Checking Port Status and Connectivity

This chapter describes how to check switch port status and connectivity on the Catalyst 5000, 4000, 2948G, 2926G, and 2926 series switches.

Note For complete syntax and usage information for the commands used in this chapter, refer to the *Command Reference* for your switch.

This chapter consists of these sections:

Checking Module Status

The Catalyst 5000, 4000, 2926G, or 2926 series switches are multimodule systems. You can see what modules are installed, as well as the MAC address ranges and version numbers for each module, using the **show module** [*mod_num*] command. Specify a particular module number to see detailed information on that module.

The Catalyst 4912G, 2948G, 2926G, and 2926 series switches are fixed-configuration switches, but are logically modular. You must apply configuration commands to the appropriate module. For example, on a Catalyst 2926G series switch, the 24 Fast Ethernet ports belong logically to module 2.

Note For detailed information on the output of the **show module** command, see the *Command Reference* for your switch.

This example shows how to check module status on a Catalyst 5000 series switch. The output shows that there are two supervisor engine modules (one in standby mode), six additional modules (including an RSM in slot 5 and a two-slot 10BaseT Ethernet module in slots 6 and 7), and a LightStream 1010 ATM ASP) installed in the chassis.

```
Console> (enable) show module
Mod Module-Name         Ports Module-Type           Model    Serial-Num Status
--- ------------------- ----- --------------------- --------- --------- -------
1                       4     10/100BaseTX Supervis WS-X5530  009979082 ok
2                       2     10/100BaseTX Supervis WS-X5530  007451586 standby
3                       48    10BaseT Ethernet      WS-X5012A 007879593 ok
4                       1     Network Analysis/RMON WS-X5380  008175475 ok
5                       1     Route Switch          WS-X5302  007460757 ok
6                             10BaseT Ethernet Ext
7                       48    10BaseT Ethernet      WS-X5014  007879658 ok
8                       1     MM OC-3 ATM           WS-X5155  003414855 ok
9                       2     UTP OC-3 Dual-Phy ATM WS-X5156  007646048 ok
13                            ASP/SRP

Mod MAC-Address(es)                         Hw     Fw          Sw
--- --------------------------------------- ------ ----------- ------------------
1   00-e0-4f-ac-b0-00 to 00-e0-4f-ac-b3-ff 1.8    3.1.2       4.3(1a)
2   00-e0-4f-ac-b0-00 to 00-e0-4f-ac-b3-ff 1.3    3.1.2       4.3(1a)
3   00-10-7b-50-1b-00 to 00-10-7b-50-1b-2f 0.202  4.2(108)    4.3(1a)
4   00-e0-14-10-18-00                      0.100  4.1.1       4.3(0.31)
5   00-e0-1e-91-d5-14 to 00-e0-1e-91-d5-15 5.0    20.7        11.3(3a)WA4(5)
7   00-10-7b-5d-30-40 to 00-10-7b-5d-30-6f 0.102  4.2(108)    4.3(1a)
8   00-e0-1e-a9-20-b9                      1.2    1.3         3.2(7)
9   00-e0-1e-e5-07-27                      2.1    1.3         51.1(1)

Mod Sub-Type Sub-Model Sub-Serial Sub-Hw
--- -------- --------- ---------- ------
1   NFFC     WS-F5521  0008936340 1.0
1   uplink   WS-U5537  0007288247 2.0
2   NFFC     WS-F5521  0011462777 1.1
2   uplink   WS-U5531  0007464204 1.1
Console> (enable)
```

This example shows how to check module status on a Catalyst 2926 series switch. The Catalyst 2926 series switches have two logical modules, a supervisor engine and a 24-port Fast Ethernet switching module.

```
Console> (enable) show module
Mod Module-Name         Ports Module-Type           Model    Serial-Num Status
--- ------------------- ----- --------------------- --------- --------- -------
1                       2     100BaseTX Supervisor  WS-X2926T 007475320 ok
2                       24    10/100BaseTX Ethernet WS-X2926L 007424148 ok

Mod MAC-Address(es)                         Hw     Fw          Sw
--- --------------------------------------- ------ ----------- ------------------
1   00-10-0d-40-34-00 to 00-10-0d-40-37-ff 2.1    2.4(1)      4.3(1a)
2   00-e0-1e-f5-9d-58 to 00-e0-1e-f5-9d-6f 1.1    2.4(1)      4.3(1a)

Mod Sub-Type Sub-Model Sub-Serial Sub-Hw
--- -------- --------- ---------- ------
1   EARL 1+  WS-F5511  0007472321 1.0
Console> (enable)
```

This example shows how to check module status on a Catalyst 2948G series switch. On the Catalyst 4912G and Catalyst 2948G series switches, there are two logical modules but both are in slot 1.

```
Console> (enable) show module
Mod Slot Ports Module-Type               Model               Status
--- ---- ----- ------------------------- ------------------- --------
1   1    0     Switching Supervisor      WS-X2948            ok
2   1    50    10/100/1000 Ethernet      WS-X2948G           ok

Mod Module-Name         Serial-Num
--- ------------------- --------------------
1                       JAB023806JR
2                       JAB0240004D

Mod MAC-Address(es)                         Hw     Fw          Sw
--- --------------------------------------- ------ ----------- ------------------
1   00-10-7b-f4-ce-00 to 00-10-7b-f4-d1-ff 1.0    4.4(1)      4.4(1)
2   00-10-7b-f4-d1-9e to 00-10-7b-f4-d1-fd 1.0
Console> (enable)
```

This example shows how to check module status on a specific module:

```
Console> (enable) show module 3
Mod Module-Name         Ports Module-Type           Model    Serial-Num Status
--- ------------------- ----- --------------------- --------- ---------- -------
3                       48    10BaseT Ethernet      WS-X5012A 007879593 ok

Mod MAC-Address(es)                         Hw     Fw          Sw
--- --------------------------------------- ------ ----------- ------------------
3   00-10-7b-50-1b-00 to 00-10-7b-50-1b-2f 0.202  4.2(108)    4.3(1a)
Console> (enable)
```

Checking Port Status

You can see summary or detailed information on the switch ports using the **show port** [*mod_num*[*/port_num*]] command. To see summary information on all of the ports on the switch, enter the **show port** command with no arguments. Specify a particular module number to see information on the ports on that module only. Enter both the module number and the port number to see detailed information about the specified port.

The Catalyst 4912G, 2948G, 2926G, and 2926 series switches are fixed-configuration switches, but are logically modular. To apply configuration commands to a particular port, you must specify the appropriate logical module. For more information, see the “Checking Module Status” section on page 13-1.

Note For detailed information on the output of the **show port** command, see the *Command Reference* for your switch.

This example shows how to see information on the ports on a specific module only:

```
Console> (enable) show port 2
Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
 2/1                     connected  trunk      normal   full  1000 1000BaseSX
 2/2                     notconnect 1          normal   full  1000 1000BaseSX
 2/3                     notconnect 1          normal   full  1000 No GBIC
 2/4                     notconnect 1          normal   full  1000 No GBIC
 2/5                     notconnect 1          normal   full  1000 No GBIC
 2/6                     notconnect 1          normal   full  1000 No GBIC

Port  Security Secure-Src-Addr   Last-Src-Addr     Shutdown Trap     IfIndex
----- -------- ----------------- ----------------- -------- -------- -------
 2/1  disabled                                     No       disabled 9
 2/2  disabled                                     No       disabled 10
 2/3  disabled                                     No       disabled 11
 2/4  disabled                                     No       disabled 12
 2/5  disabled                                     No       disabled 13
 2/6  disabled                                     No       disabled 14

Port   Send FlowControl    Receive FlowControl   RxPause TxPause Unsupported
       admin    oper       admin    oper                        opcodes
-----  -------- --------   -------- --------     ------- ------- -----------
 2/1   desired  off        off      off          0       0       0
 2/2   desired  off        off      off          0       0       0
 2/3   desired  off        off      off          0       0       0
 2/4   desired  off        off      off          0       0       0
 2/5   desired  off        off      off          0       0       0
 2/6   desired  off        off      off          0       0       0

Port  Status     Channel   Channel     Neighbor                  Neighbor
                 mode      status      device                    port
----- ---------- --------- ----------- ------------------------- ----------
 2/1  connected  auto      not channel
 2/2  notconnect auto      not channel
 2/3  notconnect auto      not channel
 2/4  notconnect auto      not channel
 2/5  notconnect auto      not channel
 2/6  notconnect auto      not channel

Port  Align-Err  FCS-Err    Xmit-Err   Rcv-Err    UnderSize
----- ---------- ---------- ---------- ---------- ---------
 2/1           -          0          0          0         0
 2/2           -          0          0          0         0
 2/3           -          0          0          0         0
 2/4           -          0          0          0         0
 2/5           -          0          0          0         0
 2/6           -          0          0          0         0

Port  Single-Col Multi-Coll Late-Coll  Excess-Col Carri-Sen Runts     Giants
----- ---------- ---------- ---------- ---------- --------- --------- ---------
 2/1           0          0          0          0         0         0         0
 2/2           0          0          0          0         0         0         0
 2/3           0          0          0          0         0         0         0
 2/4           0          0          0          0         0         0         0
 2/5           0          0          0          0         0         0         0
 2/6           0          0          0          0         0         0         0

Last-Time-Cleared
--------------------------
Tue Dec 8 1998, 13:26:01
Console> (enable)
```

This example shows how to see information on an individual port:

```
Console> (enable) show port 2/1
Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
 2/1                     connected  trunk      normal   full  1000 1000BaseSX

Port  Security Secure-Src-Addr   Last-Src-Addr     Shutdown Trap     IfIndex
----- -------- ----------------- ----------------- -------- -------- -------
 2/1  disabled                                     No       disabled 9

Port   Send FlowControl    Receive FlowControl   RxPause TxPause Unsupported
       admin    oper       admin    oper                        opcodes
-----  -------- --------   -------- --------     ------- ------- -----------
 2/1   desired  off        off      off          0       0       0

Port  Status     Channel   Channel     Neighbor                  Neighbor
                 mode      status      device                    port
----- ---------- --------- ----------- ------------------------- ----------
 2/1  connected  auto      not channel

Port  Align-Err  FCS-Err    Xmit-Err   Rcv-Err    UnderSize
----- ---------- ---------- ---------- ---------- ---------
 2/1           -          0          0          0         0

Port  Single-Col Multi-Coll Late-Coll  Excess-Col Carri-Sen Runts     Giants
----- ---------- ---------- ---------- ---------- --------- --------- ---------
 2/1           0          0          0          0         0         0         0

Last-Time-Cleared
--------------------------
Tue Dec 8 1998, 13:26:01
Console> (enable)
```

Checking Port Capabilities

You can display the capabilities of any port in a switch using the **show port capabilities** [[*mod_num*][**/***port_num*]] command.

This example shows you how to display the port capabilities for switch ports:

```
Console> (enable) show port capabilities 1
Model                   WS-X5509
Port                    1/1
Type                    100BaseTX
Speed                   100
Duplex                  half,full
Trunk encap type        ISL
Trunk mode              on,off,desirable,auto,nonegotiate
Channel                 1/1-2
Broadcast suppression   percentage(0-100)
Flow control            no
Security                yes
Membership              static,dynamic
Fast start              yes
Rewrite                 no

---------------------------------------------------------------
Model                   WS-X5509
Port                    1/2
Type                    100BaseTX
Speed                   100
Duplex                  half,full
Trunk encap type        ISL
```

```
Trunk mode               on,off,desirable,auto,nonegotiate
Channel                  1/1-2
Broadcast suppression    percentage(0-100)
Flow control             no
Security                 yes
Membership               static,dynamic
Fast start               yes
Rewrite                  no
Console> (enable) show port capabilities 7/1
Model                    WS-X5014
Port                     7/1
Type                     10BaseT
Speed                    10
Duplex                   half,full
Trunk encap type         no
Trunk mode               off
Channel                  no
Broadcast suppression    percentage(0-100)
Flow control             no
Security                 yes
Membership               static,dynamic
Fast start               yes
Rewrite                  no
Console> (enable) show port capabilities 8
Model                    WS-X5155
Port                     8/1
Type                     OC3 MMF ATM
Speed                    155
Duplex                   full
Trunk encap type         LANE
Trunk mode               on
Channel                  no
Broadcast suppression    no
Flow control             no
Security                 no
Membership               static
Fast start               no
Rewrite                  no
Console> (enable)
```

Using Telnet

You can access the switch command-line interface (CLI) using Telnet. In addition, you can use Telnet from the switch to access other devices in the network. Up to eight simultaneous Telnet sessions are possible.

To Telnet to another device on the network from the switch, perform this task in privileged mode:

Task	Command
Open a Telnet session with a remote host.	**telnet** *host* [*port*]

This example shows how to Telnet from the switch to a remote host:

```
Console> (enable) telnet labsparc
Trying 172.16.10.3...
Connected to labsparc.
Escape character is '^]'.

UNIX(r) System V Release 4.0 (labsparc)

login:
```

Using Ping

These sections describe how to use IP ping:

Understanding How Ping Works

You can use IP ping to test connectivity to remote hosts. If you attempt to ping a host in a different IP subnetwork, you must define a static route to the network or have a router configured to route between those subnets.

To stop a ping in progress, press **Ctrl-C**.

Ping will return one of the following responses:

- Normal response—The normal response (*hostname* is alive) occurs in 1 to 10 seconds, depending on network traffic.
- Destination does not respond—If the host does not respond, a no answer message is returned.
- Unknown host—If the host does not exist, an unknown host message is returned.
- Destination unreachable—If the default gateway cannot reach the specified network, a destination unreachable message is returned.
- Network or host unreachable—If there is no entry in the route table for the host or network, a network or host unreachable message is returned.

Executing Ping

To ping another device on the network from the switch, perform one of these tasks in privileged mode:

Task	Command
• Ping a remote host.	**ping** *host*
• Ping a remote host using ping options.	**ping -s** *host* [*packet_size*] [*packet_count*]

This example shows how to ping a remote host:

```
Console> (enable) ping labsparc
labsparc is alive
Console> (enable) ping 172.16.10.3
172.16.10.3 is alive
Console> (enable)
```

This example shows how to ping a remote host using the ping options:

```
Console> (enable) ping -s 172.16.10.3 1000 8
PING 172.20.52.3: 1000 data bytes
1008 bytes from 172.16.10.3: icmp_seq=0. time=6 ms
1008 bytes from 172.16.10.3: icmp_seq=1. time=5 ms
1008 bytes from 172.16.10.3: icmp_seq=2. time=6 ms
1008 bytes from 172.16.10.3: icmp_seq=3. time=6 ms
1008 bytes from 172.16.10.3: icmp_seq=4. time=6 ms
1008 bytes from 172.16.10.3: icmp_seq=5. time=5 ms
1008 bytes from 172.16.10.3: icmp_seq=6. time=6 ms
1008 bytes from 172.16.10.3: icmp_seq=7. time=5 ms

----172.16.10.3 PING Statistics----
8 packets transmitted, 8 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 5/5/6
Console> (enable)
```

Using IP Traceroute

These sections describe how to use IP traceroute:

- Understanding How IP Traceroute Works on page 13-8
- Executing IP Traceroute on page 13-9

Understanding How IP Traceroute Works

You can use IP traceroute to identify the path that packets take through the network on a hop-by-hop basis. The command output displays all network layer (Layer 3) devices, such as routers, that the traffic passes through on the way to the destination.

Switches can participate as the source or destination of the **traceroute** command but will not appear as a hop in the **traceroute** command output.

The **traceroute** command uses the Time To Live (TTL) field in the IP header to cause routers and servers to generate specific return messages. Traceroute starts by sending a User Datagram Protocol (UDP) datagram to the destination host with the TTL field set to 1. If a router finds a TTL value of 1 or 0, it drops the datagram and sends back an Internet Control Message Protocol (ICMP) time-exceeded message to the sender. The traceroute facility determines the address of the first hop by examining the source address field of the ICMP time-exceeded message.

To identify the next hop, traceroute sends a UDP packet with a TTL value of 2. The first router decrements the TTL field by 1 and sends the datagram to the next router. The second router sees a TTL value of 1, discards the datagram, and returns the time-exceeded message to the source. This process continues until the TTL is incremented to a value large enough for the datagram to reach the destination host (or until the maximum TTL is reached).

To determine when a datagram reaches its destination, traceroute sets the UDP destination port in the datagram to a very large value which the destination host is unlikely to be using. When a host receives a datagram with an unrecognized port number, it sends an ICMP port unreachable error to the source. This message indicates to the traceroute facility that it has reached the destination.

Executing IP Traceroute

To trace the path that packets take through the network, perform this task in privileged mode:

Task	Command
Execute IP traceroute to trace the path packets take through the network.	**traceroute** [**-n**] [**-w** *wait_time*] [**-i** *initial_ttl*] [**-m** *max_ttl*] [**-p** *dest_port*] [**-q** *nqueries*] [**-t** *tos*] *host* [*data_size*]

This example shows the basic usage of the **traceroute** command:

```
Console> (enable) traceroute 10.1.1.100
traceroute to 10.1.1.100 (10.1.1.100), 30 hops max, 40 byte packets
 1 10.1.1.1 (10.1.1.1)  1 ms  2 ms  1 ms
 2 10.1.1.100 (10.1.1.100)  2 ms  2 ms  2 ms
Console> (enable)
```

This example shows how to perform a **traceroute** with six queries to each hop with packets of 1400 bytes each:

```
Console> (enable) traceroute -q 6 10.1.1.100 1400
traceroute to 10.1.1.100 (10.1.1.100), 30 hops max, 1440 byte packets
 1 10.1.1.1 (10.1.1.1)  2 ms  2 ms  2 ms  1 ms  2 ms  2 ms
 2 10.1.1.100 (10.1.1.100)  2 ms  4 ms  3 ms  3 ms  3 ms  3 ms
Console> (enable)
```