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Examples

The following example shows the display from the **show tag-switching tdp parameters** command.

```
Switch# show tag-switching tdp parameters
Protocol version: 1
 No tag pool for downstream tag distribution
 Session hold time: 15 sec; keep alive interval: 5 sec
 Discovery hello: holdtime: 15 sec; interval: 5 sec
 Discovery directed hello: holdtime: 15 sec; interval: 5 sec
```

Related Commands

Command	Description
tag-switching tdp holdtime	Configures the hold time for a TDP session.

show tag-switching tsp-tunnels

To display TSP tunnel status and configuration, use the **show tag-switching tsp tunnels** privileged EXEC command.

show tag-switching tsp-tunnels [*ip-address* | **all** | **head** | **middle** | **tail** | **remote**} [*tunnel-interface-num*]] [**brief**]

Syntax Description

ip-address	Specifies an IP address that restricts the display to TSP tunnels originating at this IP address.
all	Restricts the display to TSP tunnels that originate, transit, or terminate locally.
head	Restricts the display to TSP tunnels that originate at the node.
middle	Restricts the display to TSP tunnels that transit through the node.
tail	Restricts the display to TSP tunnels that terminate at the node.
remote	Restricts the display to TSP tunnels originating elsewhere. This is, in effect, a combination of **middle** and **tail**.
tunnel-interface-num	The interface number part of the TSP tunnel identifier. See "Usage Guidelines."
brief	Displays TSP tunnels using a format of one line per tunnel.

Defaults

Displays all TSP tunnels through the node.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(3a)	New command

Usage Guidelines

Each TSP tunnel has a globally unique identifier that is used when signalling the TSP tunnel. This identifier, available at each hop, is the combination of the originating IP address (*ip-address*) and the interface number of the tunnel interface (*tunnel-interface-num*) used to configure the TSP tunnel at the head end.

Examples

The following example is sample output from the **show tag-switching tsp-tunnels** command.

```
Switch# show tag-switching tsp-tunnels
Signalling Summary:
            TSP Tunnels Process:            running
            RSVP Process:                   running
            Forwarding:                     enabled
TUNNEL ID               DESTINATION      STATUS          CONNECTION
10.106.0.6 0            10.2.0.12        up              up
```

Related Commands

Command	Description
tag-switching tsp-tunnels	Enables support for TSP tunnel negotiation.

show tcp

To display the status of TCP connections, use the **show tcp** EXEC command.

Catalyst 8540 MSR

show tcp [*line-number*] {**brief** | **console** | **vty**}

Catalyst 8510 MSR and LightStream 1010

show tcp [*line-number*] {**aux** | **brief** | **console** | **vty**}

Syntax Description

line-number	Absolute line number of the line for which you want to display the Telnet connection status.
brief	Keyword used to limit the display of information.
console	Keyword used to display the primary terminal line.
vty	Keyword used to display the virtual terminal.
aux	(Catalyst 8510 MSR and LightStream 1010) Line number on which to execute the chat script. If a line number is not specified, the current line number is chosen. If the specified line is busy, the script is not executed and an error message appears. This command is not optional if you specify a *dialer-string*. If the *dialer-string* argument is specified, aux 0 must be entered. This command functions only on physical terminal (tty) lines. It does not function on virtual terminal (vty) lines.

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Examples

The following example is sample output from the **show tcp** command.

```
Switch# show tcp
con0 (console terminal), connection 1 to host MATHOM
Connection state is ESTAB, I/O status: 1, unread input bytes: 1
Local host: 172.30.7.18, 33537 Foreign host: 192.31.7.17, 23
Enqueued packets for retransmit: 0, input: 0, saved: 0
Event Timers (current time is 2043535532):
Timer:       Retrans   TimeWait    AckHold    SendWnd   KeepAlive
Starts:           69          0         69          0           0
Wakeups:           5          0          1          0           0
Next:     2043536089          0          0          0           0
iss: 2043207208 snduna: 2043211083 sndnxt: 2043211483    sndwnd: 1344
irs: 3447586816 rcvnxt: 3447586900 rcvwnd:       2144 delrcvwnd:   83
RTTO: 565 ms, RTV: 233 ms, KRTT: 0 ms, minRTT: 68 ms, maxRTT: 1900 ms
```

```
ACK hold: 282 ms
Datagrams (max data segment is 536 bytes):
Rcvd: 106 (out of order: 0), with data: 71, total data bytes: 83
Sent: 96 (retransmit: 5), with data: 92, total data bytes: 4678
```

Table 18-66 describes the following lines of output shown in the display.

```
con0 (console terminal), connection 1 to host MATHOM
Connection state is ESTAB, I/O status: 1, unread input bytes: 1
Local host: 172.30.7.18, 33537 Foreign host: 192.31.7.17, 23
Enqueued packets for retransmit: 0, input: 0, saved: 0
```

Table 18-66 show tcp Field Descriptions—First Section of Output

Field	Description
con0	Number identifying the line (console terminal) and location string.
connection 1	Number identifying the TCP connection.
to host MATHOM	Name of the remote host to which the connection has been made. Connection state is ESTAB. A connection progresses through a series of states during its lifetime. A connection progresses through these states in the following order: • LISTEN—Waiting for a connection request from any remote TCP and port. • SYNSENT—Waiting for a matching connection request after having sent a connection request. • SYNRCVD—Waiting for a confirming connection request acknowledgment after having both received and sent a connection request. • ESTAB—Indicates an open connection; data received can be delivered to the user. This is the normal state for the data transfer phase of the connection. • FINWAIT1—Waiting for a connection termination request from the remote TCP or an acknowledgment of the connection termination request previously sent. • FINWAIT2—Waiting for a connection termination request from the remote TCP host.

Table 18-66 show tcp Field Descriptions—First Section of Output (continued)

Field	Description
to host MATHOM (Continued)	• CLOSEWAIT—Waiting for a connection termination request from the local user. • CLOSING—Waiting for a connection termination request acknowledgment from the remote TCP host. • LASTACK—Waiting for an acknowledgment of the connection termination request previously sent to the remote TCP host. • TIMEWAIT—Waiting for enough time to pass to be sure the remote TCP host has received the acknowledgment of its connection termination request. • CLOSED—Indicates no connection state at all. For more information, refer to RFC 793, Transmission Control Protocol functional specification.
I/O status: 1	Number describing the current internal status of the connection.
unread input bytes:1	Number of bytes that the lower-level TCP processes read, but the higher-level TCP processes have not yet processed.
Local host: 192.31.7.18	IP address of the network server. 33537 local port number, as derived from the following equation: *line-number* + (512 * *random-number*). (The line number uses the lower nine bits; the other bits are random.)
Foreign host: 192.31.7.17	IP address of the remote host to which the TCP connection has been made.
23	Destination port for the remote host.
Enqueued packets for retransmit: 0	Number of packets waiting on the retransmit queue. These are packets on this TCP connection that were sent but not acknowledged by the remote TCP host.
input: 0	Number of packets that are waiting on the input queue to be read by the user.
saved: 0	Number of received out-of-order packets that are waiting for all packets comprising the message to be received before they enter the input queue. For example, if packets 1, 2, 4, 5, and 6 were received, packets 1 and 2 enter the input queue, and packets 4, 5, and 6 enter the saved queue.

Examples

The following lines of output show the current time according to the system clock of the local host.

```
Event Timers (current time is 2043535532):
The time shown is the number of milliseconds since the system started.
```

The following lines of output display the number of times that various local TCP timeout values were reached during this connection. In this example, the local host retransmitted 69 times because it received no response from the remote host, and it transmitted an acknowledgment many more times because there was no data on which to piggyback.

```
Timer:       Retrans   TimeWait    AckHold    SendWnd   KeepAlive
Starts:           69          0         69          0           0
Wakeups:           5          0          1          0           0
Next:     2043536089          0          0          0           0
```

Table 18-67 describes the fields in the preceding lines of output.

Table 18-67 show tcp Field Descriptions—Second Section of Output

Field	Description
Timer:	Names of the timers in the display.
Starts:	Number of times the timer has been started during this connection.
Wakeups:	Number of keepalives transmitted without receiving any response. (This field is reset to zero when a response is received.)
Next:	System clock setting that triggers the next time this timer goes off.
Retrans	Retransmission interval time TCP packets that were not acknowledged and are waiting for retransmission.
TimeWait	TimeWait timer ensures that the remote system receives a request to disconnect a session.
AckHold	Acknowledgment timer delays the sending of acknowledgments to the remote TCP in an attempt to reduce network use.
SendWnd	Send Window timer ensures that there is no closed window due to a lost TCP acknowledgment.
KeepAlive	KeepAlive timer controls the transmission of test messages to the remote TCP to ensure that the interface has not been broken without the local TCP's knowledge.

Examples

The following lines of output display the sequence numbers that TCP uses to ensure sequenced, reliable transport of data. The local host and remote host each use these sequence numbers for flow control and to acknowledge receipt of datagrams. Table 18-68 describes the specific fields in the following lines of output.

```
iss: 2043207208 snduna: 2043211083 sndnxt: 2043211483    sndwnd: 1344
irs: 3447586816 rcvnxt: 3447586900 rcvwnd:       2144 delrcvwnd:   83
```

Table 18-68 show tcp Field Descriptions—Sequence Number

Field	Description
iss: 2043207208	Initial send sequence number.
snduna: 2043211083	Last send sequence number the local host sent for which it has not received an acknowledgment.
sndnxt: 2043211483	Sequence number the local host is sending next.
sndwnd: 1344	TCP window size of the remote host.
irs: 3447586816	Initial receive sequence number.
rcvnxt: 3447586900	Last receive sequence number the local host has acknowledged.
rcvwnd: 2144	Local host's TCP window size.
delrcvwnd: 83	Delayed receive window—The data the local host has read from the connection but has not yet subtracted from the receive window that the host has advertised to the remote host. The value in this field gradually increases until it is larger than a full-sized packet, at which point it is applied to the rcvwnd field.

Examples

The following lines of output display values that the local host uses to track transmission times so that TCP can adjust to the network it is using.

Table 18-69 describes the fields in the following line of output.

```
RTTO: 565 ms, RTV: 233 ms, KRTT: 0 ms, minRTT: 68 ms, maxRTT: 1900 ms
ACK hold: 282 ms
```

Table 18-69 show tcp Field Descriptions—Line Beginning with RTTO

Field	Description
RTTO: 565 ms	Round-trip timeout.
RTV: 233 ms	Variance of the round-trip time.
KRTT: 0 ms	New round-trip timeout (using the Karn algorithm). This field separately tracks the round-trip time of packets that were retransmitted.
minRTT: 68 ms	Smallest recorded round-trip timeout (hard-wired value used for calculation).
maxRTT: 1900 ms	Largest recorded round-trip timeout.
ACK hold: 282 ms	Time the local host delays an acknowledgment in order to piggyback data on it.

For more information on these fields, refer to "Round Trip Time Estimation," P. Karn & C. Partridge, ACM SIGCOMM-87, August 1987.

Table 18-70 describes the fields in the following lines of output.

```
Datagrams (max data segment is 536 bytes):
Rcvd: 106 (out of order: 0), with data: 71, total data bytes: 83
Sent: 96 (retransmit: 5), with data: 92, total data bytes: 4678
```

Table 18-70 show tcp Field Descriptions—Last Section of Output

Field	Description
Rcvd: 106 (out of order: 0)	Number of datagrams the local host has received during this connection (and the number of these datagrams that were out of order).
with data: 71	Number of these datagrams that contained data.
total data bytes: 83	Total number of bytes of data in these datagrams.
Sent: 96 (retransmit: 5)	Number of datagrams the local host sent during this connection (and the number of these datagrams that had to be retransmitted).
with data: 92	Number of these datagrams that contained data.
total data bytes: 4678	Total number of bytes of data in these datagrams.

show tech-support

To show information about the switch router for use when contacting technical support, use the **show tech-support** EXEC configuration command.

show tech-support [**page**] [**password**] [**ipmulticast** | **rsvp**]

Syntax Description

page	Pages through output.
password	Includes passwords in output.
ipmulticast	Displays IP multicast-related information.
rsvp	Displays RSVP-related information.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

Use the **show tech-support** to gather information about the current software image, configuration, controllers, counters, stacks, interfaces, memory, and buffers.

The output from this command contains a lot of information. Use the **page** option to control the amount of information presented on the screen. When you use the **page** option, pressing the space bar displays the next page of information.

Examples

The following example is sample output from the **show tech-support** EXEC command. Not all the information from this command is in the example.

```
Switch# show tech-support page
------------------ show version ------------------

Cisco Internetwork Operating System Software
IOS (tm) XXXXXX WA4-x Software (XXXXXX-WP-M), Version x.x(x.x)WA4(x.x)
Copyright (c) 1986-1998 by cisco Systems, Inc.
Compiled Mon 19-Jan-98 02:41 by
Image text-base: 0x60010910, data-base: 0x605B8000

ROM: System Bootstrap, Version 11.2(1.4.WA3.0) [integ 1.4.WA3.0], RELEASE SOFTWARE

Switch uptime is 4 days, 20 hours, 38 minutes
System restarted by reload
System image file is "slot0:xxxxxx-wp-mz.113-0.8.TWA4.1.30", booted via slot0:

cisco xxx (R4600) processor with 65536K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0
Last reset from power-on
1 Ethernet/IEEE 802.3 interface(s)
22 ATM network interface(s)
123K bytes of non-volatile configuration memory.
```

```
8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x100


------------------ show running-config ------------------


Building configuration...

Current configuration:
!
version xx.x
no service pad
no service udp-small-servers
no service tcp-small-servers
!
hostname Switch
!
enable password <removed>
!
ip host-routing
!
atm e164 translation-table
!
atm threshold-group 5 max-cells 50000
atm abr-mode efci
atm address 47.0091.8100.0000.0040.0b0a.2a81.0040.0b0a.2a81.00
atm router pnni
 node 1 level 80 lowest peer-group-identifier 80:47.01B1.0000.0000.0000.0000.000
0
  parent 2
  redistribute atm-static
  election leadership-priority 205
 node 2 level 72 peer-group-identifier 72:B7.809A.0000.0000.0000.0000.0000
   aggregation-mode link CBR     aggressive
!
!
interface ATM0/0/0
 no ip address
 loopback pif
 tag-switching ip
!
interface ATM0/0/1
 no ip address
 atm pvp 51
 ntp broadcast client
!
interface ATM0/0/1.51 point-to-point
!
interface ATM0/0/2
 no ip address
!
interface ATM0/0/3
 no ip address
!
interface ATM0/1/0
 --More--
```

show terminal

To obtain information about the terminal configuration parameter settings for the current terminal line, use the **show terminal** EXEC command.

show terminal

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Examples

The following example is sample output from the **show terminal** command.

```
Switch# show terminal
Line 0, Location: "", Type: ""
Length: 24 lines, Width: 80 columns
Status: Ready, Active
Capabilities: none
Modem state: Ready
Special Chars: Escape  Hold  Stop  Start  Disconnect  Activation
                ^^x    none   -     -       none
Timeouts:      Idle EXEC    Idle Session   Modem Answer  Session   Dispatch
               00:10:00        never                        none     not set
                             Idle Session Disconnect Warning
                               never
Modem type is unknown.
Session limit is not set.
Time since activation: 00:23:38
Editing is enabled.
History is enabled, history size is 10.
DNS resolution in show commands is enabled
Full user help is disabled
Allowed transports are telnet.  Preferred is telnet.
No output characters are padded
No special data dispatching characters
```

Table 18-71 describes the fields in the first two lines of **show terminal** output.

Table 18-71 show terminal Field Descriptions—First Two Lines of Output

Field	Description
Line 0	Current terminal line.
Location: ""	Location of the current terminal line, as specified using the **location** line configuration command.
Type: ""	Type of the current terminal line, as specified using the **line** global configuration command.

Table 18-71 show terminal Field Descriptions—First Two Lines of Output (continued)

Field	Description
Length: 24 lines	Length of the terminal display.
Width: 80 columns	Width of the terminal display, in character columns.

The following line of output indicates the status of the line.

```
Status: Ready, Active
```

Table 18-72 describes the possible values for the Status field.

Table 18-72 show terminal Field Description—Status Field

Field	Description
Active	A process is actively using the line.
Autobauding	The line is running the autobaud process.
Carrier Dropped	Some sense of “carrier” was dropped, and the line process should be stopped.
Connected	The line has at least one active connection.
Input Stopped	The input was turned off because of hardware flow control or overflow.
No Exit Banner	The normal exit banner is not displayed on this line.
Ready	The line state is “ready.”
SLIP Mode	The line is running SLIP or PPP.

The following line of output indicates the status of the capabilities of the line. These capabilities correspond closely to configurable parameters that can be set using configuration commands.

```
Capabilities: Enabled
```

Table 18-73 describes the possible values for the Capabilities field.

Table 18-73 show terminal Field Descriptions—Capabilities Field

Field	Description
Autobaud Full Range	Corresponds to the **autobaud** command.
Enabled	The user is successfully “enabled.”
EXEC Suppressed	Corresponds to the **no exec** command.
Hangup on Last Close	Corresponds to the **autohangup** command.
Notification Set	Corresponds to the **notify** command.
Output Non-Idle	Corresponds to the **session-timeout** command.

The following line of output indicates the modem state. Possible values include Autobauding, Carrier Dropped, Hanging Up, Idle, and Ready.

```
Modem state: Ready
```

The following lines of output indicate the special characters that can be entered to activate various terminal operations. The none or hyphen (-) values imply that no special characters are set.

```
Special Chars: Escape  Hold  Stop  Start  Disconnect  Activation
               ^^x    none   -     -       none
```

The following lines of output indicate the timeout values that were configured for the line.

```
Timeouts:      Idle EXEC    Idle Session   Modem Answer  Session   Dispatch
               never          never         0:00:15      not imp   not set
```

Table 18-74 describes the fields in the preceding lines of output.

Table 18-74 show terminal Field Descriptions—Timeouts Fields

Field	Description
Idle EXEC	Interval that the EXEC command interpreter waits for user input before resuming the current connection; or if no connections exist, returning the terminal to the idle state and disconnecting the incoming session. This interval is set using the **exec-timeout** command.
Idle Session	Interval that the software waits for traffic before closing the connection to a remote computer and returning the terminal to an idle state. This interval is set using the **session-timeout** command.
Modem Answer Session	Not implemented.
Dispatch	Number of milliseconds the software waits after putting the first character into a packet buffer before sending the packet. This interval is set using the **dispatch-timeout** command.

The following lines of output indicate how various options were configured.

```
Session limit is not set.
Allowed transports are telnet rlogin. Preferred is telnet
No output characters are padded
```

show users

To display information about the active lines on the switch router, use the **show users** EXEC command.

show users [**all**]

Syntax Description

all	Specifies that all lines be displayed, regardless of whether anyone is using them.

Command Modes

EXEC

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

This command displays the line number, connection name, idle time, and terminal location.

Examples

In the following two examples, the asterisk (*) indicates the current terminal session.

The following example is sample output from the **show users** command.

```
Switch# show users
       Line           User            Host(s)         Idle Location
       0 con 0                        idle
*      2 vty 0        jim             idle             0   GRUMPY.CISCO.COM
```

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The following example is sample output from the **show users all** command.

```
Switch# show users all
     Line        User           Host(s)       Idle  Location
*    0 vty 0     jim            idle         0    GRUMPY.CISCO.COM
     1 vty 1
     2 con 0
     3 vty 2
```

Catalyst 8510 MSR and LightStream 1010

The following example is sample output from the **show users all** command.

```
Switch# show users all
     Line        User           Host(s)       Idle  Location
*    0 vty 0     jim            idle         0    GRUMPY.CISCO.COM
     1 vty 1
     2 con 0
     3 aux 0
     4 vty 2
```

Table 18-75 describes the significant fields shown in the displays.

Table 18-75 show users Field Descriptions

Field	Description
Line	The first subfield (0 in the example output) is the absolute line number and contains three subfields. The second subfield (vty) indicates the type of line. Possible values are: • con—Console • aux—Auxiliary port (Catalyst 8510 MSR and LightStream 1010) • tty—Asynchronous terminal port • vty—Virtual terminal • The third subfield (0 in the example output) indicates the relative line number within the type.
User	User using the line. If no user is listed in this field, the line is idle.
Host(s)	Host to which the user is connected (outgoing connection). A value of “idle” means that there is no outgoing connection to a host.
Idle	Interval (in minutes) since the user had an entry.
Location	Either the hard-wired location for the line or, if there is an incoming connection, the host from which the incoming connection came.

show vc

To display active virtual circuits (PVCs, SVCs, and soft VCs), use the **show vc** EXEC command.

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show vc [*interface* {**atm** *card/subcard/port* [*vpi vci*] | **serial** *card/subcard/port*[**.***channel#*] [*dlci*]}]

Catalyst 8510 MSR and LightStream 1010

show vc [*interface* {**atm** *card/subcard/port* [*vpi vci*]| **serial** *card/subcard/port*[**:***n*] [*dlci*]}]

Syntax Description

interface	Specifies an interface type, either **atm** or **serial**.
atm	Specifies an ATM interface.
card/subcard/port	Specifies the card, subcard, and port number for the serial interface. (Catalyst 8540 MSR)
vpi vci	Virtual path identifier and virtual channel identifier to display.
serial	Specifies a serial interface.
.channel#	Channel group identifier for the serial interface. (Catalyst 8540 MSR)
dlci	Specifies the data-link connection identifier.
:n	serial interface number. (Catalyst 8510 MSR and LightStream 1010)

Command Modes

EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

This command can be used to display a summary of all VCs in the system or on an interface, or to display the details of a particular VC. The interface specified can either be an ATM or Frame Relay interface, and the VC specified can be an ATM or a Frame Relay VC.

Examples

The following example displays the details of a specific ATM VC.

```
Switch# show vc interface atm 1/1/0 0 99
Interface: ATM1/1/0, Type: ds3suni
VPI = 0  VCI = 99
Status: UP
Connection-type: PVC
Cast-type: point-to-point
Usage-Parameter-Control (UPC): pass
Packet-discard-option: disabled
Time-since-last-status-change: 00:02:54
Wrr weight: 32
```

```
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states:  Not-applicable
Cross-connect-interface: Serial3/0/0:1, Type: FRPAM-SERIAL
Cross-connect-DLCI = 99
Threshold Group: 3, Cells queued: 0
Rx cells: 0, Tx cells: 0
Tx Clp0:0,  Tx Clp1: 0
Rx Clp0:0,  Rx Clp1: 0
Rx Upc Violations:0, Rx cell drops:0
Rx Clp0 q full drops:0, Rx Clp1 qthresh drops:0
Rx connection-traffic-table-index: 100
Rx service-category: VBR-NRT (Non-Realtime Variable Bit Rate)
Rx pcr-clp01: 81
Rx scr-clp0 : 81
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx       mbs: 50
Tx connection-traffic-table-index: 100
Tx service-category: VBR-NRT (Non-Realtime Variable Bit Rate)
Tx pcr-clp01: 81
Tx scr-clp0 : 81
Tx mcr-clp01: none
Tx      cdvt: none
Tx       mbs: 50
```

Examples

The following example shows the last explicit-path status for a soft VC along with the accumulated aggregate administrative weight for the full path.

```
Switch# show vc interface atm 0/1/3 0 42
Interface:ATM0/1/3, Type:oc3suni
VPI = 0  VCI = 42
Status:UP
Connection-type:SoftVC
Cast-type:point-to-point
Usage-Parameter-Control (UPC):pass
Packet-discard-option:disabled
Time-since-last-status-change:2d22h
 Soft vc location:Source
 Remote ATM address:47.0091.8100.0000.1060.705b.d900.4000.0c81.9000.00
 Remote VPI:0
 Remote VCI:42
 Soft vc call state:Active
 Number of soft vc re-try attempts:0
 First-retry-interval:5000 milliseconds
 Maximum-retry-interval:60000 milliseconds
 Aggregate admin weight:40080
 TIME STAMPS:
 Current Slot:4
  Outgoing Setup     March 30 13:44:28.543
  Incoming Release   March 30 13:44:28.999
  Outgoing Setup     March 30 13:44:33.999
  Incoming Connect   March 30 13:44:34.031

 Explicit-path 1:result=1  PNNI_SUCCESS  (chicago.path1)
 Only-explicit
Number of OAM-configured connections:0
OAM-configuration:disabled
OAM-states: Not-applicable
Cross-connect-interface:ATM0/0/3, Type:oc3suni
Cross-connect-VPI = 0
Cross-connect-VCI = 35
```

```
Cross-connect-UPC:pass
Cross-connect OAM-configuration:disabled
Cross-connect OAM-state: Not-applicable
Rx cells:0, Tx cells:0
Rx connection-traffic-table-index:1
Rx service-category:UBR (Unspecified Bit Rate)
Rx pcr-clp01:7113539
Rx scr-clp01:none
Rx mcr-clp01:none
Rx      cdvt:1024 (from default for interface)
Rx       mbs:none
Tx connection-traffic-table-index:1
Tx service-category:UBR (Unspecified Bit Rate)
Tx pcr-clp01:7113539
Tx scr-clp01:none
Tx mcr-clp01:none
Tx      cdvt:none
Tx       mbs:none
```

Examples

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The following example displays all the VCs in a system.

```
Switch# show vc
Interface      Conn-Id    Type   X-Interface     X-Conn-Id   Encap  Status
ATM0/0/0          0/5      PVC     ATM0              0/45     QSAAL    DOWN
ATM0/0/0          0/16     PVC     ATM0              0/35     ILMI     DOWN
ATM0/0/1          0/5      PVC     ATM0              0/46     QSAAL    DOWN
ATM0/0/1          0/16     PVC     ATM0              0/36     ILMI     DOWN
ATM0/0/2          0/5      PVC     ATM0              0/47     QSAAL    UP
ATM0/0/2          0/16     PVC     ATM0              0/37     ILMI     UP
ATM0/0/2          0/18     PVC     ATM0              0/54     PNNI     UP
ATM0/0/3          0/5      PVC     ATM0              0/48     QSAAL    DOWN
ATM0/0/3          0/16     PVC     ATM0              0/38     ILMI     DOWN
ATM0/1/0          0/5      PVC     ATM0              0/49     QSAAL    DOWN
ATM0/1/0          0/16     PVC     ATM0              0/39     ILMI     DOWN
ATM0/1/1          0/5      PVC     ATM0              0/50     QSAAL    DOWN
ATM0/1/1          0/16     PVC     ATM0              0/40     ILMI     DOWN
ATM0/1/2          0/5      PVC     ATM0              0/51     QSAAL    DOWN
ATM0/1/2          0/16     PVC     ATM0              0/41     ILMI     DOWN
ATM0/1/3          0/5      PVC     ATM0              0/52     QSAAL    DOWN
ATM0/1/3          0/16     PVC     ATM0              0/42     ILMI     DOWN
ATM0              0/35     PVC     ATM0/0/0          0/16     ILMI     DOWN
ATM0              0/36     PVC     ATM0/0/1          0/16     ILMI     DOWN
ATM0              0/37     PVC     ATM0/0/2          0/16     ILMI     UP
ATM0              0/38     PVC     ATM0/0/3          0/16     ILMI     DOWN
ATM0              0/39     PVC     ATM0/1/0          0/16     ILMI     DOWN
Interface      Conn-Id    Type   X-Interface     X-Conn-Id   Encap  Status
ATM0              0/40     PVC     ATM0/1/1          0/16     ILMI     DOWN
ATM0              0/41     PVC     ATM0/1/2          0/16     ILMI     DOWN
ATM0              0/42     PVC     ATM0/1/3          0/16     ILMI     DOWN
ATM0              0/43     PVC     ATM-SEC0          0/29     IPC      DOWN
ATM0              0/44     PVC     ATM-SEC0          0/16     ILMI     DOWN
ATM0              0/45     PVC     ATM0/0/0          0/5      QSAAL    DOWN
ATM0              0/46     PVC     ATM0/0/1          0/5      QSAAL    DOWN
ATM0              0/47     PVC     ATM0/0/2          0/5      QSAAL    UP
ATM0              0/48     PVC     ATM0/0/3          0/5      QSAAL    DOWN
ATM0              0/49     PVC     ATM0/1/0          0/5      QSAAL    DOWN
ATM0              0/50     PVC     ATM0/1/1          0/5      QSAAL    DOWN
ATM0              0/51     PVC     ATM0/1/2          0/5      QSAAL    DOWN
ATM0              0/52     PVC     ATM0/1/3          0/5      QSAAL    DOWN
ATM0              0/53     PVC     ATM-SEC0          0/5      QSAAL    DOWN
```

```
ATM0              0/54     PVC     ATM0/0/2          0/18     PNNI     UP
ATM-SEC0          0/5      PVC     ATM0              0/53     QSAAL    DOWN
ATM-SEC0          0/16     PVC     ATM0              0/44     ILMI     DOWN
ATM-SEC0          0/29     PVC     ATM0              0/43     IPC      DOWN
```

Examples

Catalyst 8510 MSR and LightStream 1010

The following example displays all the VCs in a system.

```
Switch1# show vc
Interface      Conn-Id    Type   X-Interface     X-Conn-Id   Encap  Status
ATM0/0/0          0/5      PVC     ATM2/0/0          0/49     QSAAL    DOWN
ATM0/0/0          0/16     PVC     ATM2/0/0          0/35     ILMI     DOWN
ATM0/0/0          0/18     PVC     ATM2/0/0          0/73     PNNI     DOWN
ATM0/0/1          0/5      PVC     ATM2/0/0          0/50     QSAAL    DOWN
ATM0/0/1          0/16     PVC     ATM2/0/0          0/36     ILMI     DOWN
ATM0/0/2          0/5      PVC     ATM2/0/0          0/51     QSAAL    DOWN
ATM0/0/2          0/16     PVC     ATM2/0/0          0/37     ILMI     DOWN
ATM0/0/3          0/5      PVC     ATM2/0/0          0/52     QSAAL    DOWN
ATM0/0/3          0/16     PVC     ATM2/0/0          0/38     ILMI     DOWN
ATM2/0/0          0/47     PVC     ATM1/1/0          0/16     ILMI     UP
ATM2/0/0          0/48     PVC     ATM1/1/1          0/16     ILMI     DOWN
ATM2/0/0          0/49     PVC     ATM0/0/0          0/5      QSAAL    DOWN
ATM2/0/0          0/61     PVC     ATM1/1/0          0/5      QSAAL    UP
ATM2/0/0          0/62     PVC     ATM1/1/1          0/5      QSAAL    DOWN
Interface      Conn-Id    Type   X-Interface     X-Conn-Id   Encap  Status
ATM2/0/0          0/63     PVC     ATM-P3/0/0        0/32     LSIPC    UP
ATM2/0/0          0/64     PVC     ATM-P3/0/0        0/39     LSIPC    UP
ATM2/0/0          0/65     PVC     ATM-P3/0/0        0/33     IWFLMI   UP
ATM2/0/0          0/66     PVC     ATM-P3/0/0        0/34     IWFLMI   UP
ATM2/0/0          0/67     PVC     ATM-P3/0/0        0/37     IWFLMI   UP
ATM2/0/0          0/68     PVC     ATM-P3/0/0        0/48     IWFLMI   UP
ATM2/0/0          0/69     PVC     ATM-P3/0/0        0/35     IWFLMI   UP
ATM2/0/0          0/70     PVC     ATM0/1/2          0/18     PNNI     UP
ATM2/0/0          0/71     PVC     ATM1/0/1          0/18     PNNI     UP
ATM2/0/0          0/72     PVC     ATM0/1/3          0/18     PNNI     UP
ATM2/0/0          0/73     PVC     ATM0/0/0          0/18     PNNI     DOWN
Serial3/0/0:1     44       SoftVC  Serial3/0/0:2      55              UP
```

The following example displays the summary of VCs on a serial interface.

```
Switch# show vc interface serial 3/0/0:1
Interface      Conn-Id    Type   X-Interface     X-Conn-Id   Encap  Status
Serial3/0/0:1     44       SoftVC  Serial3/0/0:2      55              UP
Serial3/0/0:1     66       SoftVC  ATM1/1/0          0/66             UP
Serial3/0/0:1     99       PVC     ATM1/1/0          0/99             UP
```

The following example displays the summary of VCs on an ATM interface

```
Switch1# show vc interface atm 1/1/0
Interface      Conn-Id    Type   X-Interface     X-Conn-Id   Encap  Status
ATM1/1/0          0/5      PVC     ATM2/0/0          0/61     QSAAL    UP
ATM1/1/0          0/16     PVC     ATM2/0/0          0/47     ILMI     UP
ATM1/1/0          0/66     SoftVC  Serial3/0/0:1      66              UP
ATM1/1/0          0/99     PVC     Serial3/0/0:1      99              UP
```

Examples

The following example displays the details of a particular Frame Relay VC.

```
Switch# show vc interface serial 3/0/0:1 44
Interface: Serial3/0/0:1, Type: FRPAM-SERIAL
DLCI = 44     Status : ACTIVE
Connection-type: SoftVC
Cast-type: point-to-point
Usage-Parameter-Control (UPC): tag-drop
pvc-create-time : 00:05:36      Time-since-last-status-change : 00:05:34
Interworking Function Type : network
de-bit Mapping : map-clp-or-de       clp-bit Mapping : map-de
Soft vc location: Source
Remote ATM address: 47.0091.8100.0000.00e0.1e79.8803.4000.0c81.8020.00
Remote DLCI : 55
Soft vc call state: Active
Number of soft vc re-try attempts: 0
Slow-retry-interval: 60 seconds
Aggregate admin weight: 0
ATM-P Interface: ATM-P3/0/0, Type: ATM-PSEUDO
ATM-P VPI = 18  ATM-P VCI = 12
ATM-P Connection Status: UP
Cross-connect-interface: Serial3/0/0:2, Type: FRPAM-SERIAL
Cross-connect-DLCI = 55
tx Frames : 0   Rx Frames : 0
tx Bytes : 0    Rx Bytes : 0
tx Frames Discarded : 0         Rx Frames Discarded : 0
tx Bytes Discarded  : 0         Rx Bytes Discarded  : 0
Rx connection-traffic-table-index: 100
Rx service-category: VBR-NRT (Non-Realtime Variable Bit Rate)
Rx pir: 64000
Rx cir: 64000
Rx Bc : 32768
Rx Be : 32768
Tx connection-traffic-table-index: 100
Tx service-category: VBR-NRT (Non-Realtime Variable Bit Rate)
Tx pir: 64000
Tx cir: 64000
Tx Bc : 32768
Tx Be : 32768
```

Related Commands

Command	Description
atm pvcc	Used to create a PVC.
frame-relay pvc	Used to create a Frame Relay-to-ATM network interworking or to service interworking PVC or Frame-Relay- to-Frame Relay cross-connected PVC.
frame-relay soft-vc	Used to create Frame Relay soft PVCs on the switch.
show atm interface	Displays ATM-specific information about an ATM interface.
show atm status	Displays current information about ATM interfaces and the number of installed connections.
show atm vc	Displays the ATM layer connection information about the virtual connection.
show atm vc signalling	Shows the ATM VC signalling activity.

show version

To display the system hardware configuration, software version, and names and sources of configuration files and boot images, use the **show version** EXEC command.

show version

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification

Examples

The following example is sample output from the **show version** command.

```
Switch# show version
Cisco Internetwork Operating System Software
IOS (tm) XXXXXX WA4-x Software (XXXXXX-WP-M), Version x.x(x.x)WA4(x.x)
Copyright (c) 1986-1998 by cisco Systems, Inc.
Compiled Mon 19-Jan-98 02:41 by
Image text-base: 0x60010910, data-base: 0x605B8000

ROM: System Bootstrap, Version 11.2(1.4.WA3.0) [integ 1.4.WA3.0], RELEASE SOFTWARE

Switch uptime is 4 days, 20 hours, 38 minutes
System restarted by reload
System image file is "slot0:xxxxxx-wp-mz.113-0.8.TWA4.1.30", booted via slot0:

cisco xxx (R4600) processor with 65536K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0
Last reset from power-on
1 Ethernet/IEEE 802.3 interface(s)
22 ATM network interface(s)
123K bytes of non-volatile configuration memory.

8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x100
```

Table 18-76 describes the significant fields shown in the display.

Table 18-76 show version Field Descriptions

Field	Description
Software version 11.2	You should always specify the complete version number when reporting a possible software problem. In the example output, the version number is 11.2.
System Bootstrap, Version	Bootstrap version string.

Table 18-76 show version Field Descriptions (continued)

Field	Description
Current date and time Boot date and time Switch uptime is	Current date and time, the date and time the system was last booted, and *uptime*, or the length of time the system has been up and running.
System restarted by reload	Also displayed is a log of how the system was last booted, as a result of normal system startup or system error. For example, information can be displayed to indicate a bus error that is generally the result of an attempt to access a nonexistent address, as follows: "System restarted by bus error at PC 0xC4CA, address 0x210C0C0".
Running default software	If the software is booted over the network, the Internet address of the boot host is shown. If the software is loaded from onboard ROM, this line reads "running default software." The names and sources of the host and network configuration files are also shown.

The output of the **show version** EXEC command also provides certain messages, such as bus error messages. If such error messages appear, report the complete text of this message to your technical support specialist.