

show ip route

Use the **show ip route** command to display IP routing table entries.

show ip route [noalias]

Syntax Description	noalias (Optional) Keyword to force the display to show IP addresses, not IP aliases.
---------------------------	--

Defaults	This command has no default setting.
-----------------	--------------------------------------

Command Types	Switch command.
----------------------	-----------------

Command Modes	Normal.
----------------------	---------

Examples	This example shows how to display the IP route table:
-----------------	---

```

Console> show ip route
Fragmentation   Redirect   Unreachable
-----
enabled        enabled    enabled

Destination      Gateway      RouteMask   Flags   Use   Interface
-----
172.20.0.0       172.20.26.70  0xffff0000  U      8     sc0
default          default      0xff000000  UH     0     s10
Console>

```

Table 2-20 show ip route Command Output Fields

Field	Description
Fragmentation	Displays current setting of IP fragmentation.
Redirect	Displays current setting of ICMP redirect.
Unreachable	Displays current setting of ICMP unreachable messages.
Destination	Destination address IP route mask.
Gateway	IP address or IP alias of the gateway router.
RouteMask	Determines which path is closer to the destination.
Flags	Indicates route status; possible values are U=up, G=route to a Gateway, H=route to a Host, and D=Dynamically created by a redirect.
Use	Number of times a route entry was used to route packets.
Interface	Type of interface.

Related Commands	set ip route clear ip route
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show kerberos

Use the **show kerberos** command to display the Kerberos configuration.

show kerberos

Syntax Description This command has no arguments or keywords.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display Kerberos configuration information:

```
Console> (enable) show kerberos
Kerberos Local Realm:CISCO.COM
Kerberos server entries:
Realm:CISCO.COM, Server:187.0.2.1, Port:750

Kerberos Domain<->Realm entries:
Domain:cisco.com, Realm:CISCO.COM

Kerberos Clients NOT Mandatory
Kerberos Credentials Forwarding Enabled
Kerberos Pre Authentication Method set to None
Kerberos config key:
Kerberos SRVTAB Entries
Srvtab Entry 1:host/niners.cisco.com@CISCO.COM 0 932423923 1 1 8 01;;8>00>50;0=0=0
Console> (enable)
```

Table 2-21 describes the fields in the **show kerberos** command output.

Table 2-21 show kerberos Command Output Fields

Field	Description
Kerberos Local Realm	Status of whether the local realm is configured.
Kerberos server entries	Status of servers entered into the switch.
Kerberos Domain<->Realm entries	Kerberos domain and realm entries.
Kerberos Clients NOT Mandatory	Status of whether Kerberos has been configured as mandatory on the clients.

Table 2-21 show kerberos Command Output Fields (continued)

Field	Description
Kerberos Credentials Forwarding Disabled	Status of whether credentials forwarding is enabled or disabled.
Kerberos Pre Authentication Method	Status of whether preauthentication is enabled or disabled.
Kerberos config key	Status of whether a DES key has been configured.
Kerberos SRVTAB entries	SRVTAB entries.

Related Commands

clear kerberos clients mandatory
clear kerberos credentials forward
clear kerberos realm
clear kerberos server
clear key config-key
set kerberos clients mandatory
set kerberos credentials forward
set kerberos local-realm
set kerberos realm
set kerberos srvtab entry
set kerberos srvtab remote
set key config-key
show kerberos creds

show kerberos creds

Use the **show kerberos creds** command to display all the Kerberos credentials on the switch.

show kerberos creds

Syntax Description This command has no arguments or keywords.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display Kerberos credentials information:

```
Console> (enable) show kerberos creds  
No Kerberos credentials.  
Console> (enable)
```

Related Commands **clear kerberos credentials forward**
set kerberos credentials forward
show kerberos

show lcperroraction

Use the **show lcperroraction** command to display how your system handles LCP errors when a module reports an ASIC problem to the NMP.

show lcperroraction

Syntax Description This command has no arguments or keywords.

Defaults This command has no default settings.

Command Types Switch command.

Command Modes Privileged.

Examples This example shows how to display the action that handles an LCP error:

```
Console> (enable) show lcperroraction  
LCP action level is: system  
Console> (enable)
```

Related Commands **set lcperroraction**

show lda

Use the **show lda** command set to display the ASLB configuration information.

show lda [**committed** | **uncommitted**]

show lda mls entry

show lda mls entry [**destination** *ip_addr_spec*] [**source** *ip_addr_spec*] [**protocol** *protocol*]
[**src-port** *src_port*] [**dst-port** *dst_port*] [**short** | **long**]

show lda mls statistics count

show lda mls statistics entry

show lda mls statistics entry [**destination** *ip_addr_spec*] [**source** *ip_addr_spec*]
[**protocol** *protocol*] [**src-port** *src_port*] [**dst-port** *dst_port*]

Syntax Description

committed	(Optional) Keyword to view committed configuration information.
uncommitted	(Optional) Keyword to view configuration information that has not been committed.
mls entry	Keywords to display the ASLB MLS entries.
destination <i>ip_addr_spec</i>	(Optional) Full destination IP address or a subnet address in these formats: <i>ip_addr</i> , <i>ip_addr/netmask</i> , or <i>ip_addr/maskbit</i> .
source <i>ip_addr_spec</i>	(Optional) Full source IP address or a subnet address in these formats: <i>ip_addr</i> , <i>ip_addr/netmask</i> , or <i>ip_addr/maskbit</i> .
protocol <i>protocol</i>	(Optional) Keyword and variable to specify additional flow information (protocol family and protocol port pair) to be matched; valid values include tcp , udp , icmp , or a decimal number for other protocol families.
src-port <i>src_port</i>	(Optional) Keyword and variable to specify the number of the TCP/UDP source port (decimal). Used with dst-port to specify the port pair if the protocol is tcp or udp . 0 indicates “do not care.”
dst-port <i>dst_port</i>	(Optional) Keyword and variable to specify the number of the TCP/UDP destination port (decimal). Used with src-port to specify the port pair if the protocol is tcp or udp . 0 indicates “do not care.”
short long	(Optional) Keyword to specify the width of the display.
count	Keyword to display the number of active ASLB MLS entries.
mls statistics entry	Keywords to display statistics information.

Defaults

The default displays MLS entry information in long format.

Command Types

Switch command.

Command Modes

Normal.

Usage Guidelines

Entering the **destination** keyword specifies the entries matching the destination IP address specification, entering the **source** keyword specifies the entries matching the source IP address specification, and entering an *ip_addr_spec* can specify a full IP address or a subnet address. If you do not specify a keyword, it is treated as a wildcard, and all entries are displayed.

When entering the *ip_addr_spec*, use the full IP address or a subnet address in one of the following formats: *ip_addr*, *ip_addr/netmask*, or *ip_addr/maskbit*.

Entering the **destination** keyword specifies the entries matching the destination IP address specification, entering the **source** keyword specifies the entries matching the source IP address specification, and entering an *ip_addr_spec* can specify a full IP address or a subnet address. If you do not specify a keyword, it is treated as a wildcard, and all entries are displayed.

Use the following syntax to specify an IP subnet address:

- *ip_subnet_addr*—This is the short subnet address format. The trailing decimal number 00 in an IP address YY.YY.YY.00 specifies the boundary for an IP subnet address. For example, 172.22.36.00 indicates a 24-bit subnet address (subnet mask 172.22.36.00/255.255.255.0), and 173.24.00.00 indicates a 16-bit subnet address (subnet mask 173.24.00.00/255.255.0.0). However, this format can identify only a subnet address with a length of 8, 16, or 24 bits.
- *ip_addr/subnet_mask*—This is the long subnet address format. For example, 172.22.252.00/255.255.252.00 indicates a 22-bit subnet address. This format can specify a subnet address of any bit number. To provide more flexibility, the *ip_addr* is allowed to be a full host address, such as 172.22.253.1/255.255.252.00.
- *ip_addr/maskbits*—This is the simplified long subnet address format. The mask bits specify the number of bits of the network masks. For example, 172.22.252.00/22 indicates a 22-bit subnet address. The *ip_addr* is allowed to be a full host address, such as 172.22.254.1/22, which has the same subnet address as 172.22.252.00/72.

If you have disabled the ASLB feature, you can view the last configuration using the **show lda uncommitted** command.

The **short** | **long** options give the flexibility to display the output in regular (80 characters in width) or wide screen.

If you enter the **show lda mls entry** or the **show lda mls statistics entry** command with no keywords or variables, all entries are displayed.

Examples

This example shows how to display committed ASLB information:

```

Console> (enable) show lda committed
Status:Committed

Local Director Flow:10.0.0.8/ (TCP port 8)
Router MAC:
00-02-03-04-05-06
00-04-56-67-04-05
00-03-32-02-03-03

LD MAC:00-02-03-04-05-06

```

```
LD Router Side:
-----
Router and LD are on VLAN 110
LD is connected to switch port 4/26 on VLAN 110

LD Server Side:
-----
Server(s) and LD are on VLAN 105
LD is connected to switch port 4/40 on VLAN 105
Console> (enable)
```

This example shows how to display uncommitted ASLB information:

```
Console> (enable) show lda uncommitted
Status:Not Committed.
```

```
Router MAC:
00-02-03-04-05-06
00-04-56-67-04-05
00-03-32-02-03-03
```

```
LD MAC:00-02-03-04-05-06
```

```
LD Router Side:
-----
```

```
LD Server Side:
-----
Console> (enable)
```


Note

The examples shown for the **show lda mls entry** commands are displayed in short format. The display in the long form exceeds the page width and cannot be shown.

This example shows how to display ASLB MLS entries in short format:

```
Console> (enable) show lda mls entry short
Destination-IP  Source-IP      Prot  DstPrt  SrcPrt  Destination-Mac  Vlan
-----
EDst  ESrc  DPort  SPort  Stat-Pkts  Stat-Bytes  Uptime  Age
-----
10.0.0.8          172.20.20.10   TCP   8       64       00-33-66-99-22-44 105
ARPA ARPA -      4/25  0       0         00:00:02 00:00:05

10.0.0.8          172.20.20.11   TCP   8       64       00-33-66-99-22-44 105
ARPA ARPA -      4/25  0       0         00:00:05 00:00:08
Console> (enable)
```

This example shows how to display ASLB information for the source IP address in short format:

```
Console> (enable) show lda mls entry source 172.20.20.11 short
Destination-IP  Source-IP      Prot  DstPrt  SrcPrt  Destination-Mac  Vlan
-----
EDst  ESrc  DPort  SPort  Stat-Pkts  Stat-Bytes  Uptime  Age
-----
10.0.0.8          172.20.20.11   TCP   8       64       00-33-66-99-22-44 105
ARPA ARPA -      4/25  0       0         00:00:05 00:00:08
Console> (enable)
```

This example shows how to display the number of active ASLB MLS entries:

```
Console> (enable) show lda mls statistics count
LDA active shortcuts:20
Console> (enable)
```

This example shows how to display all ASLB MLS entry statistics:

```
Console> (enable) show lda mls statistics entry
                Last      Used
Destination IP  Source IP      Prot DstPrt SrcPrt Stat-Pkts Stat-Bytes
-----
10.0.0.8        172.20.20.10    TCP  WWW    64    636    29256
10.0.0.8        172.20.22.10    TCP  WWW    64     0     0
Console> (enable)
```

This example shows how to display the statistics for a specific destination IP address:

```
Console> (enable) show lda mls statistics entry destination 172.20.22.14
                Last      Used      Last      Used
Destination IP  Source IP      Prot DstPrt SrcPrt Stat-Pkts Stat-Bytes
-----
172.20.22.14   172.20.25.10   6    50648  80    3152   347854
Console> (enable)
```

Related Commands

```
clear lda
commit lda
set lda
```

show log

Use the **show log** command to display the error log for the system or a specific module.

show log [*mod*]

show log dump [*-count*]

Syntax Description	<i>mod</i>	(Optional) Number of the module for which the log is displayed.
	dump	Keyword to display dump log information.
	<i>-count</i>	(Optional) Number of dump log entries to display.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Usage Guidelines To display the contents of ASIC error messages as soon as they are received from SLCP/LCP, see the **set logging server** command.

You can use the **dump** keyword to display log dump information generated when certain events occur, such as memory corruption.

Examples This example shows a partial display of the output from the **show log** command:

```

Console> show log

Network Management Processor (ACTIVE NMP) Log:
Reset count: 10
Re-boot History: Mar 22 2000 10:34:09 0, Mar 17 2000 15:35:11 0
                  Mar 13 2000 17:40:16 0, Mar 13 2000 13:14:08 0
                  Mar 13 2000 11:57:30 0, Feb 24 2000 10:04:18 0
                  Feb 17 2000 08:57:19 0, Feb 15 2000 11:51:27 0
                  Feb 11 2000 12:45:09 0, Jan 26 2000 15:00:25 0

Bootrom Checksum Failures: 0   UART Failures: 0
Flash Checksum Failures: 0   Flash Program Failures: 0
Power Supply 1 Failures: 0   Power Supply 2 Failures: 0
Swapped to CLKA: 0         Swapped to CLKB: 0
Swapped to Processor 1: 0   Swapped to Processor 2: 0
DRAM Failures: 0

Exceptions: 0

Last software reset by user: 3/13/2000,17:39:00

EOBC Exceptions/Hang: 0

```

```

Heap Memory Log:
Corrupted Block = none

NVRAM log:

01. 1/25/2000,17:39:10: convertCiscoMIB:PreSac(0) checksum failed: 0xFFFF(0xE507
)

Module 3 Log:
  Reset Count:    14
  Reset History: Wed Mar 22 2000, 10:35:54
                  Fri Mar 17 2000, 15:36:57
                  Wed Mar 15 2000, 16:54:59
                  Tue Mar 14 2000, 16:02:19

<<<<output truncated >>>>

```

This example shows how to display dump log information:

```

Console> (enable) show log dump
Total logs: 1
Console> (enable)

```

Table 2-22 describes the possible fields in the output from the **show log** command.

Table 2-22 show log Command Output Fields

Field	Description
Network Management Processor (ACTIVE NMP) Log	Log that applies to the NMP on the supervisor engine.
Reset Count	Number of times the system has reset.
Re-boot History	Date and times the system has rebooted.
Bootrom Checksum Failures	Number of bootrom checksum failures.
UART Failures	Number of times the UART has failed.
Flash Checksum Failures	Number of times the Flash Checksum has failed.
Flash Program Failures	Number of times the Flash Program has failed.
Power Supply 1 Failures	Number of times Power Supply 1 has failed.
Power Supply 2 Failures	Number of times Power Supply 2 has failed.
Swapped to CLKA	Number of times a switchover to clock A has occurred.
Swapped to CLKB	Number of times a switchover to clock B has occurred.
Swapped to Processor 1	Number of times a switchover to processor 1 has occurred.
Swapped to Processor 2	Number of times a switchover to processor 2 has occurred.
DRAM Failures	Number of times the DRAM has failed.
Exceptions:	Exceptions log.
Last software reset by user	Date of the last time the software was reset.
NVRAM log	Number of times NVRAM errors have occurred.
Reset Count	Number of times the system has reset.
Reset History	Date and times the system has reset.

■ show log

Related Commands clear log

show logging

Use the **show logging** command to display the system message log information.

show logging [noalias]

Syntax Description	noalias (Optional) Keyword to force the display to show IP addresses, not IP aliases.
---------------------------	--

Defaults	This command has no default setting.
-----------------	--------------------------------------

Command Types	Switch command.
----------------------	-----------------

Command Modes	Normal.
----------------------	---------

Examples	This example shows how to display the default system message log configuration:
-----------------	---

```

Console <enable> show logging noalias
Logging buffered size:      500
      timestamp option:    enabled
Logging history size:      1
Logging console:           enabled
Logging server:            disabled
      server facility:     LOCAL7
      server severity:     warnings(4)
Current logging session:   enabled

```

Facility	Severity	Current Session Severity
acl	2	2
cdp	4	4
cops	2	2
dtp	5	5
dvlan	2	2
earl	2	2
filesys	2	2
gvrp	2	2
ip	2	2
kernel	2	2
ld	2	2
mcast	2	2
mgmt	5	5
mls	5	5
pagp	5	5
protfilt	2	2
pruning	2	2
privatevlan	2	2
qos	2	2
radius	2	2
rsvp	2	2
security	2	2

■ show logging

```

snmp                2                2
spantree            2                2
sys                 5                5
tac                 2                2
tcp                 2                2
telnet              2                2
tftp                2                2
udld                4                4
vtp                 2                2

0 (emergencies)    1 (alerts)       2 (critical)
3 (errors)         4 (warnings)     5 (notifications)
6 (information)    7 (debugging)
Console> (enable)

```

Table 2-23 describes the fields in the **show logging** command output.

Table 2-23 show logging Command Output Fields

Field	Description
Logging buffered size	Size of the logging buffer.
timestamp option	Status of whether the timestamp option is enabled or disabled.
Logging history size	Size of the logging history buffer.
Logging console	Status of whether logging to the console is enabled or disabled.
Logging server	Status of whether logging to the logging server is enabled or disabled.
Facility	Name of the facility to be logged.
Server/Severity	Severity level at which point an error from that facility is logged.
Current Session Severity	Severity level at which point an error from that facility is logged during the current session.
0 (emergencies), 1 (alerts)...	Key to the numeric severity level codes.

Related Commands

clear logging server
show logging buffer

show logging buffer

Use the **show logging buffer** command to display system messages from the internal buffer.

```
show logging buffer [-] [number_of_messages]
```

Syntax Description	<p>– (Optional) Keyword to force the display to show system messages starting from the end of the buffer.</p> <p><i>number_of_messages</i> (Optional) Number of system messages to be displayed; valid values are from 1 to 1023.</p>
Defaults	The default is –20 messages.
Command Types	Switch command.
Command Modes	Normal.
Usage Guidelines	If you do not enter the – keyword, system messages are displayed from the beginning of the buffer. If you do not specify the <i>number_of_messages</i> , all messages in the buffer are displayed.
Examples	<p>This example shows how to display the first four system messages from the internal buffer:</p> <pre>Console <enable> show logging buffer 4</pre> <pre>1999 Dec 28 15:18:21 %SYS-1-SYS_NORMPWRMGMT:System in normal power management on 1999 Dec 28 15:18:24 %SYS-5-MOD_PWRON:Module 2 powered up 1999 Dec 28 15:18:31 %MLS-5-NDEDISABLED:Netflow Data Export disabled 1999 Dec 28 15:18:32 %MLS-5-MCAST_STATUS:IP Multicast Multilayer Switching is ed Console> (enable)</pre> <p>This example shows how to display the last four system messages from the internal buffer:</p> <pre>Console <enable> show logging buffer -4</pre> <pre>1999 Dec 28 15:18:32 %MLS-5-MCAST_STATUS:IP Multicast Multilayer Switching is ed 1999 Dec 28 15:18:32 %SYS-5-MOD_OK:Module 1 is online 1999 Dec 28 15:19:07 %SYS-5-MOD_OK:Module 2 is online 1999 Dec 28 15:19:27 %PAGP-5-PORTTOSTP:Port 2/1 joined bridge port 2/1 Console <enable></pre>
Related Commands	clear logging buffer

show mac

Use the **show mac** command to display MAC counters.

```
show mac [mod[/port]]
```

Syntax Description	<i>mod[/port]</i> (Optional) Number of the module and (optional) port.
---------------------------	--

Defaults	This command has no default setting.
-----------------	--------------------------------------

Command Types	Switch command.
----------------------	-----------------

Command Modes	Normal.
----------------------	---------

Usage Guidelines	If you do not specify a module number, all modules are shown. If you do not specify a port number, all ports are shown.
-------------------------	---

The Out-Discards field displays the number of outbound packets chosen to be discarded even though no errors had been detected to prevent being transmitted. One possibility for discarding such a packet could be to free up buffer space.

Examples	This example shows how to display MAC information for port 1 on module 3:
-----------------	---

```
Console> show mac 3/1
```

Port	Rcv-Unicast	Rcv-Multicast	Rcv-Broadcast
3/1	0	22636	1

Port	Xmit-Unicast	Xmit-Multicast	Xmit-Broadcast
3/1	3690	1888064	305202

Port	Rcv-Octet	Xmit-Octet
3/1	9310072	162180717

MAC	Dely-Exced	MTU-Exced	In-Discard	Out-Discard
3/1	0	0	0	0

Port	Last-Time-Cleared
3/1	Wed Jan 14 2004, 07:59:35

```
Console>
```

Table 2-24 describes the possible fields in the **show mac** command output.

Table 2-24 *show mac Command Output Fields*

Field	Description
MAC	Module and port.
Rcv-Frms	Frames received on the port.
Xmit-Frms	Frames transmitted on the port.
Rcv-Broad	Broadcast frames received on the port.
Xmit-Broad	Broadcast frames transmitted on the port.
Dely-Exced	Total transmit frames aborted due to excessive deferral.
MTU-Exced	Frames for which the MTU size was exceeded.
In-Discard	Incoming frames that were discarded because the frame did not need to be switched.
Out-Discard	The number of outbound packets chosen to be discarded even though no errors had been detected to prevent their being transmitted.
Curr-Path	Current path used (primary or secondary).
TVX	Value of the valid transmission timer.
Upstream-Nbr	MAC address of the current upstream neighbor.
Downstream-Nbr	MAC address of the current downstream neighbor.
Old-Upstrm-Nbr	MAC address of the previous upstream neighbor.
Old-Downstrm-Nbr	MAC address of the previous downstream neighbor.
Rcv-Smt	Number of SMT frames received by the port.
Xmit-Smt	Number of NSMT frames transmitted by the port.
Rcv-llc	Number of NLLC frames received by the port.
Xmit-llc	Number of LLC frames transmitted by the port.
Rcv-Octet	Number of octet frames received on the port.
Xmit-Octet	Number of octet frames transmitted on the port.
Rcv-Unicast	Number of unicast frames received on the port.
Rcv-Broadcast	Number of broadcast frames received on the port.
Xmit-Unicast	Number of unicast frames transmitted on the port.
Xmit-Broadcast	Number of broadcast frames transmitted on the port.
Tvx-Exp-Ct	Number of times the TVX timer expired.
Last-Time-Cleared	Date and time of the last clear counters command.

show microcode

Use the **show microcode** command to display the version of the microcode and the module version information.

show microcode

Syntax Description This command has no arguments or keywords.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display the **show microcode** output for a supervisor engine:

```
Console> show microcode
Bundled Images  Version                Size      Built
-----
LCP SLCP        4.2(0.24)VAI58          302506 12/03/98 03:51:46
LCP LX1000      4.2(0.24)VAI58          288508 12/03/98 03:53:12
LCP LX10100     4.2(0.24)VAI58          379810 12/03/98 03:52:33
```

Table 2-25 describes possible fields in the **show microcode** command output.

Table 2-25 show microcode Command Output Fields

Field	Description
Bundled Images	Name of the bundled image.
Version	Version of the image.
Size	Size of the image.
Built	Date image was built.

show mls

Use the **show mls** command set to display MLS Layer 3 packet information in the MLS-based Catalyst 6000 family switches.

```
show mls [ip | ipx] [mod]
```

```
show mls nde
```

Syntax Description	
ip	(Optional) Keyword to specify IP MLS.
ipx	(Optional) Keyword to specify IPX MLS.
<i>mod</i>	(Optional) Number of the MSFC; valid values are 15 and 16.
nde	Keyword to display NDE information.

Defaults The default displays both IP and IPX MLS information.

Command Types Switch command.

Command Modes Normal.

Usage Guidelines If you enter any of the **show mls** commands on Catalyst 6000 family switches without IP or IPX MLS, one of these warning messages display:

```
Multilayer switching not supported on feature card.
```

or

```
IPX Multilayer switching not supported on feature card.
```

If you place the MSFC on a supervisor engine installed in slot 1, then the MSFC is recognized as module 15. If you install the supervisor engine in slot 2, the MSFC is recognized as module 16.

Examples This example shows the display if you enter the **show mls** command with no arguments:

```
Console> (enable) show mls
Total Active MLS entries = 0
Total packets switched = 0
IP Multilayer switching enabled
IP Multilayer switching aging time = 256 seconds
IP Multilayer switching fast aging time = 0 seconds, packet threshold = 0
IP Flow mask: Full Flow
Configured flow mask is Destination flow
Active IP MLS entries = 0
Netflow Data Export version: 8
Netflow Data Export disabled
Netflow Data Export port/host is not configured
Total packets exported = 0
```

■ show mls

```

MSFC ID      Module XTAG MAC      Vlans
-----
52.0.0.03    15      1      01-10-29-8a-0c-00 1,10,123,434,121
                                           222,666,959

```

```

IPX Multilayer switching enabled
IPX Multilayer switching aging time = 256 seconds
IPX Flow mask: Full Flow
Active IPX MLS entries = 0

```

```

MSFC ID      Module XTAG MAC      Vlans
-----
52.0.0.3     16      1      00-10-29-8a-0c-00 1,10

```

Console> (enable)

This example shows how to display IPX MLS information:

```

Console> (enable) show mls ipx
IPX Multilayer switching disabled
IPX Multilayer switching aging time = 256 seconds
IPX flow mask is Destination flow
IPX max hop is 16
Active IPX MLS entries = 0

```

```

IPX MLS-RP IP    MLS-RP ID    XTAG MLS-RP MAC-Vlans
-----
22.1.0.55       00906dfc5800  5 00-10-07-38-29-17 2-15,66,77,88,99
                                           00-90-6d-fc-58-00 20-21

```

```

MSFC ID      Module XTAG MAC      Vlans
-----
52.0.0.3     16      1      00-10-29-8a-0c-00 1,10

```

Console> (enable)

This example shows how to display NDE information:

```

Console> (enable) show mls nde
Netflow Data Export version: 7
Netflow Data Export disabled
Netflow Data Export port/host is not configured
Total packets exported = 0
Console> (enable)

```

Related Commands

```

set mls agingtime
set mls exclude protocol
set mls nde
set mls statistics protocol
clear mls

```

show mls entry

Use the **show mls** command set to display state information in the MLS-based Catalyst 6000 family switches.

```
show mls entry [mod] [short | long]
```

```
show mls entry ip [mod] [destination ip_addr_spec] [source ip_addr_spec]
[protocol protocol] [src-port src_port] [dst-port dst_port] [short | long]
```

```
show mls entry ipx [mod] [destination ipx_addr_spec] [source ipx_addr_spec] [short | long]
```

Syntax Description

<i>mod</i>	(Optional) MSFC module number; valid values are 15 or 16.
short	(Optional) Keyword to display the output with carriage returns.
long	(Optional) Keyword to display the output on one line.
ip	Keyword to specify IP MLS.
destination	(Optional) Keyword to specify the destination IP or IPX address.
<i>ip_addr_spec</i>	(Optional) Full IP address or a subnet address.
source	(Optional) Keyword to specify the source IP or IPX address.
protocol	(Optional) Keyword to specify the protocol type.
<i>protocol</i>	(Optional) Protocol type; valid values can be 0 , tcp , udp , icmp , or a decimal number for other protocol families. 0 indicates “do not care.”
src-port <i>src_port</i>	(Optional) Keyword and variable to specify the number of the TCP/UDP source port (decimal). Used with dst-port to specify the port pair if the protocol is tcp or udp . 0 indicates “do not care.”
dst-port <i>dst_port</i>	(Optional) Keyword and variable to specify the number of the TCP/UDP destination port (decimal). Used with src-port to specify the port pair if the protocol is tcp or udp . 0 indicates “do not care.”
ipx	Keyword to specify IPX MLS.
<i>ipx_addr_spec</i>	(Optional) Full IPX address or a subnet address.

Defaults

The default displays MLS information in long format.

Command Types

Switch command.

Command Modes

Normal.

Usage Guidelines

If you use the **ip** keyword, you are specifying a command for IP MLS. If you use the **ipx** keyword, you are specifying a command for IPX MLS.

When entering the *ip_addr_spec*, use the full IP address or a subnet address in one of the following formats: *ip_addr*, *ip_addr/netmask*, or *ip_addr/maskbit*.

When entering the *ipx_addr_spec*, use the full IP address or a subnet address in one of the following formats: *src_net/[mask]*, *dest_net.dest_node*, or *dest_net/mask*.

If you enter any **show mls** command on Catalyst 6000 family switches without IP MLS, this warning message displays:

```
Multilayer switching not supported on feature card.
```

If you enter any **show mls** command on Catalyst 6000 family switches without IPX MLS, this warning message displays:

```
IPX Multilayer switching not supported on feature card.
```

If you enter the **show mls** command with no arguments, general IP MLS information and all IP MLS-RP information displays.

A value 0 for *src_port* and *dst_port* means “don’t care.”

Entering the **destination** keyword specifies the entries matching the destination IP address specification, entering the **source** keyword specifies the entries matching the source IP address specification, and entering an *ip_addr_spec* can specify a full IP address or a subnet address. If you do not specify a keyword, it is treated as a wildcard, and all entries are displayed.

Use the following syntax to specify an IP subnet address:

- *ip_subnet_addr*—This is the short subnet address format. The trailing decimal number 00 in an IP address YY.YY.YY.00 specifies the boundary for an IP subnet address. For example, 172.22.36.00 indicates a 24-bit subnet address (subnet mask 172.22.36.00/255.255.255.0), and 173.24.00.00 indicates a 16-bit subnet address (subnet mask 173.24.00.00/255.255.0.0). However, this format can identify only a subnet address with a length of 8, 16, or 24 bits.
- *ip_addr/subnet_mask*—This is the long subnet address format. For example, 172.22.252.00/255.255.252.00 indicates a 22-bit subnet address. This format can specify a subnet address of any bit number. To provide more flexibility, the *ip_addr* is allowed to be a full host address, such as 172.22.253.1/255.255.252.00.
- *ip_addr/maskbits*—This is the simplified long subnet address format. The mask bits specify the number of bits of the network masks. For example, 172.22.252.00/22 indicates a 22-bit subnet address. The *ip_addr* is allowed to be a full host address, such as 172.22.254.1/22, which has the same subnet address as 172.22.252.00/72.

The [**long** | **short**] option gives the flexibility to display the output in regular (80 characters in width) or wide screen.

Dashes may be displayed for some fields if the fields are not applicable to the type of flow mask.

If you place the MSFC on a supervisor engine installed in slot 1, then the MSFC is recognized as module 15. If you install the supervisor engine in slot 2, the MSFC is recognized as module 16.

Examples



Note

The examples shown for the **show mls** commands are displayed in short format. The display in the long form exceeds the page width and cannot be shown.

This example shows how to display all MLS packet entry information:

```
Console> (enable) show mls entry short
```

```
Destination-IP Source-IP Prot DstPrt SrcPrt Destination-Mac Vlan
-----
ESrc EDst SPort DPort Stat-Pkts Stat-Byte Uptime Age
-----
171.69.200.234 171.69.192.41 TCP* 6000 59181 00-60-70-6c-fc-22 4
ARPA SNAP 5/8 11/1 3152 347854 09:01:19 09:08:20
171.69.1.133 171.69.192.42 UDP 2049 41636 00-60-70-6c-fc-23 2
SNAP ARPA 5/8 1/1 2345 123456 09:03:32 09:08:12
```

```
Total IP entries: 2
```

```
Destination-IPX Source-IPX-net Destination-Mac Vlan Port
-----
Stat-Pkts Stat-Bytes
-----
BABE.0000.0000.0001 - 00-a0-c9-0a-89-1d 211 13/37 30230 1510775
201.00A0.2451.7423 - 00-a0-24-51-74-23 201 14/33
30256 31795084
501.0000.3100.0501 - 31-00-05-01-00-00 501 9/37
12121 323232
401.0000.0000.0401 - 00-00-04-01-00-00 401 3/1
4633 38676
```

```
Total IPX entries: 4
```

```
Console> (enable)
```

These examples show how to display different IP MLS packet entry information:

Full flow:

```
Console> (enable) show mls entry ip short
```

```
Destination-IP Source-IP Prot DstPrt SrcPrt Destination-Mac
Vlan -----
-----
EDst ESrc DPort SPort Stat-Pkts Stat-Byte Uptime Age
-----
MSFC 127.0.0.24 (module 16):
171.69.200.234 171.69.192.41 TCP* 6000 59181 00-60-70-6c-fc-22 4
ARPA SNAP 5/8 11/1 3152 347854 09:01:19 09:08:20
171.69.1.133 171.69.192.42 UDP 2049 41636 00-60-70-6c-fc-23 2
SNAP ARPA 5/8 1/1 2345 123456 09:03:32 09:08:12
```

```
Total Entries:2
```

```
* indicates TCP flow has ended
```

```
Console> (enable)
```

show mls entry

Destination-only flow:

```

Console> (enable) show mls entry ip short
Destination-IP Source-IP Prot DstPrt SrcPrt Destination-Mac Vlan
-----
ESrc EDst SPort DPort Stat-Pkts Stat-Byte Uptime Age
-----
MSFC 127.0.0.24 (module 16):
171.69.200.234 - - - 00-60-70-6c-fc-22 4
  ARPA SNAP 5/8 11/1 3152 347854 09:01:19 09:08:20
171.69.1.133 - - - 00-60-70-6c-fc-23 2
  SNAP ARPA 5/8 1/1 2345 123456 09:03:32 09:08:12

Total Entries: 2
* indicates TCP flow has ended
Console> (enable)

```

Destination-source flow:

```

Console> (enable) show mls entry ip 16 short
Destination-IP Source-IP Prot DstPrt SrcPrt Destination-Mac Vlan ESrc EDst
Destination-IP Source-IP Prot DstPrt SrcPrt Destination-Mac Vlan
-----
ESrc EDst SPort DPort Stat-Pkts Stat-Byte Uptime Age
-----
MSFC 127.0.0.24 (module 16):
171.69.200.234 171.69.192.41 - - 00-60-70-6c-fc-22 4
  ARPA SNAP 5/8 11/1 3152 347854 09:01:19 09:08:20
171.69.1.133 171.69.192.42 - - 00-60-70-6c-fc-23 2
  SNAP ARPA 5/8 1/1 2345 123456 09:03:32 09:08:12

Total Entries: 2
* indicates TCP flow has ended
Console> (enable)

```

These examples show how to display different IPX MLS packet entry information:

Destination-source:

```

Console> (enable) show mls entry ipx short
Destination-IPX Source-IPX-net Destination-Mac Vlan Port
-----
Stat-Pkts Stat-Bytes
-----
MSFC 127.0.0.22 (Module 15):
201.00A0.2451.7423 1.0002 00-a0-24-51-74-23 201 14/33
  30256 31795084
501.0000.3100.0501 1.0003 31-00-05-01-00-00 501 9/37
  12121 323232

Total entries: 0
Console> (enable)

```

Destination-only flow:

```

Console> (enable) show mls entry ipx short
Destination-IPX          Source-IPX-net Destination-Mac   Vlan Port
-----
Stat-Pkts Stat-Bytes
-----
MSFC 127.0.0.24 (module 16):
BABE.0000.0000.0001      -              00-a0-c9-0a-89-1d 211  13/37
 30230      1510775
201.00A0.2451.7423      -              00-a0-24-51-74-23 201  14/33
 30256      31795084
501.0000.3100.0501      -              31-00-05-01-00-00 501  9/37
 12121      323232
401.0000.0000.0401      -              00-00-04-01-00-00 401  3/1
 4633      38676

Total entries: 4
Console> (enable)

```

```

Console> (enable) show mls entry ipx 16 short
Destination-IPX          Source-IPX-net Destination-Mac   Vlan Port
-----
Stat-Pkts Stat-Bytes
-----
MSFC 127.0.0.22 (Module 16):
501.0000.3100.0501      -              31-00-05-01-00-00 501  9/37
 12121      323232
401.0000.0000.0401      -              00-00-04-01-00-00 401  3/1
 4633      38676
Console> (enable)

```

Related Commands clear mls

show mls exclude protocol

Use the **show mls exclude protocol** command to display excluded protocols on TCP or UDP from being shortcuts.

show mls exclude protocol

Syntax Description This command has no arguments.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Usage Guidelines MLS exclusion only works in full-flow mode.

Examples This example shows how to display excluded protocols on TCP or UDP from being shortcuts:

```
Console> (enable) show mls exclude protocol
Protocol-Port Excluded-From
-----
89            TCP UDP
5             TCP
10           TCP UDP
122          UDP
Note: MLS exclusion only works in full flow mode.
Console. (enable)
```

Related Commands **set mls exclude protocol**
clear mls exclude protocol

show mls multicast

Use the **show mls multicast** command set to display IP multicast MLS information.

show mls multicast

show mls multicast entry {[*mod*] [**vlan** *vlan_id*] [**group** *ip_addr*]} [**source** *ip_addr*]
[**all** | **long** | **short**]

show mls multicast statistics {*mod*}

Syntax Description		
entry	Keyword to specify the IP multicast MLS packet entry.	
<i>mod</i>	(Optional) Number of the MSFC; valid values are 15 and 16.	
vlan <i>vlan_id</i>	(Optional) Keyword and variable to specify a VLAN.	
group <i>ip_addr</i>	(Optional) Keyword and variable to specify a multicast group address.	
source <i>ip_addr</i>	(Optional) Keyword and variable to specify a multicast traffic source.	
all	(Optional) Keyword to specify all IP multicast MLS entries on the switch.	
long	(Optional) Keyword to specify an output appropriate for terminals that support output 80-characters wide.	
short	(Optional) Keyword to specify an output appropriate for terminals that support output less than 80-characters wide.	
statistics	Keyword to display statistics for an MSFC.	

Command Types Switch command.

Command Modes Normal.

Usage Guidelines If you enter the **show mls multicast** commands on Catalyst 6000 family switches without MLS, this warning message displays:

```
This feature is not supported on this device.
```

If you enter the **show mls multicast entry** commands with no arguments, all the MLS entries for multicast displays.

If you disable DNS, no name can be specified or shown.

Entering the **vlan** keyword specifies the VLAN entries matching this address specification, and entering an *ip_addr* can specify a full IP address or a subnet address. Entering the **group** keyword specifies the group entries matching this IP address specification. If you do not specify a keyword, it is treated as a wildcard, and all entries are displayed.

A warning message is displayed if you disable the Layer 2 multicast protocol when the MMLS feature is running.

If you place the MSFC on a supervisor engine installed in slot 1, then the MSFC is recognized as module 15. If you install the supervisor engine in slot 2, the MSFC is recognized as module 16.

Examples

This example shows how to display all IP MMLS entries:

```
Console> (enable) show mls multicast
Admin Status: Enabled
Operational Status: Active
Configured flow mask is {Destination-source-pvlan flow}
Active Entries = 750
MSFC:: 1.2.3.4 (Active)
Console> (enable)
```

This example shows how to display statistical information from MSFC 15:

```
Console> (enable) show mls multicast statistics 15
Router IP      Router Name      Router MAC
-----
170.67.2.12   mothra           00-10-0d-38-a4-00

Transmit:
  Delete Notifications      10
  Acknowledgements:       100
  Flow Statistics:         500
Receive
  Open Connection Requests: 2
  Keep Alive Messages:     75
  Shortcut Messages:
  Shortcut Install TLV:    8
  Selective Delete TLV:   0
  Update TLV:              0
  Input VLAN Delete TLV:  2
  Output VLAN Delete TLV: 2
  Global Delete TLV:      1
  MFD Install TLV:        8
  MFD Delete TLV:         0
Console> (enable)
```

**Note**

The following examples for the **show mls multicast entry** command set are displayed in short format. The display in the long form exceeds the page width and cannot be shown.

This example shows how to display IP MMLS entries for a specific MSFC and a specific multicast source address:

```
Console> (enable) show mls multicast entry 15 1.1.5.252 source 1.1.11.1 short
Router IP      Dest IP      Source IP  Pkts      Bytes
InVlan OutVlans
-----
172.20.49.159  224.1.1.6   1.1.40.4   368       57776
  40      23,25
172.20.49.159  224.1.1.71  1.1.22.2   99        65142
  22      30,37
172.20.49.159  224.1.1.8   1.1.22.2   396       235620
  22      13,19
Console> (enable)
```

This example shows how to display IP MMLS entries for a specific multicast group address:

```

Console> (enable) show mls multicast entry group 224.1.1.1
Router IP      Dest IP      Source IP    Pkts      Bytes      InVlan  OutVlans
-----
1.1.5.252     224.1.1.1   1.1.11.1    15870     2761380    20
1.1.9.254     224.1.1.1   1.1.12.3    671400    116823600  12
1.1.5.252     224.1.1.1   1.1.12.3    15759     2742066    20
1.1.9.254     224.1.1.1   1.1.11.1    671853    116902422  11
1.1.9.254     224.1.1.1   1.1.12.1    671400    116823600  12
1.1.5.252     224.1.1.1   1.1.13.1    15840     2756160    20
1.1.9.254     224.1.1.1   1.1.13.1    670950    116745300  13
1.1.5.252     224.1.1.1   1.1.12.1    15840     2756160    20
1.1.9.254     224.1.1.1   1.1.11.3    671847    116901378  11
Total Entries: 9
Console> (enable)

```

Related Commands

- set mls multicast
- clear mls exclude protocol

show mls statistics

Use the **show mls statistics** command set to display MLS statistics information in the MLS-based Catalyst 6000 family switches.

show mls statistics protocol

show mls statistics entry [*mod*]

show mls statistics entry ip [*mod*] [**destination** *ip_addr_spec*] [**source** *ip_addr_spec*]
[**protocol** *protocol* [**src-port** *src_port*] [**dst-port** *dst_port*]]

show mls statistics entry ipx [*mod*] [**destination** *ipx_addr_spec*] [**source** *ipx_addr_spec*]

Syntax Description	
protocol	Keyword to specify a route processor.
entry	Keyword to specify the entry type.
<i>mod</i>	(Optional) Number of the MSFC; valid values are 15 or 16.
entry	Keyword to display statistics based on the specified option.
ip	(Optional) Keyword to specify IP MLS.
destination	(Optional) Keyword to specify the destination IP address.
<i>ip_addr_spec</i>	(Optional) Full IP address or a subnet address in the following formats: <i>ip_addr</i> ; <i>ip_addr/netmask</i> , or <i>ip_addr/maskbit</i> .
source	(Optional) Keyword to specify the source IP address.
protocol <i>protocol</i>	(Optional) Keyword and variable to specify additional flow information (protocol family and protocol port pair) to be matched; valid values are from 1 to 255, ip , ipinip , icmp , igmp , tcp , and udp .
src-port <i>src_port</i>	(Optional) Keyword and variable to specify the source port IP address.
dst-port <i>dst_port</i>	(Optional) Keyword and variable to specify the destination port IP address.
ipx	Keyword to specify IPX MLS.
<i>ipx_addr_spec</i>	(Optional) Full IPX address or a subnet address in one of the following formats: <i>src_net/[mask]</i> , <i>dest_net.dest_node</i> , or <i>dest_net/mask</i> .

Command Types Switch command.

Command Modes Normal.

Usage Guidelines

When specifying the **ip** | **ipx** keyword, if you specify **ip** or do not enter a keyword, this means that the command is for IP MLS. If you specify **ipx**, this means the command is for IPX only.

When entering the IPX address syntax, use the following format:

- IPX net address—1...FFFFFFFE
- IPX node address—x.x.x where x is 0...FFFF
- IPX address—ipx_net.ipx_node (for example 3.0034.1245.AB45, A43.0000.0000.0001)

If you enter any of the **show mls statistics protocol** commands on a Catalyst 6000 family switch without MLS, this warning message displays:

```
Feature not supported in hardware.
```

If you enter the **show mls statistics protocol** command, the statistics in the protocol category, such as Telnet, FTP, or WWW are displayed. Note that this applies for “full flowmask” only. In flowmasks other than full flow, inapplicable fields will have a dash (similar to **show mls entry** outputs).

A value 0 for *src_port* and *dst_port* means “don’t care.” Note that this applies for “full flowmask” only.

Use the following syntax to specify an IP subnet address:

- *ip_subnet_addr*—This is the short subnet address format. The trailing decimal number “00” in an IP address YY.YY.YY.YY specifies the boundary for an IP subnet address. For example, 172.22.36.00 indicates a 24-bit subnet address (subnet mask 255.255.255.0), and 173.24.00.00 indicates a 16-bit subnet address (subnet mask 255.255.0.0). However, this format can identify only a subnet address with a length of 8, 16, or 24 bits.
- *ip_addr/subnet_mask*—This is the long subnet address format; for example, 172.22.252.00/255.255.252.00 indicates a 22-bit subnet address. This format can specify a subnet address of any bit number. To provide more flexibility, the *ip_addr* is allowed to be a full host address, such as 172.22.253.1/255.255.252.00, which has the same subnet address as *ip_subnet_addr*.
- *ip_addr/maskbits*—This is the simplified long subnet address format. The mask bits specify the number of bits of the network masks. For example, 172.22.252.00/22 indicates a 22-bit subnet address. The *ip_addr* is allowed to be a full host address, such as 172.22.254.1/22, which has the same subnet address as 172.22.252.00/72.

If you place the MSFC on a supervisor engine installed in slot 1, then the MSFC is recognized as module 15. If you install the supervisor engine in slot 2, the MSFC is recognized as module 16.

Examples

This example shows how to display the statistics for all protocol categories:

```
Console> (enable) show mls statistics protocol
Protocol  TotalFlows  TotalPackets  Total Bytes
-----
Telnet    900         630          4298
FTP       688         2190         3105
WWW       389         42679        623686
SMTP      802         4966         92873
X         142         2487         36870
DNS       1580        52           1046
Others    82          1            73
Total     6583        53005        801951
Console> (enable)
```

show mls statistics

This example shows how to display the statistics for all protocol categories:

```
Console> (enable) show mls statistics
                               Last   Used
Destination IP  Source IP      Prot DstPrt SrcPrt Stat-Pkts Stat-Bytes
-----
172.20.22.14   172.20.25.10   6   50648  80   3152   347854
172.20.22.43   172.20.32.43   44   2323   324   23232  232323

Destination IPX      Source IPX net Stat-Pkts Stat-Bytes
-----
201.00A0.2451.7423   1.0002           30256   31795084
501.0000.3100.0501   1.0003           12121   323232
Console> (enable)
```

This example shows how to display IP MLS statistics for MSFC 15:

```
Console> show mls statistics entry ip 15 destination 172.20.22.14
MSFC 127.0.0.12 (Module 15):
                               Last   Used
Destination IP  Source IP      Prot DstPrt SrcPrt Stat-Pkts Stat-Bytes
-----
172.20.22.14   172.20.25.10   6   50648  80   3152   347854
Console>
```

This example shows how to display the statistics for a specific destination IP address:

```
Console> show mls statistics entry destination 172.20.22.14
                               Last Used      Last   Used
Destination IP  Source IP      Prot DstPrt SrcPrt Stat-Pkts Stat-Bytes
-----
172.20.22.14   172.20.25.10   6   50648  80   3152   347854
Console>
```

This example shows how to display the statistics for a specific destination IPX address:

```
Console> show mls statistics entry ipx destination 1.0002.00e0.fefc.6000
Destination IPX      Source IPX net Stat-Pkts Stat-Bytes
-----
MLS-RP 10.20.26.64:
1.0002.00e0.fefc.6000  1.0003           11       521
Console>
```

Related Commands

- set mls statistics protocol
- clear mls

show module

Use the **show module** command to display module status and information. For supervisor engines, the **show module** command displays the supervisor engine number but appends the uplink daughter card's module type and information.

show module [*mod*]

Syntax Description	<i>mod</i> (Optional) Number of the module.
---------------------------	---

Defaults	This command has no default setting.
-----------------	--------------------------------------

Command Types	Switch command.
----------------------	-----------------

Command Modes	Normal.
----------------------	---------

Usage Guidelines	<p>If you do not specify a module number, all modules are shown.</p> <p>The MAC addresses for the supervisor engine are displayed in three lines of output. The first line lists the two MAC addresses for inband ports, the second line lists the two MAC addresses for the two gigabit-uplink ports, and the third line lists the allocated 0x3ff MAC address for the chassis backplane.</p> <p>If you place the MSFC on a supervisor engine installed in slot 1, then the MSFC is recognized as module 15. If you install the supervisor engine in slot 2, the MSFC is recognized as module 16.</p>
-------------------------	--

Examples	This example shows how to display status and information for all modules:
-----------------	---

```

Console> show module
Mod Slot Ports Module-Type           Model                Sub Status
-----
 1   1   2   1000BaseX Supervisor    WS-X6K-SUP1A-2GE    yes ok
15   1   1   Multilayer Switch Feature WS-F6K-MSFC         no ok
 8   8   48  10/100BaseTX Ethernet    WS-X6248-RJ-45     no ok
 9   9   48  10/100BaseTX Ethernet    WS-X6348-RJ-45     yes ok

Mod Module-Name      Serial-Num
-----
 1                   SAD03436055
15                   SAD03432597
 9                   SAD03414268

```

■ show module

```

Mod MAC-Address(es)                Hw      Fw      Sw
-----
1  00-30-80-f7-a5-06 to 00-30-80-f7-a5-07 1.0     5.2(1)  6.1(0.12)
   00-30-80-f7-a5-04 to 00-30-80-f7-a5-05
   00-30-a3-4a-a0-00 to 00-30-a3-4a-a3-ff
15 00-d0-bc-ee-d0-dc to 00-d0-bc-ee-d1-1b 1.2     12.0(3)XE1 12.0(3)XE1
8  00-d0-c0-c8-83-ac to 00-d0-c0-c8-83-db 1.1     4.2(0.24)V 6.1(0.37)FTL
9  00-50-3e-7c-43-00 to 00-50-3e-7c-43-2f 0.201  5.3(1)

Mod Sub-Type                Sub-Model                Sub-Serial  Sub-Hw
-----
1  L3 Switching Engine      WS-F6K-PFC                SAD03451187 1.0
9  Inline Power Module      WS-F6K-VPWR                1.0
Console>

```

These examples show the information displayed for different module types.

This example shows the display for a 48-port 10/100BaseTX switching services-configured module:

```

Console> show module 5
Mod Slot Ports Module-Type                Model                Status
-----
5  5    48    10/100BaseTX (RJ-45)  WS-X6248-RJ-45      ok

Mod Module-Name                Serial-Num
-----
5                                SAD03181291

Mod MAC-Address(es)                Hw      Fw      Sw
-----
5  00-50-f0-ac-30-54 to 00-50-f0-ac-30-83 1.0     4.2(0.24)V 6.1(0.12)
Console>

```

This example shows the display for an 8-port T1/E1 ISDN PRI services-configured module:

```

Console> (enable) show module 3
Mod Slot Ports Module-Type                Model                Status
-----
3  3    8     T1 PSTN                WS-X6608-T1         ok

Mod Module-Name                Serial-Num
-----
3  T1                            SAD02440056

Mod MAC-Address(es)                Hw      Fw      Sw
-----
3  00-50-0f-08-bc-a0 to 00-50-0f-08-bc-cf 0.1     5.1(1)     5.4(1)
Console>

```

This example shows the display for a 24-port FXS analog station interface services-configured module:

```

Console> show module 3
Mod Slot Ports Module-Type                Model                Status
-----
3  3    24    FXS                    WS-X6624-FXS        ok

Mod Module-Name                Serial-Num
-----
3  Elvis-S                      SAD02440056

Mod MAC-Address(es)                Hw      Fw      Sw
-----
3  00-50-0f-08-bc-a0 to 00-50-0f-08-bc-a0 0.1     5.1(1)     5.4(1)
Console>

```

Table 2-26 describes the possible fields in the **show module** command output.

Table 2-26 show module Command Output Fields

Field	Description
Mod	Module number.
Slot	Number of the slot where the module or submodule resides.
Ports	Number of ports on the module.
Module-Type	Module (such as 100BaseX Ethernet).
Model	Model number of the module.
Sub	Status of whether a submodule is installed.
Status	Status of the module. Possible status strings are ok, disable, faulty, other, standby, error, pwr-down, and pwr-deny states ¹ .
Module-Name	Name of the module.
Serial-Num	Serial number of the module.
MAC-Address(es)	MAC address or MAC address range for the module.
Hw ²	Hardware version of the module.
Fw ³	Firmware version of the module.
Sw	Software version on the module.
Sub-Type ⁴	Submodule type.
Sub-Model ⁴	Model number of the submodule.
Sub-Serial ⁴	Serial number of the submodule.
Sub-Hw ⁴	Hardware version of the submodule.

1. The pwr-down and pwr-deny states are supported by the power management feature.
2. Hw for the supervisor engine displays the supervisor engine's EARL hardware version.
3. Fw for the supervisor engine displays the supervisor engine's boot version.
4. This field displays EARL information.

show moduleinit

Use the **show moduleinit** command to display contents of the information stored in the system module initiation log.

```
show moduleinit [mod] [log lognum | -logcount]
```

Syntax Description		
<i>mod</i>	(Optional)	Number of the module.
log	(Optional)	Keyword to specify a specific log.
<i>lognum</i>	(Optional)	Number of the log to display.
<i>-logcount</i>	(Optional)	Number of previous logs to display.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Usage Guidelines If you do not specify a module number, contents for all modules are shown.

Examples This example shows how to show the last two log entries for module 1:

```
Console> show moduleinit 1 log -2
Module 1:   Number of Logs: 3
Log #2:
State 1: Entry/Exit/Elapse Time: 14721/14721/0
        Success_Exit
State 2: Entry/Exit/Elapse Time: 14721/14721/0
        Success
State 3: Entry/Exit/Elapse Time: 14721/32223/17502
        Success_Exit

Log #3:
State 1: Entry/Exit/Elapse Time: 38302/38302/0
        P_PortConfigTokenRingFeatures()
        ConfigModule()
State 2: Entry/Exit/Elapse Time: 38302/38302/0
        Success
State 3: Entry/Exit/Elapse Time: 38302/38310/8
        Success_Exit
Console>
```

This example shows how to display the contents of a specific log for module 1:

```
Console> show moduleinit 1 log 2
Module 1:  Number of Logs: 3
Log #2:
State 1: Entry/Exit/Elapse Time: 14721/14721/0
        Success_Exit
State 2: Entry/Exit/Elapse Time: 14721/14721/0
        Success
State 3: Entry/Exit/Elapse Time: 14721/32223/17502

Console>
```

Table 2-27 describes the possible fields in the **show moduleinit** command output.

Table 2-27 *show moduleinit* Command Output Fields

Field	Description
Log #	Number of the log.
State #	Number of the module initiation states. Output includes the entry time into and exit time from all the module initiation states, along with the elapsed time, in milliseconds.

show msmautostate

Use the **show msmautostate** command to display the current status of the line protocol state determination of the MSM(s) due to Catalyst 6000 family switch port state changes.

show msmautostate *mod*

Syntax Description	<i>mod</i> Number of the module.
Defaults	This command has no default setting.
Command Types	Switch command.
Command Modes	Normal.
Examples	<p>This example shows how to display the current status of MSM line protocol state determination:</p> <pre>Console> show msmautostate MSM Auto port state: enabled Console></pre>
Related Commands	set msmautostate

show multicast group

Use the **show multicast group** command to display the multicast group configuration.

```
show multicast group [mac_addr] [vlan_id]
```

Syntax Description	
<i>mac_addr</i>	(Optional) Destination MAC address.
<i>vlan_id</i>	(Optional) Number of the VLAN.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display the multicast group configuration:

```
Console> (enable) show multicast group
IGMP disabled
```

```
VLAN  Dest MAC/Route Des  Destination Ports or VCs / [Protocol Type]
-----
1      01-00-11-22-33-44*    2/6-12
1      01-11-22-33-44-55*    2/6-12
1      01-22-33-44-55-66*    2/6-12
1      01-33-44-55-66-77*    2/6-12
```

```
Total Number of Entries = 4
Console> (enable)
```

Table 2-28 describes the fields in the **show multicast group** command output.

Table 2-28 show multicast group Command Output Fields

Field	Description
CGMP enabled/disabled	Status of whether CGMP is enabled or disabled.
IGMP enabled/disabled	Status of whether IGMP is enabled or disabled.
GMRP enabled/disabled	Status of whether GMRP is enabled or disabled.
VLAN	VLAN number.
Dest MAC/Route Des	Group destination MAC address.
*	Status of whether the port was configured manually as a multicast router port.
CoS	CoS value.

Table 2-28 *show multicast group Command Output Fields (continued)*

Field	Description
Destination Ports or VCs	List of all the ports that belong to this multicast group. Traffic destined to this group address will be forwarded on all these ports.
Protocol Type	Type of protocol.
Total Number of Entries	Total number of entries in the multicast group table that match the criteria specified by the command.

Related Commands

clear multicast router
set multicast router
show multicast router

show multicast group count

Use the **show multicast group count** command to show the total count of multicast addresses (groups) in a VLAN.

```
show multicast group count [vlan_id]
```

Syntax Description	<i>vlan_id</i> (Optional) Number of the VLAN.
Defaults	This command has no default setting.
Command Types	Switch command.
Command Modes	Normal.
Usage Guidelines	An asterisk in the show multicast group count command output indicates the port was configured manually.
Examples	<p>This example shows how to display the total count of multicast groups in VLAN 5:</p> <pre>Console> show multicast group count 5</pre> <p>Total Number of Entries = 2 Console></p>
Related Commands	<pre>clear multicast router set multicast router show multicast router</pre>

show multicast protocols status

Use the **show multicast protocols status** command to display the status of Layer 2 multicast protocols on the switch.

show multicast protocols status

Syntax Description This command has no arguments.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display the Layer 2 multicast protocol status:

```
Console> show multicast protocols status
IGMP disabled
IGMP fastleave enabled
RGMP enabled
GMRP disabled
Console>
```

Related Commands **set gmrp**
set igmp

show multicast router

Use the **show multicast router** command to display the ports that have IGMP or RGMP-capable routers assigned to them.

```
show multicast router {igmp | rgmp} [mod/port] [vlan_id]
```

Syntax Description	
igmp	Keyword to specify IGMP-capable routers.
rgmp	Keyword to specify RGMP-capable routers.
<i>mod/port</i>	(Optional) Number of the module and the port on the module.
<i>vlan_id</i>	(Optional) Number of the VLAN.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display the ports that have IGMP-multicast routers assigned to them:

```
Console> show multicast router igmp
Port      Vlan
-----
5/15      1
Total Number of Entries = 1
'*' - Configured
'+ ' - RGMP-capable
Console>
```

This example shows how to display the ports that have RGMP-multicast routers assigned to them:

```
Console> show multicast router rgmp
Port      Vlan
-----
5/1 +     1
5/14 +    2
Total Number of Entries = 2
'*' - Configured
'+ ' - RGMP-capable
Console>
```

Table 2-29 describes the fields in the **show multicast router** command output.

Table 2-29 *show multicast router Command Output Fields*

Field	Description
Port	Port through which a multicast router can be reached.
*	Status of whether the port was configured manually or not.
+	Status of whether the router is RGMP capable or not.
VLAN	VLAN associated with the port.
Total Number of Entries	Total number of entries in the table that match the criteria specified by the command.

Related Commands

set rgmp
set igmp
set multicast router
show multicast group
show multicast group count

show netstat

Use the **show netstat** command to display the currently active network connections and to list statistics for the various protocols in the TCP/IP.

show netstat [**tcp** | **udp** | **ip** | **icmp** | **routes** | **stats** | **interfaces**]

Syntax Description	
tcp	(Optional) Keyword to show TCP statistics.
udp	(Optional) Keyword to show UDP statistics.
ip	(Optional) Keyword to show IP statistics.
icmp	(Optional) Keyword to show ICMP statistics.
routes	(Optional) Keyword to show the IP routing table.
stats	(Optional) Keyword to show all statistics for TCP, UDP, IP, and ICMP.
interfaces	(Optional) Keyword to show interface statistics.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display the current active network connections:

```

Console> show netstat
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         (state)
tcp      0    128 172.20.25.142.23       171.68.10.75.44720    ESTABLISHED
tcp      0     0 *.7161                 *.*                     LISTEN
tcp      0     0 *.23                   *.*                     LISTEN
udp      0     0 *.*                    *.*                     *
udp      0     0 *.161                  *.*                     *
udp      0     0 *.123                  *.*                     *
Console>

```

This example shows how to display TCP statistics:

```

Console> show netstat tcp
tcp:
    5122 packets sent
        4642 data packets (102292 bytes)
        28 data packets (6148 bytes) retransmitted
        434 ack-only packets (412 delayed)
        0 URG only packets
        0 window probe packets
        1 window update packet
        17 control packets
    7621 packets received
        4639 acks (for 103883 bytes)
        69 duplicate acks
        0 acks for unsent data
        3468 packets (15367 bytes) received in-sequence
        12 completely duplicate packets (20 bytes)
        0 packets with some dup. data (0 bytes duped)
        4 out-of-order packets (0 bytes)
        0 packets (0 bytes) of data after window
        0 window probes
        0 window update packets
        0 packets received after close
        0 discarded for bad checksums
        0 discarded for bad header offset fields
        0 discarded because packet too short
    6 connection requests
    6 connection accepts
    10 connections established (including accepts)
    11 connections closed (including 1 drop)
    2 embryonic connections dropped
    4581 segments updated rtt (of 4600 attempts)
    28 retransmit timeouts
        0 connections dropped by rexmit timeout
    0 persist timeouts
    66 keepalive timeouts
        63 keepalive probes sent
        3 connections dropped by keepalive

```

Console>

Table 2-30 describes the fields in the **show netstat tcp** command output.

Table 2-30 show netstat tcp Command Output Fields

Field	Description
packets sent	Total number of TCP packets sent.
data packets (bytes)	Number of TCP data packets sent and the size of those packets in bytes.
data packets (bytes) retransmitted	Number of TCP data packets retransmitted and the size of those packets in bytes.
ack-only packets (delayed)	Number of TCP acknowledgment-only packets sent and the number of those packets delayed.
URG only packets	Number of URG packets.
window probe packets	Number of window probe packets.
window update packet	Number of window update packets.
packets received	Total number of TCP packets received.

Table 2-30 *show netstat tcp Command Output Fields (continued)*

Field	Description
acks (for <i>x</i> bytes)	Number of TCP acknowledgments received and the total bytes acknowledged.
duplicate acks	Number of duplicate TCP acknowledgments received.
acks for unsent data	Number of TCP acknowledgments received for data that was not sent.
packets (bytes) received in-sequence	Number of TCP packets (and the size in bytes) received in sequence.
completely duplicate packets (bytes)	Number of duplicate TCP packets (and the size in bytes) received.
packets with some dup. data (bytes duped)	Number of TCP packets received with duplicate data (and the number of bytes of duplicated data).
out-of-order packets (bytes)	Number of out-of-order TCP packets (and the size in bytes) received.
packets (bytes) of data after window	Number of TCP packets (and the size in bytes) received outside of the specified data window.
discarded for bad checksums	Number of TCP packets received and discarded that failed the checksum.
discarded because packet too short	Number of TCP packets received and discarded that were truncated.
connection requests	Total number of TCP connection requests sent.
connection accepts	Total number of TCP connection accepts sent.
connections established (including accepts)	Total number of TCP connections established, including those for which a connection accept was sent.
connections closed (including <i>x</i> drops)	Total number of TCP connections closed, including dropped connections.
retransmit timeouts	Number of timeouts that occurred when a retransmission was attempted.
connections dropped by retransmit timeout	Number of connections dropped due to retransmission timeouts.
keepalive timeouts	Number of keepalive timeouts that occurred.
keepalive probes sent	Number of TCP keepalive probes sent.
connections dropped by keepalive	Number of connections dropped.

This example shows how to display UDP statistics:

```

Console> show netstat udp
udp:
    0 incomplete headers
    0 bad data length fields
    0 bad checksums
    0 socket overflows
    1116 no such ports
Console>

```

Table 2-31 describes the fields in the **show netstat udp** command output.

Table 2-31 show netstat udp Command Output Fields

Field	Description
incomplete headers	Number of UDP packets received with incomplete packet headers.
bad data length fields	Number of UDP packets received with a data length field that did not match the actual length of the packet payload.
bad checksums	Number of UDP packets received that failed the checksum.
socket overflows	Number of socket overflows.
no such ports	Number of UDP packets received destined for nonexistent ports.

This example shows how to display IP statistics:

```

Console> show netstat ip
ip:
    76894 total packets received
    0 bad header checksums
    0 with size smaller than minimum
    0 with data size < data length
    0 with header length < data size
    0 with data length < header length
    0 fragments received
    0 fragments dropped (dup or out of space)
    0 fragments dropped after timeout
    0 packets forwarded
    0 packets not forwardable
    0 redirects sent
Console>

```

Table 2-32 describes the fields in the **show netstat ip** command output.

Table 2-32 show netstat ip Command Output Fields

Field	Description
total packets received	Total number of IP packets received.
bad header checksums	Number of received IP packets that failed the checksum.
with size smaller than minimum	Number of received IP packets that were smaller than the minimum IP packet size.
with data size < data length	Number of packets in which the data size was less than the data length.
with header length < data size	Number of packets in which the header length was less than the data size.

Table 2-32 *show netstat ip Command Output Fields (continued)*

Field	Description
with data length < header length	Number of packets in which the data length was less than the minimum header length.
fragments received	Number of IP packet fragments received.
fragments dropped (dup or out of space)	Number of received IP packet fragments that were dropped because of duplicate data or buffer overflow.
fragments dropped after timeout	Number of received IP packet fragments that were dropped.
packets forwarded	Number of forwarded IP packets.
packets not forwardable	Number of IP packets that the switch did not forward.
redirects sent	Number of IP packets that the switch redirected.

This example shows how to display ICMP statistics:

```

Console> show netstat icmp
icmp:
  Redirect enabled
  0 calls to icmp_error
  0 errors not generated 'cuz old message was icmp
  Output histogram:
    echo reply: 1001
  1 message with bad code fields
  0 messages < minimum length
  0 bad checksums
  0 messages with bad length
  Input histogram:
    echo reply: 12
    destination unreachable: 3961
    echo: 1001
  1001 message responses generated
Console>

```

Table 2-33 describes the fields in the **show netstat icmp** command output.

Table 2-33 *show netstat icmp Command Output Fields*

Field	Description
Redirect enabled	Status of whether ICMP redirection is enabled or disabled.
Output histogram	Frequency distribution statistics for output ICMP packets.
echo reply	Number of output echo reply ICMP packets.
messages with bad code fields	Number of ICMP packets with an invalid code field.
messages < minimum length	Number of ICMP packets with less than the minimum packet length.
bad checksums	Number of ICMP packets that failed the checksum.
messages with bad length	Number of ICMP packets with an invalid length.
Input histogram	Frequency distribution statistics for input ICMP packets.

Table 2-33 show netstat icmp Command Output Fields (continued)

Field	Description
echo reply	Number of input echo-reply ICMP packets.
destination unreachable	Number of input destination-unreachable ICMP packets.
echo	Number of input-echo ICMP packets.
message responses generated	Number of ICMP message responses the system generated.

This example shows how to display the IP routing table:

```

Console> show netstat routes
DESTINATION    GATEWAY          FLAGS   USE           INTERFACE
default        172.16.1.201    UG      6186          sc0
172.16.0.0     172.16.25.142  U       6383          sc0
default        default          UH      0             s10
Console>

```

Table 2-34 describes the fields in the **show netstat routes** command output.

Table 2-34 show netstat routes Command Output Fields

Field	Description
DESTINATION	Destination IP address or network.
GATEWAY	Next hop to the destination.
FLAGS	Flags indicating the interface state.
USE	Number of times this route was used.
INTERFACE	Interface out of which packets to the destination should be forwarded.

This example shows how to display interface statistics:

```

Console> show netstat interface
Interface      InPackets  InErrors  OutPackets  OutErrors
s10            0          0         0           0
sc0            368996    0         12624      0
Console>
Interface Rcv-Octet          Xmit-Octet
-----
sc0      182786             0
s10      0                  0
Interface Rcv-Unicast      Xmit-Unicast
-----
sc0      3002               1314
s10      0                  0
Console>

```

Table 2-35 describes the fields in the **show netstat interface** command output.

Table 2-35 *show netstat interface Command Output Fields*

Field	Description
Interface	Interface number (sl0 is the SLIP interface; sc0 is the in-band interface).
InPackets	Number of input packets on the interface.
InErrors	Number of input errors on the interface.
OutPackets	Number of output packets on the interface.
OutErrors	Number of output errors on the interface.
Rcv-Octet	Number of octet frames received on the port.
Xmit-Octet	Number of octet frames transmitted on the port.
Rcv-Unicast	Number of unicast frames received on the port.
Xmit-Unicast	Number of unicast frames transmitted on the port.

Related Commands

set interface
set ip route

show ntp

Use the **show ntp** command to display the current NTP status.

show ntp

Syntax Description This command has no arguments or keywords.

Defaults This command has no default setting.

Command Types Switch command.

Command Modes Normal.

Examples This example shows how to display the current NTP status:

```

Console> show ntp
Current time: Tue Mar 28 2000, 11:19:03 pst
Timezone: 'pst', offset from UTC is -8 hours
Summertime: 'pst', enabled
Last NTP update:
Broadcast client mode: enabled
Broadcast delay: 3000 microseconds
Client mode: disabled

NTP-Server
-----
time_server.cisco.com
Console>

```

Table 2-36 describes the fields in the **show ntp** command output.

Table 2-36 show ntp Command Output Fields

Field	Description
Current time	Current system time.
Timezone	Time zone and the offset in hours from UTC.
Summertime	Time zone for daylight saving time and whether the daylight saving time adjustment is enabled or disabled.
Last NTP update	Time of the last NTP update.
Broadcast client mode	Status of whether NTP broadcast-client mode is enabled or disabled.
Broadcast delay	Configured NTP broadcast delay.
Client mode	Status of whether NTP client mode is enabled or disabled.
NTP-Server	List of configured NTP servers.

Related Commands

```
clear ntp server  
set ntp broadcastclient  
set ntp broadcastdelay  
set ntp client  
set ntp server
```