

# Hardware Troubleshooting for Catalyst 5500/5000/2926G/2926 Series Switches

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*Interactive:* This document offers customized analysis of your Cisco device.

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# Introduction

This document discusses troubleshooting procedures, symptoms, **show** commands, and diagnostics for the Cisco Catalyst® 5000 family, which features five modular chassis: Catalyst 5000, 5002, 5505, 5509 and 5500 (13-slot chassis). The 2900/2926 series has six non-modular or fixed-configuration switches: the 2901, 2902, 2926T, 2926F, 2926GS, and 2926GL, which are in the same switch family as the 5000/5500 series and share the same architecture.

The goal of this document is to help Cisco customers identify and fix some basic hardware issues or to perform more extensive troubleshooting prior to contacting the Cisco Technical Assistance Center (TAC). Following an orderly troubleshooting process by collecting specific diagnostics ensures that information necessary to resolve the problem is not lost. Refining the scope of the problem saves the customer valuable time in finding a solution.

**Note:** If the switch is connected to the network, do not reset or reseat modules as a first troubleshooting step. In addition to the downtime users experience, the internal buffer, which logs system messages, is erased and potentially useful information regarding hardware or software errors is lost. If the switch is offline, you have more freedom to monitor the LED status, and then pull cables, reseat modules, or reset the switch as necessary. Troubleshooting LED status is discussed in more detail later in this document.

## Prerequisites

### Requirements

Readers of this document should be knowledgeable of the following:

- The [Catalyst 5000 Command Reference](#)
- Switching fundamentals (or read [How LAN Switches Work](#))
- General system requirements of Catalyst Switches (or read [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#))

### Components Used

The information in this document is based on Catalyst 5000 series switches, including Catalyst 2900/2926 series switches.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

### Conventions

For more information on document conventions, refer to the [Cisco Technical Tips Conventions](#).

## Background Information

### Preparation for Troubleshooting Hardware on Catalyst Switches

Many hardware problems encountered during field installations or during normal operation could be prevented by a thorough product overview ahead of time. For those customers not already familiar with general system and power requirements, redundancy requirements, proper installation procedure, switch management, and software considerations for these switches, we recommend that you read the documentation below.

- [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#). This document covers the following important information:
  - Which Supervisor is supported in which chassis? Refer to the *Supervisor Engine and Redundancy Information* section.
  - What are the requirements for Supervisor redundancy? Refer to the *Supervisor Engine and Redundancy Information* section.

- How do I configure a management interface? How do I back up my configuration? Refer to the *Switch Management* section.
- Which software version in a train is GD (General Deployment) for the Catalyst 5000 Family? Refer to the *Software Considerations* section.

## Online Troubleshooting Tools

Cisco has a variety of troubleshooting tools and resources to help you interpret switch output, determine hardware/software compatibility, track bugs, and search Field Notices. The tools are available to [registered](#) users only and are mentioned throughout this document.

- [Software Advisor](#) [↗](#) ([registered](#) customers only) Determine which features are found in a software release and get information about hardware and software compatibility.
- [Output Interpreter](#) [↗](#) ([registered](#) customers only) Paste in the output of a command and get the interpretation with relevant errors, warnings, and status information.
- [Error Message Decoder](#) [↗](#) ([registered](#) customers only) Paste in system error messages and discover their meaning.
- [Bug Toolkit](#) [↗](#) ([registered](#) customers only) Search bugs by software version, feature set, and keywords.
- [Field Notices](#) Search Field Notices for known hardware problems.

## Common Error Messages

If you are seeing error messages on the console or in the log, you should review the following documents before troubleshooting:

- [Common CatOS Error Messages on Catalyst 4000 Series Switches](#)
- [Common CatOS Error Messages on Catalyst 5000/5500 Series Switches](#)
- [Common CatOS Error Messages on Catalyst 6000/6500 Series Switches](#)

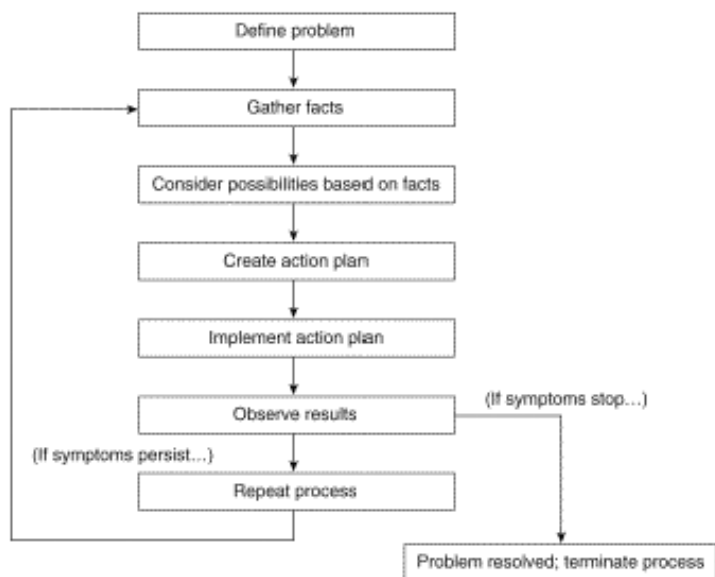
## References

This document does not cover software troubleshooting or configuration. Extensive resources are available for these issues under [LAN Switching Technical Support](#).

This document assumes familiarity with the [Catalyst 5000 Command Reference](#). You should also have a prior understanding of switching fundamentals or read [How LAN Switches Work](#). References to public online material are provided throughout this document and in the [Related Information](#) section at the end.

## General Problem Solving Model

Hardware failures in LANs are characterized by certain symptoms. These symptoms might be general, such as the inability to make a Telnet connection between switches, or more specific, such as link flapping or the switch resetting itself. Each symptom can be traced to one or more causes by using specific troubleshooting techniques. A systematic approach works best. Define the specific symptoms, identify all potential problems that could cause the symptoms, and eliminate each potential problem (from most likely to least likely) until the symptoms disappear. The flowchart below illustrates the General Problem-Solving Model.



## General Problem-Solving Process

The following steps detail the problem-solving process outlined in the flowchart above.

### Step 1 Define the problem.

Identify and define the problem. This allows you to identify what kinds of causes could result in the symptoms. For the Catalyst 5000 Family, ask yourself the following questions:

- What is the primary symptom?
- Is the problem specific to this Catalyst 5000 switch or is it affecting other switches on the network as well?
- Is this a problem with one or more ports on a specific module?
- What devices connected to the Catalyst 5000 ports are experiencing the problem?
- Is the problem affecting all modules or the entire switch?
- When did this problem first occur and has it occurred more than once?
- When you first noticed the problem, was it during a peak traffic time? Is there anything else unique about the time of day when you first noticed the problem?
- Were you running any commands or making any configuration changes at the time the error occurred?

### Step 2 Gather the facts.

Gather **diagnostic** and **show** commands from the switch to isolate the scope of the problem. If physical access to the equipment is possible, locate and list any modules with red or yellow LEDs, disconnected cables, or loose connections.

### Step 3 Consider the possible causes.

Consider possible problems based on the information you gathered. Depending on the data, you might be able to eliminate hardware as a problem, allowing you to focus on software problems. At every opportunity, try to narrow the number of potential problems so that you can create an efficient plan of action.

### Step 4 Create and implement an action plan.

Create and implement an action plan based on the potential problems. Focus on only one potential problem at a time. If you alter more than one variable simultaneously, you might solve the problem, but it becomes far more difficult to identify the specific change that eliminated the symptom. As a result, what you learn will not help you solve the same problem if it occurs in the future.

**Step 5 Observe the results.**

Gather and analyze the results each time a variable is changed to determine if the problem has been fixed.

**Step 6 Repeat the process.**

Continue to test for possible causes until the problem is resolved.

## Common LAN Issues

As described in the Problem Solving Model, the first step in resolving a problem is to identify the symptom. Most problems with LANs fall into the three general categories listed below, with various symptoms related to each category.

- [Connectivity Problems](#)
- [System, Supervisor, and Module Problems](#)
- [Supervisor Crashes](#)

**Note:** Some commands presented in this document are "hidden," meaning they cannot be parsed with a "?" and you cannot press **Tab** to complete. When a hidden command is suggested in this document, simply gather the output and send it to the TAC engineer, if opening a case. This output may or may not be useful in solving your case. These commands are undocumented, so the TAC engineer is not required to explain the output to the customer.

## Connectivity Problems

Connectivity problems occur when communication with the Supervisor, a module, or hosts connected to the module is intermittent or has been lost. Below are two tables that list common symptoms and commands associated with connectivity. Click on the symptom for a list of steps and commands to help you diagnose the problem. Click on the command for a description of the command and sample output.

### Connectivity Symptom Summary


- [Unable to Make a Console Connection to the Supervisor](#)
- [Unable to Make a Telnet Connection to the Supervisor](#)
- [Unable to Connect to a Remote Host, Router, or Another Switch](#)
- [Port Status Shows Not Connected, Faulty, Disabled, Inactive, or errDisable](#)
- [Seeing Errors on the Ports](#)
- [Experiencing Poor Performance](#)
- [Receiving Continuous %PAGP-5 Left/Joined Bridge Messages](#)
- [Unable to Autonegotiate or Speed/Duplex Mismatch](#)

### Connectivity Command Summary

- [show interface](#)
- [show ip route](#)
- [show version](#)
- [show config](#)
- [show module](#)
- [show system](#)
- [show port capabilities](#)
- [show port mod/port](#)
- [show mac mod/port](#)
- [show counters mod/port](#)
- [clear counters](#)
- [show cdp neighbors detail](#)
- [show spantree summary](#)

The following commands are supported by the Output Interpreter and can be used to assist in troubleshooting connectivity problems:

- **show version**
- **show module**
- **show system**
- **show port**
- **show mac**
- **show counters**
- **show cdp neighbors detail**

If you have the output of the supported commands from your Cisco device, you can use the [Output Interpreter](#)  ( [registered](#) customers only) to display potential issues and fixes. To use this tool, you must be logged in and have JavaScript enabled.

## Unable to Make a Console Connection to the Supervisor

**Step 1** Make sure you are trying to make a console connection to the active Supervisor. You cannot make a console connection to the standby Supervisor.

**Step 2** Make sure you are using the right cable and the baud rate is set correctly. Refer to [Connecting a Terminal to the Console Port on Catalyst Switches](#) for more information.

## Unable to Make a Telnet Connection to the Supervisor

**Step 1** Make sure you have correctly configured the sc0 management interface as described under the *Switch Management* section of [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#), or refer to [Configuring a Management IP Address on Catalyst Switches](#). Verify this using the [show interface](#) command. If you are using Telnet from a different VLAN than the management interface, make sure a default gateway is configured. Verify this using the [show ip route](#) command.

**Step 2** To eliminate any routing issues, use Telnet from a PC directly connected to the switch in the same VLAN as the sc0 interface.

**Step 3** Make sure the Supervisor is not in boot or ROMmon mode. If it is, you cannot make a Telnet connection and must open a console session to begin troubleshooting. Refer to [Recovering Catalyst Switches Running CatOS from Booting Failures](#) for more

information.

## Unable to Connect to a Remote Host, Router, or Another Switch

**Step 1** Verify that the link (port) LED status is green. If it is solid orange, it has been disabled by the software. If it blinks orange after Supervisor bootup and module initialization, there is a hardware failure. If there is no link LED, check and swap cables. Verify the operation of the end device and network interface card (NIC).

**Step 2** Capture the output from the [show config](#), [show module](#), [show test 0](#), [show port mod/port](#), and [show port capabilities](#) commands. The [show config](#) command shows the non-default configuration changes.

- Verify that [show module](#) status is "ok" for that module and not "disabled" or "faulty."
- If the status is "disabled," use the **set module enable mod** command.
- If the status is "faulty," establish a console connection to capture bootup power-on self test (POST) diagnostics and any system error messages. Reset the module with the **reset mod** command. Determine if the [show test 0](#) command shows this module passed all of its diagnostic tests on bootup.
- Remove the module and inspect it for bent pins. Reseat the module, firmly press down the ejector levers, and tighten the captive installation screws. If the [show module](#) status is still "faulty," try the module in another slot. Slot 2 accepts line cards or a Supervisor Engine. If necessary, power the switch off and then on. If the status is still "faulty," the module has failed.

**Step 3** Verify using the [show port mod/port](#) command that the status is "connected," meaning the port is operational. If any other status is displayed, refer to [Port Status Shows Not Connected, Faulty, Disabled, Inactive, or errDisable](#) for troubleshooting steps.

**Note:** A status of "connected" does not mean the ports are free of errors. If there are errors on the ports, proceed to the [Seeing Errors on the Ports](#) section of this document.

**Step 4** Verify whether this device is on the *same* or a *different* VLAN. Remember that this is a Layer 2 device and a router is required to route between VLANs.

**Step 5** If connecting to another switch, what type of port is being used? If it is a trunk port, what trunk encapsulations does it support? Is the port capable of EtherChannel? Issue the [show port capabilities](#) command for a quick look at port capabilities. For troubleshooting issues with trunking or EtherChannel, refer to [LAN Switching Technical Support](#).

If the end device is a Cisco router or switch, and Cisco Discovery Protocol is enabled, issue the [show cdp neighbor detail](#) command to identify the device, remote interface type, and remote IP address.

**Step 6** What type of media is involved? Fiber? Gigabit Interface Converters (GBICs)? Category 3 or 5 unshielded twisted pair (UTP) cabling? Refer to the *Physical Layer Issues* section of [Troubleshooting Switch Port and Interface Problems](#) for troubleshooting steps concerning the media type of the switch port.

**Step 7** Swap cables. Move the cable to a different port. Eliminate patch panels. Patch panels are a common source of connectivity failures, so you should attempt to connect directly to the end device and verify the operation of the end device.

## Port Status Shows Not Connected, Faulty, Disabled, Inactive, or errDisable

The following table describes potential port statuses and troubleshooting tips:

Status	Description and Troubleshooting Tips
connected	The port is operational and connected to the end device. A status of "connected" does not mean the ports are error-free. If there are errors on the ports, proceed to the <a href="#">Seeing Errors on the Ports</a> section of this document.
notconnect	Nothing is connected to the port. Check or swap cables and verify the operation of the end device.

faulty	This indicates the possibility of a hardware failure. Issue the <a href="#">show test 0</a> command to verify. If "F" displays for a port, proceed as in Step 2 of <a href="#">Unable to Connect to a Remote Host on the Switch</a> .
disabled	The port is manually disabled. Issue the <b>set port enable mod/port</b> command to enable the port.
inactive	The port belongs to a VLAN that does not exist. Issue the <b>set vlan vlan</b> command to add a VLAN.
errDisable	The port had been shut down due to errors. Refer to <a href="#">Recovering from errDisable Port State on the CatOS Platforms</a> .

## Seeing Errors on the Ports

Complaints of poor performance by users can sometimes translate to errors on switch ports. Output from the port error counters helps you troubleshoot connectivity problems.

**Step 1** Verify the port status and troubleshoot accordingly. Refer to [Port Status Shows Not Connected, Faulty, Disabled, Inactive or errDisable](#) for more information.

**Step 2** Capture the output of the [show port mod/port](#), [show mac mod/port](#), and [show counters mod/port](#) commands.

The following are some common causes for data link errors on ports:

- speed/duplex misconfiguration
- network congestion
- NIC cards or drivers
- cabling
- bad port

The [show port mod/port](#) command may show Late-Coll, Align-Err, FCS-Err, Xmit-Err, and Rcv-Err. For an explanation of these errors and possible causes, refer to the *Explanation of CatOS Show Port Counters* table in [Troubleshooting Switch Port and Interface Problems](#).

The [show mac mod/port](#) command shows the number of unicast, multicast, and broadcast frames transmitted. Check to see if frames are being received and transmitted.

In-Discard shows frames that did not need to be switched. This is normal if the port is connected to a hub and two devices are exchanging data. Lrn-Discards indicates that Content Addressable Memory (CAM) entries are being discarded. In-Lost/Out-Lost indicates port buffer overflows. For an explanation of these errors and possible causes, refer to the *Explanation of CatOS Show MAC Counters* table in [Troubleshooting Switch Port and Interface Problems](#).

The [show counters mod/port](#) command is useful for troubleshooting "R" line cards. For example, the following is an excerpt from the **show counter** output of a 10/100BaseTX Ethernet line card (part number WS-X5225R):

```
5 badTxCRC = 0
```

If badTxCRC is incrementing, the problem may be bad hardware corrupting packets. Capture the output and open a case with TAC.

**Step 3** Issue the [clear counters](#) command to reset the output of the [show port mod/port](#), [show mac mod/port](#), and [show counters mod/port](#) commands. Capture the output of these commands again to see if errors are incrementing.

**Step 4** To troubleshoot additional causes of port errors, refer to the following documents:

- [Troubleshooting Cisco Catalyst Switches to NIC Compatibility Issues](#)
- [Configuring and Troubleshooting Ethernet 10/100/1000Mb Half/Full Duplex Auto-Negotiation](#)

## Experiencing Poor Performance

Poor performance is often perceived to be a hardware problem, when in fact it can most often be attributed to connectivity problems. Refer to [Seeing Errors on the Ports](#) for troubleshooting steps.

## Receiving Continuous %PAGP-5 Left/Joined Bridge Messages

**Step 1** Capture the output from the [show port mod/port](#), [show mac mod/port](#), and [show spantree summary](#) commands.

System messages like the ones below are informational.

```
2002 Jan 19 14:59:05 %PAGP-5-PORTFROMSTP:Port 2/11 left bridge port 2/11
2002 Jan 19 14:59:23 %PAGP-5-PORTTOSTP:Port 2/11 joined bridge port 2/11
```

**Step 2** If these system messages occur repeatedly on certain ports, refer to the *Error Messages on Catalyst 6000/6500 Series Switches* section of [Common CatOS Error Messages on Catalyst 6000/6500 Series Switches](#) for possible causes.

**Step 3** If you also see errors on the port in the output of the [show port mod/port](#) and [show mac mod/port](#) commands, refer to [Seeing Errors on the Ports](#) for troubleshooting steps.

**Step 4** Issue the [show spantree summary](#) command for a quick check on how many ports are in each VLAN, whether any ports on the switch are blocking, and which VLANs they are blocking for. Since spanning tree loops can cause link flaps or actually bring down a switch or network giving the appearance of a hardware failure this is vital information to capture whether troubleshooting hardware or software. For troubleshooting spanning tree issues, refer to [LAN Switching Technical Support](#).

## Unable to Autonegotiate or Speed/Duplex Mismatch

**Step 1** Make sure you have speed and duplex configured the same way on both sides of the link. Catalyst 5000 switchports are set to auto by default. If, for example, both sides of a 100 BaseTX link autonegotiate correctly, then you see the following result when you issue the [show port mod/port](#) command:

```
Duplex      Speed
-----
a-full      a-100
```

If you hardcode both sides, you see the following result:

```
Duplex      Speed
-----
full        100
```

**Step 2** If there is an autonegotiation problem caused by a speed/duplex mismatch or NIC incompatibility, errors show up on the ports. Refer to the following documents for more information:

- [Configuring and Troubleshooting Ethernet 10/100/1000Mb Half/Full Duplex Auto-Negotiation](#)
- [Troubleshooting Cisco Catalyst Switches to NIC Compatibility Issues](#)

## System, Supervisor, and Module Problems

System, Supervisor, and module problems occur when either system status (Sys-Status) LEDs indicate a problem, when the Supervisor or modules are not recognized or show "faulty," or when users are experiencing poor performance. Below are two tables that list common symptoms associated with system component problems and the commands used to troubleshoot them. Click on a symptom for a list of steps to help you diagnose the problem. Click on a command for a description of the command and sample output.


### System/Supervisor/Module Symptom Summary

- [Experiencing Software Upgrade Problems](#)
- [Supervisor Is Not Online or Is Stuck in Boot or ROMmon Mode](#)
- [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#)
- [Switching Module Is Not Recognized](#)
- [Module Status Is Showing Faulty or Not "ok"](#)
- [Experiencing Poor Performance](#)
- [Receiving System Error Messages](#)

### System Component Command Summary

- [show version](#)
- [show module](#)
- [show flash](#)
- [show config](#)
- [show test 0](#)
- [show system](#)
- [show traffic](#) (Catalyst 5500/Supervisor III)
- [show time](#)
- [show logging buffer 1023](#)
- [show process cpu](#)
- [show mbuf all](#) (hidden)
- [show biga](#) (Supervisor I and II) (hidden)
- [show scp stat](#) (hidden)

The following commands are supported by the Output Interpreter and can be used to assist in troubleshooting system, Supervisor, and module problems: **show version**, **show module**, and **show system**.

If you have the output of the supported commands from your Cisco device, you can use the [Output Interpreter](#)  ( [registered](#) customers only) to display potential issues and fixes. To use this tool, you must be logged in and have JavaScript enabled.

## Experiencing Software Upgrade Problems

**Step 1** Most customer problems associated with software upgrades are the result of not understanding the **copy tftp** procedure, the boot process, or the flash system for the Supervisor. Refer to the *Switch Management* and *Software Considerations* sections of [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#).

Capture the output of the **show version** and **show flash** or **dir bootflash:** commands, depending on the type of Supervisor you have. Verify that you have enough DRAM and flash for the image you are trying to upgrade to, and then perform the **copy tftp** procedure.

**Step 2** On the Supervisor III and IIIF, you can set a **boot** environment variable and a **config-register**. Refer to [Catalyst 5000 Series Switches Modifying the Switch Boot Configuration](#) for information on these settings.

```
3-5500> (enable) set boot ?
auto-config          Set auto config file
```

config-register	Set configuration register
sync	Set sync parameters
system	Set BOOT environment variable

TAC recommends setting the boot environment variable and config-register as follows:

1. Verify that the image you want to boot is currently installed in flash.

```
3-5500> (enable) dir bootflash:
-#- -length- ----date/time----- name
  1   16726 Nov 24 2000 19:18:54 80-81.cfg
  2  4942017 Nov 30 2001 06:52:27 cat5000-sup3.5-5-11.bin
```


2. Set the boot environment variable for the image in flash that you want to boot from.

```
3-5500> (enable) set boot system flash bootflash:cat5000-sup3.5-5-11.bin
BOOT variable = bootflash:cat5000-sup3.5-5-11.bin,1;
```

3. Set the config-register to boot from flash.

```
3-5500> (enable) set boot config-register 0x2102
Configuration register is 0x2102
ignore-config: disabled
auto-config: non-recurring
console baud: 9600
boot: image specified by the boot system commands
```

**Step 3** If you end in ROMmon or boot mode during the upgrade, refer to [Recovering Catalyst Switches Running CatOS from Booting Failures](#) for more information.

**Step 4** Use the [Bug Toolkit](#)  ( [registered](#) customers only) to track down bugs, or consult the [Supervisor Engine Module Software Release Notes](#) for warnings.

## Supervisor Is Not Online or Is Stuck in Boot or ROMmon Mode

The most common cause of a Catalyst 5000 Family Supervisor not being recognized is that it is stuck in boot or ROMmon mode due to a missing or corrupt image. In these modes, you cannot make a telnet connection to the Supervisor and must open a console session.

**Step 1** If the Supervisor is stuck in either boot or ROMmon mode, depending on the Supervisor, follow the troubleshooting steps in [Recovering Catalyst Switches Running CatOS from Booting Failures](#).

**Step 2** If the Supervisor is in neither boot nor ROMmon mode but is still not online, follow the troubleshooting steps for the Supervisor Engine under [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#).

## System Component LEDs Are Orange or Red or Supervisor Is Not Online

**Step 1** If you observe orange or red LEDs on startup, wait until the system boots up completely before you conclude that there is a problem. The Sys-Status LED on the Supervisor remains orange until bootup is complete, and turns green if the bootup is successful.

Next, the Supervisor initializes the switching modules, which operate differently depending on the module. Some flash on and off; others stay orange until initialization is complete. At this point, the link (port) LEDs turn off altogether until a signal is detected.

**Step 2** Understand the Catalyst 5000 family components and what the LEDs tell you. Refer to [Catalyst 5000 Series Switches Troubleshooting the Installation](#) to begin.


Look at the front panel LEDs of your Supervisor and refer to the following documents for examples:

- [Catalyst 5000 Series Supervisor Engine I and II Installation and Configuration Note](#)
- [Catalyst 5000 Series Supervisor Engine II G Installation and Configuration Note](#)
- [Catalyst 5000 Series Supervisor Engine III and Uplink Module Installation and Configuration Note](#)

- [Catalyst 5000 Series Supervisor Engine III G Installation and Configuration Note](#)

Look at the front panel LEDs of your switching module and refer to the *Ethernet and Fast Ethernet Module LED Descriptions* table in the [Catalyst 5000 Series Ethernet and Fast Ethernet Modules Installation and Configuration Note](#) for an example.

**Step 3** Capture the output of the [show version](#), [show system](#), [show module](#), and [show test 0](#) commands, which give the status of the power supply, fan assembly, Supervisor Engine, and switching modules.


- **Power supply** Includes the power supplies and power supply fans. PS1 and PS2 status LEDs on the Supervisor should be green. If one or both are red, this can indicate a power supply failure.
  1. Determine if the [show system](#) command shows the PS1 or PS2 status as "faulty."
  2. Inspect the power supplies. Make sure power is applied to both units. If a second power supply is installed, but has no power, the [show system](#) command shows the PS2 status and Sys-Status as "faulty."
  3. Reseat the power supply. Try a different circuit or swap power cords. If the status is still red, or the [show system](#) command shows a status of "faulty," there is a power supply failure. Refer to [Catalyst 5000 Series Switches Removal and Replacement Procedures](#) for more information.
- **Fan assembly** The system fan assembly should operate whenever system power is on. You should be able to hear the fan assembly to determine if it is operating. The Fan LED on the Supervisor should be green. If it is not, perform the following steps:
  1. Determine if the fan status is "faulty" using the [show system](#) command.
  2. Inspect the fan assembly and the power supplies, and verify that power is being applied to the system.
  3. Reseat the fan assembly and tighten the captive installation screws. If necessary, reset the switch. If the status is still red, or the [show system](#) command still shows a "faulty" status, there is a fan failure. Refer to [Catalyst 5000 Series Switches Removal and Replacement Procedures](#) for more information.
- **Supervisor Engine** The Supervisor Engine contains the system operating software, so check the Supervisor Engine if you have trouble with the system software. The Sys-Status LED on the Supervisor Engine indicates whether the Supervisor Engine has passed all diagnostic tests. Open a console session and check whether or not the Supervisor is in boot or ROMmon mode. If it is, refer to the [Supervisor Is Not Online or Is Stuck in Boot or ROMmon Mode](#) section for troubleshooting steps.
  1. Issue the [show system](#) command to determine if the Sys-Status is "faulty." Determine if the [show test 0](#) command shows the Supervisor passed all diagnostic tests as of the last bootup of the switch. Note any "F" results.
  2. Inspect the fan assembly and power supplies for any problems.
  3. Open a console session and capture bootup POST diagnostics and system error messages. Reset the Supervisor. If you have redundant Supervisors, you can perform a **reset x** command, where *x* is the active Supervisor experiencing problems. This forces the standby Supervisor to become active. Then look at the [show test 0](#) command output to see if the Supervisors pass their diagnostic tests on bootup. If you have only one Supervisor, enter **reset** and check the command output of the [show test 0](#) command to see if it passes its diagnostic test on bootup.
  4. Remove the Supervisor and inspect it for bent pins. Reseat the Supervisor, firmly press down the ejector levers, and tighten the captive installation screws. Wait for the Supervisor to initialize. If the [show system](#) command shows that the Sys-Status is still "faulty," try the Supervisor in another slot. Only slots 1 and 2 accept Supervisor Engines. If necessary, power the switch off and then on. If Sys-Status is still "faulty," the Supervisor has failed.
- **Switching modules** The LED status on each switching module indicates whether the switching module has been initialized correctly. The Supervisor Engine must be operating properly for the switching module to initialize. If a switching module is improperly installed in the switch, it does not function.
  1. Capture the output of the [show version](#) and [show module](#) commands. Determine if the software version you are running supports this module. Consult the [Software Advisor](#)  ( [registered](#) customers only) . Determine if the status is "faulty" for that module. Determine if the [show test 0](#) command shows this module passed all of its diagnostic tests as of the last bootup of the switch. Note any "F" results.

2. Determine if the status says "disabled," because this indicates the module was administratively disabled. The status LED is orange in this case. Issue the **set module enable mod** command.
3. Open a console session and capture bootup POST diagnostics and any system error messages. Reset the module with the **reset mod** command. Determine if the [show test 0](#) command shows this module passed all of its diagnostic tests on bootup.
4. Remove the module and inspect it for bent pins. Reseat the module, firmly press down the ejector levers, and tighten the captive installation screws. If the [show module](#) command shows the status is still "faulty," try the module in another slot. Slot 2 accepts line cards or a Supervisor Engine. If necessary, power the switch off and then on. If the status is still "faulty," the module has failed.
5. If a link (port) LED is solid orange or is blinking orange (after Supervisor bootup and module initialization), refer to the [Unable to Connect to a Remote Host, Router, or Another Switch](#) section.

## Switching Module Is Not Recognized

The most common cause of a switching module or a line card not being recognized is an incorrect software version.

**Step 1** Determine that this is a problem with just one module and not all modules. If all modules are affected, follow the steps under [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#). Capture the output of the [show version](#), [show module](#), and [show test 0](#) commands.

**Step 2** Issue the [show version](#) command to check the software version you are using and the model number of the module you are having problems with. Determine total DRAM and total flash. Use the [Software Advisor](#)  ( [registered](#) customers only) to determine hardware/software compatibility.

If you find that you need to upgrade, please refer to [Supervisor Engine Module Software Release Notes](#) and then choose, for example, [Release Notes for Catalyst 5000 Family Software Release 5.x](#) and search on any area of interest regarding your software version and requirements. Refer to the *Software Considerations* section of [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#) for important information on memory requirements, upgrade paths, release numbering, and General Deployment (GD) software.

**Step 3** If the Supervisor is not stuck in boot or ROMmon mode and you have determined that the module is supported by the current version of the software, then follow the steps for troubleshooting the Switching Module under [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#).

## Module Status Is Showing Faulty or Not "ok"

**Step 1** Capture the output from the [show module](#) and [show test 0](#) commands.

**Step 2** For any status other than "ok" in the output of these two commands, follow the troubleshooting steps for the Switching Module under [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#).

## Experiencing Poor Performance

Poor performance is often perceived to be a hardware issue, but that is usually not the case. When customers describe to the TAC that users on a particular switch are experiencing slow performance, it often turns out to be related to connectivity problems, software misconfiguration, or problems elsewhere on the network.

**Step 1** Identify whether performance issues are occurring for users connected to all switching modules, one module in particular, or just one or more ports. Capture the output from the [show module](#) and [show test 0](#) commands. Make sure that the Supervisor and modules have an "ok" status. If there is a "faulty" status, follow the troubleshooting steps for the Switching Module under [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#).

**Step 2** Capture the output from the [show port mod/port](#), [show mac mod/port](#), and [show counters mod/port](#) commands. If you see incrementing errors on port counters, troubleshoot this performance issue as a connectivity issue. Follow the troubleshooting steps under [Seeing Errors on the Ports](#).

**Step 3** Capture the output from the [show config](#) and [show logging buffer 1023](#) commands. The [show config](#) command shows only the non-default configuration changes. Ideally, every time you make a change, you have backed up the configuration to use as a comparison. Issue the [show config](#) command to associate a configuration change with the behavior you are experiencing.

If you see any system messages (other than informational messages) that may indicate a problem caused by hardware or some other source, capture these messages with the [show logging buffer 1023](#) command. This command displays the last 1023 system messages with timestamps (default). Next, refer to [Catalyst 6500 Series Switches Message and Recovery Procedures](#) as well as [Common CatOS Error Messages on Catalyst 6000/6500 Series Switches](#) to see if you can rule out any harmless system messages from those that may indicate a problem. Use the [Error Message Decoder](#) [↗](#) ([registered](#) customers only) tool to help decipher the output of any messages.

**Step 4** Many performance problems are related to network traffic conditions. Capture the output of the [show system](#) command. Additionally, for a Catalyst 5500 with the Supervisor III Engine, capture the output of the [show traffic](#) command.

The [show system](#) command has a Traffic field which indicates the current backplane utilization, which is typically less than ten percent. If you believe you are having performance-related issues on a particular switch, look at the Peak field (the peak backplane utilization on the switch since it was last booted) and note the timestamp indicated by Peak-Time. Keep in mind that spikes in traffic percentage on the backplane could be a spanning tree loop or broadcast storm. Refer to [Troubleshooting Spanning-Tree Protocol and Related Design Considerations](#) for more information.

The [show traffic](#) command displays the Traffic and Peak information for each switching bus. Supervisor IIIs on a Catalyst 5500 use a three-bus architecture for an aggregate of 3.6 Gig, so the Traffic field in the [show system](#) command indicates the current backplane utilization for all three buses. Refer to the Basic Architecture Overview section in [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#) for more information.

With a Catalyst 5500/Supervisor III, the Traffic field indicates the current backplane utilization per bus and is typically less than ten percent. Look at the Peak field and note the peak backplane utilization per bus since the switch was last booted. Also note the timestamp indicated by Peak-Time. Keep in mind that spikes in traffic percentage per bus could be a spanning tree loop or a broadcast storm. Refer to [Troubleshooting Spanning-Tree Protocol and Related Design Considerations](#) for further information.

If the current traffic percentage on a particular bus is greater than 30 percent which is higher than it should normally be you can issue the **whichbus mod/port** (hidden) command to see which slots in the chassis belong to that bus. A module with users experiencing performance issues could then be moved to a different bus to see if this resolves the problem.

Make sure to refer to the *Switch Chassis Information and Supported Supervisors* section of [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#) for information on which chassis supports which Supervisor, and on slot dependencies for different modules.

The tables below list the slot/bus assignments for the Catalyst 5000 Family. If the switch has a single bus, it is represented by the letter A. If the switch has three buses, they are represented by A, B, and C.

#### Catalyst 5000 5 slots, single 1.2Gbps switching bus

Slot	Backplane Bus Layout
1	A
2	A
3	A
4	A
5	A

#### Catalyst 5002 2 slots, single 1.2Gbps switching bus

Slot	Backplane Bus Layout
1	A
2	A

#### Catalyst 5505<sup>1</sup> 5 slots, 3 buses x 1.2Gbps = 3.6Gbps switching backplane

Slot	Backplane Bus Layout
1	A B C
2	A B C
3	A B C
4	B A C
5	C B A

### Catalyst 5509<sup>1</sup> 9 slots, 3 buses x 1.2Gbps = 3.6Gbps switching backplane

Slot	Backplane Bus Layout
1	A B C
2	A B C
3	A B C
4	A B C
5	B A C
6	B A C
7	B A C
8	C B A
9	C B A

### Catalyst 5513<sup>1</sup> 13 slots, 3 buses x 1.2Gbps = 3.6Gbps switching backplane + 5Gps Cell backplane

Slot	Backplane Bus Layout
1	A B C
2	A B C
3	A B C
4	A B C
5	A B C
6	B
7	B
8	B
9	B ATM
10	C ATM
11	C ATM
12	C ATM
13	ASP/MSRP

<sup>1</sup> The Supervisor III Engine is required to use all three of the 1.2 Gbps buses.

#### Slot Dependencies

All three 1.2-Gbps input buses in the Catalyst 5505 or Catalyst 5509 extend across all slots. For all of the Catalyst 5500 chassis, all line cards except the Gigabit Ethernet modules and Supervisor III Engines plug into the connector on the left-hand side of the chassis. This is the bus shown on the left for each slot in the Backplane Bus Layout tables above. The Gigabit Ethernet modules and Supervisor III Engines connect into all three buses simultaneously. Therefore, on a Catalyst 5500 chassis, it makes sense to put any Gigabit Ethernet modules into slots 2 to 5, because these slots possess all three buses.

#### Catalyst 5500 Specific Dependencies

The last five slots (9 to 13) of a Catalyst 5500 chassis also contain an ATM bus. Slot 13 is reserved for an ATM Switch Processor (ASP) or a Multiservice Switch Route Processor (MSRP) of a Catalyst 8510. If you place an ASP in slot 13, then slots 9 to 12 can hold LightStream 1010 CAMs/PAMs. If you place an MSRP in slot 13, then slots 9 to 12 can hold Catalyst 8510 cards.

**Note:** You can still have regular line cards (such as Ethernet cards) in slots 9 to 12 with an ASP or MSRP installed in slot 13.

**Step 5** Capture the output of the [show process cpu](#) command. This command helps identify a process that may cause high CPU utilization on the Supervisor.

A common misconception is the meaning of the process Kernel and Idle. Below is an excerpt from the [show process cpu](#) command.

PID	Runtime(ms)	Invoked	uSecs	5Sec	1Min	5Min	TTY	Process
1	0	0	0	97.16%	94.69%	96.96%	-2	Kernel and Idle

Kernel and Idle indicates the amount of time the CPU has been idle. Notice the value in the output is approximately 95 percent, which is a typical idle time. This is because decisions about packet forwarding on a switch are handled in the hardware, unlike a router where packet processing decisions are made in the software.

The CPU on a Catalyst 5000 Supervisor is used for MAC address learning and aging, packet processing for control traffic such as spanning tree Bridge Protocol Data Units (BPDUs), Cisco Discovery Protocol, VLAN Trunking Protocol (VTP), Dynamic Trunking Protocol (DTP), Port Aggregation Protocol (PAgP) and for management traffic such as simple network management protocol (SNMP) and Telnet. It also performs administrative functions such as port monitoring and Application-Specific Integrated Circuit (ASIC) hardware management.

Some processes, such as SNMP, can excessively poll the management interface, causing a spike in CPU utilization. A high amount of Topology Change Notifications (TCNs) can overwhelm the CPU with spanning tree BPDUs. To help identify which process may be causing the problem, proceed as follows:

- Issue the [show process cpu](#) command during a time of normal activity for your network, and then save the output.
- Issue the command again if you experience any performance-related issues.
- Compare the two outputs. Is there a process you can identify that is unusually high in comparison?
- Issue the [show process cpu](#) command multiple times and notice if there is a significant increase or decrease in CPU utilization or spikes. Does the CPU utilization remain consistently high?

The answer is most likely not a hardware problem, but a problem elsewhere.

**Step 6** One performance-related issue that results from misconfiguration occurs when the inband channel, which is used for any control traffic terminating on the switch (such as ping, Telnet, VTP, STP, or Cisco Discovery Protocol), is not put in a separate VLAN from user data.

Cisco always recommends that the management or sc0 interface of the switch be kept in a separate VLAN from user data. Otherwise, any broadcast or multicast storm can flood the inband channel to the Network Management Processor (NMP), which needs to be free to handle the protocols just mentioned.

If you have not been able to track down any reason for performance issues on the switch by following the steps mentioned previously, capture the output of the following hidden commands, as well as the other commands in the preceding steps, and open a case with the TAC.

- **show biga** (Supervisor I and II)
- **show inband** (Supervisor III)
- **show scp stat**

**Step 7** Though rare, memory leaks may occasionally occur, causing what seem to be issues of poor performance and other apparently performance-related symptoms. If you have not been able to track down any reason for performance issues on the switch by following the steps mentioned previously, capture the output of the **show mbuf all** command, as well as the other commands in the preceding steps, and open a case with the TAC.

## Receiving System Error Messages

As mentioned in the [Online Troubleshooting Tools](#) section of this document, Cisco has a suite of online diagnostic tools to help you determine hardware and software compatibility, interpret output, and decode errors. One of these tools is the [Error Message Decoder](#) [↗](#) ([registered](#) customers only). This tool can be used to decipher the output of system messages that concern you.

**Step 1** Many system messages are informational in nature, while others may indicate a problem. Refer to the [Catalyst 6500 Series Switches Message and Recovery Procedures](#) guide and [Common CatOS Error Messages on Catalyst 6000/6500 Series Switches](#) for more information. Capture the output of any system messages with the [show logging buffer 1023](#) command.

**Step 2** System messages have timestamps (default) which can help you to isolate a timeframe for your problem. Make sure your system clock is set correctly with the [show time](#) command.

## Supervisor Crashes

Supervisor crashes occur when the switch has reset, is continually resetting, or is down completely. Below are two tables that list common symptoms and commands associated with Supervisor crashes. Click on the symptom for a list of steps to help you diagnose the problem. Click on a command for a description of the command and sample output.

### Supervisor Crashes Symptom Summary

- [Receiving System Error Messages](#)
- [Switch Has Reset, Is Continually Resetting, or Has Crashed](#)

### Supervisor Crash Command Summary

- [show log](#)
- [show logging buffer 1023](#)
- [show version](#)
- [show test 0](#)
- [show system](#)
- [show biga](#) (Supervisor I and II) (hidden)
- [show mbuf all](#) (hidden)
- [ps -c](#) (multiple times) (hidden)
- [show tech-support](#)

The following commands are supported by the Output Interpreter and can be used to assist in troubleshooting Supervisor crashes: **show version** and **show system**.

If you have the output of the supported commands from your Cisco device, you can use the [Output Interpreter](#) [↗](#) ([registered](#) customers only) to display potential issues and fixes. To use this tool, you must be logged in and have JavaScript enabled.

## Receiving System Error Messages

System error messages may be useful if you experience a switch reset.

**Step 1** Many system messages are informational in nature, while others may indicate a problem. Refer to the [Catalyst 6500 Series Switches Message and Recovery Procedures](#) guide and [Common CatOS Error Messages on Catalyst 6000/6500 Series Switches](#). Issue the [show logging buffer 1023](#) command to capture the output of any system messages.

**Step 2** System messages have timestamps (default) which can help you to isolate a timeframe for your problem. Make sure your

system clock is set correctly with the [show time](#) command.

## Switch Has Reset, Is Continually Resetting, or Has Crashed

If the switch has reset or crashed due to a hardware or software problem, it is important to capture the output of certain **show** commands as quickly as possible.

**Step 1** Capture the output of the [show log](#), [show version](#), [show test 0](#), and [show logging buffer 1023](#) commands.

The [show log](#) command has a number of important indications of problems that may be related to a crash.

- It keeps track of the last ten system resets with timestamps that show when the reboot occurred. Below is a snapshot of the re-boot history.

```
Re-boot History:  Jan 10 2002 21:13:23 3, Jan 06 2002 16:04:58 3
                  Jan 06 2002 10:39:53 3, Jan 06 2002 10:04:08 3
                  Jan 05 2002 19:46:38 3, Jan 05 2002 16:58:35 3
                  Jan 05 2002 16:00:19 3, Jan 03 2002 15:27:04 3
                  Dec 30 2001 18:39:16 3, Dec 30 2001 18:26:30 3
```

The re-boot history indicates only that the switch was reset. It could have been reset manually by the user or unintentionally by a crash. However, the most recent manual reset of the switch is recorded further down in the output.

```
Last software reset by user: 1/10/2002,21:13:16
```

Notice that the timestamp of the last manual reset (1/10/2002,21:13:16) matches the most recent entry in the re-boot history.

- It shows whether there have been any exceptions. Exceptions are CPU dumps that occur immediately after a crash.

```
Exceptions: 0
```

In the case above, there were no exceptions recorded. In the case of an exception, it would include a timestamp that could be matched with the re-boot history. It would also include a HEX dump or stack which could be decoded by a TAC engineer to determine whether this was a software-forced exception or one caused by hardware. Below is sample output of the **show log** command when an exception is recorded.

```
-----snip
Exceptions: 1
Last Exception occurred on Apr 10 2000 05:34:40 ...
Software version = 5.1(0.71)
Error Msg:
PID = 13 cdpdtimer
PC: 1002C3AA, Status: 2000, Vector: 7008
sp+00: 20001002 C3AA7008 11FF233C 01050005
sp+10: 00050005 CCCCCC 11FF2300 11FF230C
sp+20: CCCCCC FFFFFFFF CCCCCC FFFFFFFF
sp+30: 11FF2368 1002C386 0000000F 00000481
sp+40: 000001D7 00000485 00094778 000953C1
sp+50: 00000861 1043A5C0 1043A5DC 1043A5D8
-----snip
```

- It shows other errors that may have caused the Supervisor to reset, such as a power supply failure or a memory problem with DRAM, flash, or a failed module.

The [show version](#) command provides software version information to use for a bug search. If you identify an exception using the **show log** command, use the [Bug Toolkit](#) [☞](#) ([registered](#) customers only) to search for bugs on the Catalyst 5000 and this exception or search on Catalyst 5000 and the software version you are running. Also, the [show version](#) command gives you a quick snapshot of how long the switch has been up, as shown below.

```
Uptime is 9 days, 19 hours, 1 minute
```

The [show test 0](#) command indicates an "F" status on the Supervisor or module if any of the diagnostics failed. An improperly seated

module can cause the switch to crash. If the Supervisor or module shows "failed," proceed with the troubleshooting steps under [System Component LEDs Are Orange or Red or Supervisor Is Not Online](#).

The [show logging buffer 1023](#) command displays all system messages, including possible error messages, that may relate to the crash. Refer to [Receiving System Error Messages](#) for troubleshooting suggestions.

**Step 2** Try to use the **show** commands and troubleshooting procedures in the preceding steps first. If these steps fail, capture the command output from the [show tech-support](#) command. This command continuously displays output for all of the commands listed below. The output continues to scroll until complete, but you can end the display by pressing **Ctrl-C**.

**show version, show flash, show microcode, show system, show module, show port, show mac, show trunk, show vlan, show vtp domain, show spantree active, show spantree summary, show test, show arp, show ip route, show cdp neighbor detail, show netstat stats, show memory buffers, show out-of-band stats, show inband stats, show cam static, show cam count dynamic, show cam system, show config, show log, show process, show process memory, show process cpu, ps, ps -c**

Often the output from all of these commands is not necessary to resolve a specific problem, so TAC engineers usually do not ask for it. However, it is good output to have in case other **show** commands or troubleshooting procedures fail to resolve the problem.

**Step 3** If all of the previous troubleshooting steps fail to diagnose the problem, capture the output of the following hidden commands, as well as the other commands listed in the preceding steps, and open a case with the TAC.

- **show biga** (Supervisor I and II)
- **show inband** (Supervisor III)
- **show mbuf all**
- **ps -c** (capture multiple times)

## Hardware Command Summary

### show version

This command verifies the version of software you are running and also has information about the size of flash and DRAM. This is useful information if you need to upgrade. Before you upgrade, go to [Supervisor Engine Module Software Release Notes](#) and choose, for example, [Release Notes for Catalyst 5000 Family Software Release 5.x](#) and search on any area of interest regarding your software version and requirements.

This command can be especially useful for situations in which customers with Supervisors I and II are upgrading from 2.x to 3.x versions, where there was a change in the way flash was formatted. It is also useful for situations in which Boot ROM upgrades may be required, as is the case when installing a Supervisor II or III in a Catalyst 5509. Please refer to [Upgrading the Catalyst 5000 Supervisor II and III Boot ROMs](#) for further information.

Below is an example of the **show version** command. Refer to the [Command Reference](#) for more information on the [show version](#) command.

```
5505-3> (enable) show version
WS-C5505 Software, Version McpSW: 5.5(12) NmpSW: 5.5(12)
Copyright (c) 1995-2001 by Cisco Systems
NMP S/W compiled on Nov 27 2001, 18:56:42
MCP S/W compiled on Nov 27 2001, 18:51:00
System Bootstrap Version: 5.1(1)
```

```
Hardware Version: 1.0 Model: WS-C5505 Serial #: 066548228
```

```
Mod Port Model Serial # Versions
-----
1 2 WS-X5550 022532167 Hw: 1.2
      Fw : 5.1(1)
      Fw1: 5.2(1)
      Sw : 5.5(12)
```

```

2   24   WS-X5225R   013444226 Hw : 3.3
                        Fw : 4.3(1)
                        Sw : 5.5(12)
3   12   WS-X5201    007499537 Hw : 1.1
                        Fw : 2.3(2)
                        Sw : 5.5(12)
4    3   WS-X5403    007674051 Hw : 1.0
                        Fw : 4.1(1)
                        Sw : 5.5(12)

```

Module	DRAM			FLASH			NVRAM		
	Total	Used	Free	Total	Used	Free	Total	Used	Free
1	32768K	18081K	14687K	8192K	4236K	3956K	512K	179K	333K

```

Uptime is 0 day, 5 hours, 39 minutes
5505-3> (enable)

```

## show module

This command displays information about the modules installed in the switch. In particular, note the status of the module. If the status is "faulty," there may be a hardware failure.

Below is an example of the **show module** command. Refer to the [Command Reference](#) for more information on the [show module](#) command.

```

5505-3> (enable) show module
Mod Slot Ports Module-Type                               Model          Sub  Status
----
1   1     2     1000BaseX Supervisor IIIG          WS-X5550       no   ok
2   2    24     10/100BaseTX Ethernet          WS-X5225R     no   ok
3   3    12     100BaseFX MM Ethernet          WS-X5201     no   ok
4   4     3     1000BaseX Ethernet          WS-X5403     no   ok
Mod Module-Name                Serial-Num
----
1                               00022532167
2                               00013444226
3                               00007499537
4                               00007674051

Mod MAC-Address(es)           Hw  Fw  Sw
----
1  00-d0-bb-9f-80-00 to 00-d0-bb-9f-83-ff 1.2  5.1(1)  5.5(12)
2  00-50-3e-b4-d8-80 to 00-50-3e-b4-d8-97 3.3  4.3(1)  5.5(12)
3  00-e0-1e-b6-0d-cc to 00-e0-1e-b6-0d-d7 1.1  2.3(2)  5.5(12)
4  00-e0-1e-6c-89-fe to 00-e0-1e-6c-8a-00 1.0  4.1(1)  5.5(12)
5505-3> (enable)

```

## show flash

This command displays the contents of the flash file system. Flash file systems differ among Catalyst Supervisors. Some Supervisors use **show flash** to display the contents, while others use **dir bootflash:**. When you copy an image to the Supervisor IIIG, for instance, you issue the **download** command and flash is completely erased in the process of installing the image. With other Supervisors, you can issue the **copy tftp flash** command to add one or more images.

Many problems, both hardware- and software-related, can be avoided by understanding the flash system for your Supervisor. Refer to the *Switch Management* section of [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#) and [show flash](#) or [dir bootflash:](#) in the [Command Reference](#) for further information. Below is an example of the **show flash** command.

```

5505-3> (enable) show flash

```

File	Version	Size	Built
c5000 nmp	5.5(12)	2445727	11/27/01 18:58:44
lcp	5.5(12)	27521	11/27/01 18:04:59
lcp 360	5.5(12)	140972	11/27/01 18:52:07
atm/fddi	5.5(12)	26637	11/27/01 18:05:02
lcp 64k	5.5(12)	61757	11/27/01 18:10:49
lcp c5ip	5.5(12)	25911	11/27/01 18:10:51
lcp tr	5.5(12)	32596	11/27/01 18:06:43
mcp 360	5.5(12)	296640	11/27/01 18:52:17
lcp atm	5.5(12)	26622	11/27/01 18:05:50
lcp xa1	5.5(12)	91622	11/27/01 18:52:10
lcp xa2	5.5(12)	59408	11/27/01 18:52:13
mcp3g	5.5(12)	59815	11/27/01 18:51:00
mcp2g	5.5(12)	54561	11/27/01 18:46:18
mcp2g s4a	5.5(12)	63389	11/27/01 18:35:45
mcp2g s4b		30513	11/27/01 18:35:45
trembl	c6.30(ff.ff)	9216	
trembl2	3.22(4a.1)	9216	
banff	3.ff(ff.ff)	9216	
banff2	6.7(0.f)	9216	

```
5505-3> (enable)
```

## show config

This command displays the non-default system configuration. This is useful to capture every time you make a configuration change as a way to possibly associate changes to hardware or software problems. Notice there is a timestamp for each output. Compare the output to **show config all**, which shows the entire system configuration and can be lengthy.

Below is an example of the **show config** command. Refer to the [Command Reference](#) for more information on the [show config](#) command.

```
5505-3> (enable) show config
This command shows non-default configurations only.
Use 'show config all' to show both default and non-default configurations.
.....
.....
.....
..
begin
!
# ***** NON-DEFAULT CONFIGURATION *****
!
!
#time: Sun Jan 6 2002, 14:40:45
!
#version 5.5(12)
!
!
#system
set system name 5505-3
!
#frame distribution method
set port channel all distribution mac both
!
#vtp
set vtp domain Catalyst
set vtp mode client
!
```

```

#ip
set interface sc0 1 10.1.3.5/255.255.255.0 10.1.3.255

!
#set boot command
set boot auto-config non-recurring
!
#mls
set mls nde disable
!
#port channel
set port channel 2/21-24 12
!
# default port status is enable
!
!
#module 1 : 2-port 1000BaseX Supervisor IIIG
!
#module 2 : 24-port 10/100BaseTX Ethernet
set trunk 2/21 desirable dot1q 1-1005
set trunk 2/22 desirable dot1q 1-1005
set trunk 2/23 desirable dot1q 1-1005
set trunk 2/24 desirable dot1q 1-1005
set port channel 2/21-24 mode desirable silent
!
#module 3 : 12-port 100BaseFX MM Ethernet
!
#module 4 : 3-port 1000BaseX Ethernet
!
#module 5 empty
!
#module 15 empty
!
#module 16 empty
end
5505-3> (enable)

```

## show test 0

This command displays the results of diagnostic tests for the Supervisor and all modules. The **show test** command only displays the results of diagnostics on the last bootup of the switch or a reset of the Supervisor or modules.

If you are running version 5.4.1 or later, check the status of the diaglevel with the **show test diaglevel** command. A status of "complete," which tests the Enhanced Address Recognition Logic (EARL) cards, port loopback/bundle/inline rewrite, and DRAM/NVRAM/External cache is recommended. This test takes a minute as compared to 30 seconds for a test level of "minimal," however it is more thorough. Results are output with a "." for Pass or "F" for Fail, indicating a hardware failure.

Display and/or change the diaglevel as follows:

```

5505-3> (enable) show test diaglevel
Diagnostic mode at last bootup : minimal
Diagnostic mode at next reset  : minimal

5505-3> (enable) set test diaglevel ?
  complete                Complete diagnostics
  minimal                 Minimal diagnostics
  bypass                  Bypass diagnostics

5505-3> (enable) set test diaglevel complete

```

Diagnostic level set to complete.

```
5505-3> (enable) show test diaglevel
Diagnostic mode at last bootup : minimal
Diagnostic mode at next reset  : complete
```

Below is an example of the **show test 0** command. Refer to the [Command Reference](#) for more information about the fields displayed in the output of **show test 0**.

```
5505-3> (enable) show test 0
Diagnostic mode at next reset: complete
```

System Diagnostic Status : (. = Pass, F = Fail, N = N/A)

Module 1

EARL III Status :

```
DisableIndexLearnTest: .
DontLearnTest: .
DisableNewLearnTest: .
ConditionalLearnTest: .
MonitorColorFloodTest: .
EarlTrapTest: .
StaticMacAndTypeTest: .
BadDvlanTest: .
BadBpduTest: .
IndexMatchTest: .
ProtocolTypeTest: .
IcmpTest: .
SourceMissTest: .
SourceModifiedTest: .
ArpaToArpaShortcutTest: .
ArpaToSnapShortcutTest: .
SnapToArpaShortcutTest: .
SnapToSnapShortcutTest: .
SoftwareShortcutTest: .
MulticastExpansionTest: .
DontShortcutTest: .
ShortcutTableFullTest: .
ArpaToArpaShortcutTest(IPX): .
ArpaToSnapShortcutTest(IPX): .
ArpaToSapShortcutTest(IPX): .
ArpaToRawShortcutTest(IPX): .
SnapToArpaShortcutTest(IPX): .
SnapToSnapShortcutTest(IPX): .
SnapToSapShortcutTest(IPX): .
SnapToRawShortcutTest(IPX): .
SapToArpaShortcutTest(IPX): .
SapToSnapShortcutTest(IPX): .
SapToSapShortcutTest(IPX): .
SapToRawShortcutTest(IPX): .
RawToArpaShortcutTest(IPX): .
RawToSnapShortcutTest(IPX): .
RawToSapShortcutTest(IPX): .
RawToRawShortcutTest(IPX): .
SoftwareShortcutTest(IPX): .
DontShortcutTest(IPX): .
ShortcutTableFullTest(IPX): .
```

```
Module 1 : 2-port 1000BaseX Supervisor IIIG
Loopback Status [Reported by Module 1] :
```

```
Ports  1   2   9
-----
      .   .   .
```

Module 2 : 24-port 10/100BaseTX Ethernet

Loopback Status [Reported by Module 1] :

```
Ports 1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
-----
      .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
```

Channel Status :

```
Ports 1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
-----
      .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
```

InlineRewrite Status :

```
Ports 1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
-----
      .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
```

...

5505-3> (enable)

## show system

This command displays system information. The status fields relate to the various LEDs for system components on the Supervisor front panel. One common customer issue occurs when the System LED shows faulty after a second power supply is added but not powered up. In this case, PS2-Status and Sys-Status both say faulty, since the switch senses a power supply is installed, but not active. Because this could also mean that the second power supply has actually failed, an on-site inspection is required. Take note of the uptime (how long the switch has been up and running). This is useful information to know in the event of a switch crash.

Below is an example of the **show system** command. Refer to the [Command Reference](#) for more information on the [show system](#) command.

```
5505-3> (enable) show system
```

```
PS1-Status PS2-Status
```

```
-----
```

```
ok          none
```

```
Fan-Status Temp-Alarm Sys-Status Uptime d,h:m:s Logout
```

```
-----
```

```
ok          off          ok          0,00:52:20    20 min
```

```
PS1-Type    PS2-Type
```

```
-----
```

```
WS-C5008B   none
```

```
Modem      Baud   Traffic Peak Peak-Time
```

```
-----
```

```
disable   9600   0%       0% Sun Jan 6 2002, 16:05:33
```

```
System Name
```

```
System Location
```

```
System Contact
```

```
CC
```

```
-----
```

```
5505-3
```

```
5505-3> (enable)
```

## show traffic

(Catalyst 5500/Supervisor III only)

This command displays the Traffic and Peak information for each switching bus.

Below is an example of the **show traffic** command. Refer to the [Command Reference](#) for more information on the [show traffic](#) command.

```
5505-4> (enable) show traffic
Threshold: 100%
Switching-Bus Traffic Peak Peak-Time
-----
A                0%        4% Mon Dec 31 2001, 9:05:33
B                0%        0% Sun Jan 6 2002, 16:05:33
C                0%        0% Sun Jan 6 2002, 16:05:33
5505-4> (enable)
```

## show time

This command displays the day of the week, month, and year, as well as the time in 24-hour format. This output verifies the operation of the system clock and serves as a reminder that system log messages carry a timestamp. Make sure to set the time accurately or sync the switch to Network Time Protocol (NTP) (refer to [Catalyst 5000 Series Switches Configuring NTP](#)).

Below is an example of the **show time** command. Refer to the [Command Reference](#) for more information on the [show time](#) command.

```
5505-3> (enable) show time Sun Jan 6 2002, 17:08:54
```

## show logging buffer 1023

This command displays system messages from the internal buffer. The **show logging buffer** command alone gives you only the last 20 system messages, while adding the 1023 keyword gives you the last 1023 messages. Many of these messages are strictly informational. Others may contain clues as to the nature of the problem, whether it is a hardware problem, a switch crash, or a software problem.

For example, these are types of informational messages:

```
2002 Jan 06 16:07:04 %DTP-5-TRUNKPORTON:Port 2/23 has become dot1q trunk
2002 Jan 06 16:07:08 %PAGP-5-PORTTOSTP:Port 2/21 joined bridge port 2/21-24
```

A message such as the following indicates a hardware or software incompatibility:

```
Module 6 is not supported (46)
```

A message similar to this indicates a hardware failure:

```
EARL-3-LTL: Failure to set LTL for module [dec]
```

Refer to the [Catalyst 5000 Family Switches Message and Recovery Procedures](#) guide for your version of Catalyst 5000 software. Also use the [Error Message Decoder](#) [↗](#) ( [registered](#) customers only ), [Bug Toolkit](#) [↗](#) ( [registered](#) customers only ), and other resources found in the [Online Troubleshooting Tools](#) section of this document, as well as the [Common CatOS Error Messages on Catalyst 5000/5500 Series Switches](#).

Below is an example of the **show logging buffer 1023** command. Refer to the [Command Reference](#) for more information on the [show logging buffer 1023](#) command.

```
5505-3 (enable) show logging buffer 1023
2002 Jan 10 21:14:47 %MLS-5-MLSENABLED:IP Multilayer switching is enabled
2002 Jan 10 21:14:47 %MLS-5-NDEDISABLED:Netflow Data Export disabled
2002 Jan 10 21:14:49 %SYS-5-MOD_OK:Module 1 is online
2002 Jan 10 21:15:01 %SYS-5-MOD_OK:Module 4 is online
2002 Jan 10 21:15:06 %SYS-5-MOD_OK:Module 3 is online
2002 Jan 10 21:15:12 %SYS-5-MOD_OK:Module 5 is online
2002 Jan 10 21:15:14 %SYS-5-MOD_OK:Module 2 is online
```

```

2002 Jan 10 21:15:44 %PAGP-5-PORTTOSTP:Port 2/9 joined bridge port 2/9
2002 Jan 10 21:16:14 %SYS-5-MOD_OK:Module 5 is online
2002 Jan 13 03:24:29 %SYS-5-PKTTESTSTART:Packet buffer test started
2002 Jan 14 07:11:04 %SYS-5-PKTTESTDONE:Packet buffer test done. Use 'show test'
to see test results
2002 Jan 17 03:23:07 %PAGP-5-PORTFROMSTP:Port 2/9 left bridge port 2/9
2002 Jan 18 20:15:48 %SYS-5-MOD_OK:Module 2 is online
2002 Jan 18 20:16:07 %PAGP-5-PORTTOSTP:Port 2/11 joined bridge port 2/11
2002 Jan 19 14:18:46 %PAGP-5-PORTFROMSTP:Port 2/11 left bridge port 2/11
2002 Jan 19 14:19:03 %PAGP-5-PORTTOSTP:Port 2/11 joined bridge port 2/11
2002 Jan 19 14:59:05 %PAGP-5-PORTFROMSTP:Port 2/11 left bridge port 2/11
2002 Jan 19 14:59:23 %PAGP-5-PORTTOSTP:Port 2/11 joined bridge port 2/11
2002 Jan 20 03:15:44 %SYS-5-PKTTESTSTART:Packet buffer test started

```

## show process cpu

This command displays information about CPU usage.

Below is an example of the **show process cpu** command. Refer to the [Command Reference](#) for more information on the [show proc](#) command.

```
5505-3> (enable) show process cpu
```

```

CPU utilization for five seconds:  2.84%
                                one minute:  5.31%
                                five minutes:  3.04%

```

PID	Runtime(ms)	Invoked	uSecs	5Sec	1Min	5Min	TTY	Process
1	0	0	0	97.16%	94.69%	96.96%	-2	Kernel and Idle
2	0	1	0	0.00%	0.00%	0.00%	-2	runTimeDiag
3	3454	5650	559000	0.00%	0.00%	0.00%	-2	SynDiags
4	39646	57072	107000	0.28%	0.00%	0.00%	-2	SynConfig
5	2806	13872	2000	0.04%	0.00%	0.00%	-2	Statuspoll
6	2981	2779	3000	0.02%	0.00%	0.00%	-2	StatusPoll 5s
7	4297	2293	1000	0.02%	0.00%	0.00%	-2	SWPoll164bCnt
8	176276	616490	3000	0.44%	0.00%	0.00%	-2	SL_TASK
9	5642	27605	111000	0.04%	0.00%	0.00%	-2	RedundantTask
12	16	2	16000	0.00%	0.00%	0.00%	-2	SecurityRx
13	7316	15121	19000	0.00%	0.00%	0.00%	-2	Earl
14	350	1371	1000	0.00%	0.00%	0.00%	-2	ProtocolFilter
15	0	1	0	0.00%	0.00%	0.00%	-2	telnetd
16	0	1	0	0.00%	0.00%	0.00%	-2	llcSSTPFlood
17	3519	2550	4000	0.00%	0.00%	0.00%	-2	cdpd
18	133937	13847	25000	0.92%	0.00%	0.00%	-2	cdpdtimer
19	14810	13925	4000	0.10%	0.00%	0.00%	-2	SptTimer
20	42838	24066	7000	0.36%	0.00%	0.00%	-2	SptBpduRx
21	12702	13846	3000	0.10%	0.00%	0.00%	-2	SptBpduTx
22	4789	13846	1000	0.02%	0.00%	0.00%	-2	VtpTimer
23	355	136	47000	0.00%	0.00%	0.00%	-2	VtpRx
24	36435	134949	3000	0.06%	0.00%	0.00%	-2	ProtocolTimer
25	1	1	1000	0.00%	0.00%	0.00%	-2	RMON AlarmTimer
27	8054	4757	18000	0.00%	0.00%	0.00%	-2	DTP_Rx
28	3865	2295	61000	0.00%	0.00%	0.00%	-2	EthChnlRx
29	296	109	41000	0.00%	0.00%	0.00%	-2	EthChnlConfig
30	10549	136903	2000	0.04%	0.00%	0.00%	-2	sptHelper
31	0	1	0	0.00%	0.00%	0.00%	-2	sptTraps
32	322	1387	1000	0.00%	0.00%	0.00%	-2	ciscoRmonTimer
33	245	1387	1000	0.00%	0.00%	0.00%	-2	ciscoUsrHistory
34	1	5	1000	0.00%	0.00%	0.00%	-2	SnmpTraps

```

35 1 1 1000 0.00% 0.00% 0.00% -2 Acct Send Bkg
37 1241 36 76000 0.00% 0.00% 0.00% -2 SysLogTask
38 12 1 12000 0.00% 0.00% 0.00% -2 Netflow
39 23816 8666 4000 0.14% 0.00% 0.00% -2 L3Aging
40 3558 13651 1000 0.00% 0.00% 0.00% -2 pinggateA
85 24912 3245 384000 0.26% 3.69% 1.96% 0 Console
86 1021 1 1021000 0.00% 0.00% 0.00% -2 snmpdm
5505-3> (enable)

```

**show mbuf all**

(hidden command)

**show biga**

(Supervisor I and II hidden command)

**show inband**

(Supervisor III only hidden command)

**show scp stat**

(hidden command)

**ps -c**

(hidden command)

**show port capabilities**

This command displays the capabilities of the modules and ports in a switch. This command is a quick way to display hardware and software features without having to search the Release Notes for the trunk encapsulation types supported and the port EtherChannel capabilities.

Below is an example of the **show port capabilities 2/4** command. Refer to the [Command Reference](#) for more information on the [show port capabilities](#) command.

```

5505-3> (enable) show port capabilities 2/4
Model WS-X5225R
Port 2/4
Type 10/100BaseTX
Speed auto,10,100
Duplex half,full
Trunk encap type 802.1Q,ISL
Trunk mode on,off,desirable,auto,nonegotiate
Channel 2/3-4,2/1-4
Broadcast suppression percentage(0-100)
Flow control receive-(off,on),send-(off,on)
Security yes
Membership static,dynamic
Fast start yes
QoS scheduling rx-(none),tx-(none)
CoS rewrite yes
ToS rewrite IP-Precedence
Rewrite yes
UDLD yes
AuxiliaryVlan 1..1000,untagged,dot1p,none
SPAN source,destination
5505-3> (enable)

```

**show port <mod/port>**

This command displays port status and counters. If the status is anything other than "connected," refer to the troubleshooting steps under [Port Status Shows Not Connected, Faulty, Disabled, Inactive, or errDisable](#). If the port counters show incrementing errors, refer to the troubleshooting steps under [Seeing Errors on the Ports](#).

Below is an example of the **show port mod/port** command. Refer to the [Command Reference](#) for more information on the [show port](#) command.

```
5505-3 (enable) show port 2/11
```

```
Port      Name      Status      Vlan      Level      Duplex      Speed      Type
-----
2/11      connected 30          normal    a-half     a-10        10/100BaseTX

Port AuxiliaryVlan AuxVlan-Status
-----
2/11      none      none

Port Security Violation Shutdown-Time Age-Time Max-Addr Trap IfIndex
-----
2/11 disabled shutdown 0 0 1 disabled 35

Port Num-Addr Secure-Src-Addr Age-Left Last-Src-Addr Shutdown/Time-Left
-----
2/11 0 - - - - -

Port Broadcast-Limit Broadcast-Drop
-----
2/11 - 0

Port Send FlowControl Receive FlowControl RxPause TxPause Unsupported
      admin oper admin oper opcodes
-----
2/11 off off on on 0 0 0

Port Status Channel Admin Ch
      Status Mode Group Id
-----
2/11 connected autosilent 16 0

Port Align-Err FCS-Err Xmit-Err Rcv-Err UnderSize
-----
2/11 0 0 0 0 0

Port Single-Col Multi-Coll Late-Coll Excess-Col Carri-Sen Runts Giants
-----
2/11 0 0 0 0 0 0 0

Last-Time-Cleared
-----
Thu Jan 10 2002, 21:13:58
```

```
5505-3 (enable)
```

**show mac <mod/port>**

This command displays the MAC counters and is useful in determining whether counters are incrementing as expected. This

command also shows the total unicast, multicast, and broadcast frames received on a port. The In-Lost/Out-Lost counters indicate that port buffers are overflowing. Refer to [Seeing Errors on the Ports](#) for troubleshooting steps.

Below is an example of the **show mac mod/port** command. Refer to the [Command Reference](#) for more information on the [show mac](#) command.

```
5505-3 (enable) show mac 2/11

Port Rcv-Unicast Rcv-Multicast Rcv-Broadcast
-----
2/11 286 55 0

Port Xmit-Unicast Xmit-Multicast Xmit-Broadcast
-----
2/11 0 1713 0

Port Rcv-Octet Xmit-Octet
-----
2/11 33409 126802

MAC Dely-Excd MTU-Excd In-Discard Lrn-Discrd In-Lost Out-Lost
-----
2/11 0 0 0 0 0 0

Last-Time-Cleared
-----
Thu Jan 10 2002, 21:13:58
```

### **show counters <mod/port>**

This command displays hardware counters for the port and varies depending on the type of port. In the WS-X5225R 10/100 card below, look at counter 5, badTxCRC = 0. If this counter incremented, it indicates a hardware failure. Refer to [Seeing Errors on the Ports](#) for troubleshooting steps.

Below is an example of the **show counters mod/port** command. Refer to the [Command Reference](#) for more information on the [show counters](#) command and a description of these counters.

```
5505-3 (enable) show counters 2/11
64 bit counters
0  ifHCInOctets           =          58546
1  ifHCInUcastPkts       =           505
2  ifHCInMulticastPkts   =            95
3  ifHCInBroadcastPkts   =             0
4  ifHCOctets            =         224006
5  ifHCOUcastPkts        =             0
6  ifHCOMulticastPkts    =           3030
7  ifHCOBroadcastPkts    =             0

32 bit counters
0  etherStatsFragments   =             0
1  dot3StatsInternalMacRxErrs =           0
2  etherStatsJabbers     =             0
3  baseX100StatsSymCodeViolates =           0
4  dot1BasePortDelayExcdAborts =           0
5  badTxCRC              =             0
6  dot3StatsLateCollisions =           0
7  dot3StatsExcessiveCollisions =           0
8  dot3StatsSQETestErrors =           0
9  dot3StatsCarrierSenseErrors =           0
```

10	dmaOverflow	=	0
11	linkFail	=	0
12	txJabber	=	0
13	dmaTxLengthErrors	=	0
14	dmaRxLengthErrors	=	0
15	dmaXferLengthErrors	=	0
16	dmaMonitorPkts	=	0
17	dot1dTpPortInFrames	=	600
18	dot3StatsFCSErrors	=	0
19	dot1dTpPortOutFrames	=	3030
20	dot3StatsSingleColFrames	=	0
21	dot3StatsMultiColFrames	=	0
22	dot3StatsInternalMacTxErrs	=	0
23	dot3StatsDeferredTx	=	0
24	dot3StatsBadPreamble	=	0
25	dot3StatsAbortLateCollision	=	0
26	dot3StatsABortExcessiveLen	=	0
27	dot1dTpPortInDiscards	=	0
28	rxRuntErrors	=	0
29	dmaMacMismatch	=	0
30	etherStatsRxPkts256to511	=	87
31	etherStatsRxPkts512to1023	=	0
32	etherStatsRxPkts1024to1518	=	0
33	etherStatsOversizePkts	=	0
34	dot3StatsAlignmentErrors	=	0
35	etherStatsRxMulticastPkts	=	95
36	etherStatsRxBroadcastPkts	=	0
37	etherStatsTxPkts64	=	2690
38	etherStatsTxPkts65to127	=	167
39	etherStatsTxPkts128to255	=	173
40	etherStatsTxPkts256to511	=	0
41	etherStatsTxPkts512to1023	=	0
42	etherStatsTxPkts1024to1518	=	0
43	dmaLastChance	=	0
44	etherStatsRxPkts65to127	=	8
45	etherStatsRxPkts128to255	=	0
46	etherStatsTxBroadcastPkts	=	0
47	etherStatsTxMulticastPkts	=	3030
48	etherStatsRxOctets	=	58546
49	etherStatsTxOctets	=	224006
50	dmaTxFull	=	0
51	dmaRetry	=	0
52	dmaLevel2Request	=	0
53	etherStatsUndersizePkts	=	0
54	dot3StatsTotalCollisions	=	0
55	etherStatsRxPkts64	=	505
56	etherStatsRxUnicastPkts	=	505
57	etherStatsRxPkts1518to1548	=	0
58	etherStatsTxPkts1518to1548	=	0
59	txDrop	=	0
60	txSuppressDrop	=	0
61	dmaTxFlowControlFrames	=	0
62	dmaRxFlowControlFramesGood	=	0
63	dmaRxFlowControlFramesBad	=	0
64	swBusCRCErrorDrop	=	0
65	swBusResultEvent	=	0
66	swBusSBDEvent	=	0
67	RxInnerCRCErrorDrop	=	0

```

68 RxLengthErrorDrop           =           0
69 RxCBLDrop                    =           5
70 TxCBLDrop                     =           1
71 RxBPDUThresholdDrop         =           0
72 TxBPDUThresholdDrop         =           0
73 RxQueueFullDrop             =           0
74 RxISL1QEncapFrames          =           0
75 TxISL1QEncapFrames          =           0
76 RxWrongEncapDrop            =           0
5505-3 (enable)

```

## clear counters

This command is used to reset the **show port**, **show mac**, and **show counter** command statistics and is also useful for determining if errors are continuing to increment or have been resolved.

Refer to the [Command Reference](#) for more information on the [clear counters](#) command.

## show cdp neighbors detail

This command shows details about remote Cisco devices using the Cisco Discovery Protocol. This is one quick way to get the IP address and interface of a Cisco device on any given switchport.

Below is an example of the **show cdp neighbors detail** command. Refer to the [Command Reference](#) for more information on the [show cdp neighbors detail](#) command.

```

5505-3 (enable) show cdp neighbor detail
Port (Our Port): 2/11
Device-ID: 2520-2
Device Addresses:
  IP Address: 10.1.1.16
Holdtime: 160 sec
Capabilities: ROUTER
Version:
  Cisco Internetwork Operating System Software
  IOS (tm) 2500 Software (C2500-D-L), Version 12.0(9), RELEASE SOFTWARE (fc1)
  Copyright (c) 1986-2000 by cisco Systems, Inc.
  Compiled Mon 24-Jan-00 22:06 by bettyl
Platform: cisco 2520
Port-ID (Port on Neighbors's Device): Ethernet0
VTP Management Domain: unknown
Native VLAN: unknown
Duplex: unknown
5505-3 (enable)

```

## show spantree summary

This command provides a summary of spantree information useful in troubleshooting link flaps and other network issues masquerading as hardware issues.

Below is an example of the **show spantree summary** command. Refer to the [Command Reference](#) for more information on the [show spantree summary](#) and [show spantree](#) commands.

```

5505-3>(enable) show spantree summary
Root switch for vlans: none.
Portfast bpdu-guard disabled for bridge.
Uplinkfast disabled for bridge.
Backbonefast disabled for bridge.

Summary of connected spanning tree ports by vlan

```

Vlan	Blocking	Listening	Learning	Forwarding	STP Active
1	2	0	0	6	8
2	0	0	0	4	4
3	0	0	0	4	4
4	0	0	0	4	4

	Blocking	Listening	Learning	Forwarding	STP Active
Total	2	0	0	18	20

**show log**

This command displays the error log for the system or a specific module. If there has been a switch reset or crash, the stack information necessary to determine the cause of the switch crash is displayed here.

Below is an example of the **show log** command. Refer to the [Command Reference](#) for more information on the [show log](#) command.

```
5505-3 (enable) show log
```

## Network Management Processor (ACTIVE NMP) Log:

```
Reset count: 92
```

```
Re-boot History: Jan 10 2002 21:13:23 3, Jan 06 2002 16:04:58 3
                 Jan 06 2002 10:39:53 3, Jan 06 2002 10:04:08 3
                 Jan 05 2002 19:46:38 3, Jan 05 2002 16:58:35 3
                 Jan 05 2002 16:00:19 3, Jan 03 2002 15:27:04 3
                 Dec 30 2001 18:39:16 3, Dec 30 2001 18:26:30 3
```

```
Bootrom Checksum Failures: 0   UART Failures: 0
Flash Checksum Failures: 2   Flash Program Failures: 0
Power Supply 1 Failures: 13  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
```

```
Loaded NMP version: 5.5(12)
```

```
Reload same NMP version count: 4
```

```
Last software reset by user: 1/10/2002,21:13:16
```

## Heap Memory Log:

```
Corrupted Block = none
```

## NVRAM log:

```
01. 4/5/2001,01:05:20: Earl2:Banff (2) LST status h=0 t=0
02. 4/5/2001,01:05:20: Earl2:Banff (3) LST status h=0 t=0
03. 4/5/2001,07:07:09: Earl2:Banff (1) LST status h=0 t=0
04. 4/5/2001,07:07:09: Earl2:Banff (2) LST status h=0 t=0
05. 4/5/2001,07:07:09: Earl2:Banff (3) LST status h=0 t=0
```

```
snip-----
```

```
37. 1/5/2002,19:47:05: convert_post_SAC_CiscoMIB:Nvram block 44 unconvertible: 2
(0)
```

```
38. 1/5/2002,19:47:05: convert_post_SAC_CiscoMIB:Nvram block 62 unconvertible: 4
(3)
```

```
39. 1/5/2002,19:47:21: supVersion:Nmp version 5.5(12)
```

## Module 2 Log:

```
Reset Count: 6
Reset History: Fri Jan 18 2002, 20:15:37
               Thu Jan 10 2002, 21:15:08
               Sun Jan 6 2002, 16:06:41
               Sun Jan 6 2002, 10:41:37
```

## Module 3 Log:

```
Reset Count: 5
Reset History: Thu Jan 10 2002, 21:15:03
               Sun Jan 6 2002, 16:06:37
               Sun Jan 6 2002, 10:41:33
               Sat Jan 5 2002, 19:48:18
```

## Module 4 Log:

```
Reset Count: 7
Reset History: Thu Jan 10 2002, 21:15:00
               Sun Jan 6 2002, 16:06:35
               Sun Jan 6 2002, 10:41:31
               Sat Jan 5 2002, 19:48:15
```

## Module 5 Log:

```
Reset Count: 4
Reset History: Thu Jan 10 2002, 21:16:14
               Thu Jan 10 2002, 21:15:09
               Wed Jan 9 2002, 11:01:25
               Wed Jan 9 2002, 11:00:19
```

**show tech-support**

This command continuously displays output for all of the commands listed below, meaning the output continues to scroll until complete. You can end the display by pressing **Ctrl-C**.

**show version, show flash, show microcode, show system, show module, show port, show mac, show trunk, show vlan, show vtp domain, show spantree active, show spantree summary, show test, show arp, show ip route, show cdp neighbor detail, show netstat stats, show memory buffers, show out-of-band stats, show inband stats, show cam static, show cam count dynamic, show cam system, show config, show log, show process, show process memory, show process cpu, ps, ps -c**

Refer to the [Command Reference](#) for more information on the [show tech-support](#) command.

**Symptom Description Summary**

[Connectivity  
Problems](#)

[System,  
Supervisor, and  
Module Problems](#)

[Supervisor  
Crashes](#)

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>● <a href="#">Unable to Make a Console Connection to the Supervisor</a></li> <li>● <a href="#">Unable to Make a Telnet Connection to the Supervisor</a></li> <li>● <a href="#">Unable to Connect to a Remote Host, Router, or Another Switch</a></li> <li>● <a href="#">Seeing Errors on the Ports</a></li> <li>● <a href="#">Experiencing Poor Performance</a></li> <li>● <a href="#">Port Status Shows Not Connected, Faulty, Disabled, Inactive, or errDisable</a></li> <li>● <a href="#">Receiving Continuous %PAGP-5 Left/Joined Bridge Messages</a></li> <li>● <a href="#">Unable to Autonegotiate or Speed/Duplex Mismatch</a></li> </ul> | <ul style="list-style-type: none"> <li>● <a href="#">Experiencing Software Upgrade Problems</a></li> <li>● <a href="#">Supervisor Is Not Online or Is Stuck in Boot or ROMmon Mode</a></li> <li>● <a href="#">System Component LEDs Are Orange or Red or Supervisor Is Not Online</a></li> <li>● <a href="#">Switching Module Is Not Recognized</a></li> <li>● <a href="#">Module Status Is Showing Faulty or Not "ok"</a></li> <li>● <a href="#">Experiencing Poor Performance</a></li> <li>● <a href="#">Receiving System Error Messages</a></li> </ul> | <ul style="list-style-type: none"> <li>● <a href="#">Receiving System Error Messages</a></li> <li>● <a href="#">Switch Has Reset, Is Continually Resetting, or Has Crashed</a></li> </ul> |
|---|---|---|

## Hardware Command Summary

<u>Connectivity Problems</u>	<u>System, Supervisor, and Module Problems</u>	<u>Supervisor Crashes</u>
<ul style="list-style-type: none"> <li>● <a href="#"><u>show interface</u></a></li> <li>● <a href="#"><u>show ip route</u></a></li> <li>● <a href="#"><u>show version</u></a></li> <li>● <a href="#"><u>show config</u></a></li> <li>● <a href="#"><u>show module</u></a></li> <li>● <a href="#"><u>show system</u></a></li> <li>● <a href="#"><u>show port capabilities</u></a></li> <li>● <a href="#"><u>show port mod/port</u></a></li> <li>● <a href="#"><u>show mac mod/port</u></a></li> <li>● <a href="#"><u>show counters mod/port</u></a></li> <li>● <a href="#"><u>clear counters</u></a></li> <li>● <a href="#"><u>show cdp neighbors detail</u></a></li> <li>● <a href="#"><u>show spantree summary</u></a></li> </ul>	<ul style="list-style-type: none"> <li>● <a href="#"><u>show version</u></a></li> <li>● <a href="#"><u>show module</u></a></li> <li>● <a href="#"><u>show flash</u></a></li> <li>● <a href="#"><u>show config</u></a></li> <li>● <a href="#"><u>show test 0</u></a></li> <li>● <a href="#"><u>show system</u></a></li> <li>● <a href="#"><u>show traffic</u></a> (5500/Sup III)</li> <li>● <a href="#"><u>show time</u></a></li> <li>● <a href="#"><u>show logging buffer 1023</u></a></li> <li>● <a href="#"><u>show process cpu</u></a></li> <li>● <a href="#"><u>show mbuf all</u></a> (hidden)</li> <li>● <a href="#"><u>show biga</u></a> (Sup I &amp; II) (hidden)</li> <li>● <a href="#"><u>sh scp stat</u></a> (hidden)</li> </ul>	<ul style="list-style-type: none"> <li>● <a href="#"><u>show log</u></a></li> <li>● <a href="#"><u>show logging buffer 1023</u></a></li> <li>● <a href="#"><u>show version</u></a></li> <li>● <a href="#"><u>show test 0</u></a></li> <li>● <a href="#"><u>show system</u></a></li> <li>● <a href="#"><u>show biga</u></a> (SupI &amp; II) (hidden)</li> <li>● <a href="#"><u>show mbuf all</u></a> (hidden)</li> <li>● <a href="#"><u>show scp stat</u></a> (hidden)</li> <li>● <a href="#"><u>ps -c</u></a> (multiple times) (hidden)</li> <li>● <a href="#"><u>show tech-support</u></a></li> </ul>

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## Related Information

- [Preparing to Troubleshoot Hardware for Catalyst 5500/5000/2926G/2926 Series Switches](#)
  - [LAN Product Support](#)
  - [LAN Switching Technical Support](#)
  - [Technical Support - Cisco Systems](#)
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