

# Hardware Troubleshooting for AS5350 and AS5400 Series Routers

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## Introduction

Valuable time and resources are often wasted replacing hardware that actually functions properly. This document helps troubleshoot potential hardware issues with Cisco AS5350 and AS5400 Series Routers, and can help you identify which component may be causing a hardware failure, depending on the type of error that the router is experiencing.

## Prerequisites

## Requirements

Readers of this document should be knowledgeable of these documents:

- [Cisco AS5350 Universal Gateway Chassis Installation Guide](#)
- [Cisco AS5400 Universal Gateway Chassis Installation Guide](#)
- [Cisco AS5350 and AS5400 Universal Gateway Card Installation Guide](#)
- [Troubleshooting Router Crashes](#)
- [AS5300 Series Field Notices](#)
- [AS5400 Series Field Notices](#)

## Components Used

The information in this document is not specific to one Cisco IOS® software release, but applies to all Cisco IOS software versions that run on Cisco AS5350 and 5400 Series Routers.

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

## Conventions

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

## Hardware-Software Compatibility and Memory Requirements

Whenever you install a new card, module, or Cisco IOS software image, it is important to verify that the access server has enough memory, and that the hardware and software are compatible with the features you wish to use.

Perform the following recommended steps to check for hardware-software compatibility and memory requirements:

1. Use the [Software Advisor tool](#) ( [registered](#) customers only) to choose software for your network device.
2. Use the [Download Software Area](#) ( [registered](#) customers only) to check the minimum amount of memory (RAM and Flash) required by the Cisco IOS software, and download the Cisco IOS software image. To determine the amount of memory (RAM and Flash) installed on your router, refer to the *Memory Requirements* section of [How to Choose a Cisco IOS Software Release](#).

### Tips:

- If you want to keep the same features as the version that is currently running on your router,

but do not know which feature set you are using, issue the **show version** command on your router and paste it into the [Output Interpreter tool](#) ([registered](#) customers only) to find out. It is important to check for feature support, especially if you plan to use recent software features.

- If you need to upgrade the Cisco IOS software image to a new version or feature set, refer to [How to Choose a Cisco IOS Software Release](#) for more information.
3. If you determine that a Cisco IOS software upgrade is required, follow the [Software Installation and Upgrade Procedure](#) for the Cisco AS5350 and AS5400.



## Identifying the Issue

Since the problem encountered may be caused by many factors such as hardware, software, cables, telephone company, configuration, and so on, it is important that you isolate and verify each option. This section describes some commonly seen symptoms and the appropriate resolution procedure.

### Capturing Information

In order to determine what is causing the issue, the first step is to capture as much information about the problem as possible. The following information is essential in determining the cause of the problem:

- Console logs (for more information, refer to [Applying Correct Terminal Emulator Settings for Console Connections](#)).
- Syslog information— If the router is set up to send logs to a syslog server, you may be able to obtain information on what happened. For details, refer to [Resource Manager Essentials and Syslog Analysis: How-To](#).
- **show technical-support** command output—The **show technical-support** command is a compilation of many different commands including **show version**, **show running-config**, and **show stacks**. Technical Support engineers usually ask for this information to troubleshoot hardware issues. It is important to collect the **show technical-support** information before doing a reload or power cycle as these actions can cause all information about the problem to be lost.
- Complete the bootup sequence if the router experiences boot errors.

If you have the output of a **show** command from your Cisco device (including **show technical-support**), you can use [Output Interpreter](#)  to display potential issues and fixes. To use [Output Interpreter](#) , you must be a [registered](#) customer, be logged in, and have JavaScript enabled.

### Router Reboot or Reload

The router can reboot or reload for various reasons. When the router reboots, it returns to a normal state (meaning that it is passing traffic and allows you access into the router); however, it may reboot again. The table below provides some common reasons for router reboots, along with troubleshooting tips. If you are experiencing one of these issues, click on the link and it takes you to the troubleshooting steps for that particular issue. To check why the router rebooted, issue the **show version** command and look at the output.



Reason for Reboot	Steps to Take
Reload due to a router crash	<p>A "system crash" refers to a situation where the system has detected an unrecoverable error and has restarted itself. A crash can be caused by software problems, hardware problems, or both. This section deals with hardware-caused crashes and crashes that are software-related, but may be mistaken for hardware problems.</p> <p><b>IMPORTANT:</b> If the router is reloaded after the crash (for example, through a power cycle or the <b>reload</b> command), important information about the crash will be lost, so try to collect <b>show technical-support</b> and <b>show log</b> command output, as well as the crashinfo file (if possible) before reloading the router.</p> <p>For more information regarding this issue, refer to <a href="#">Troubleshooting Router Crashes</a>.</p>
Reload due to a bus error crash	<p>The system encounters a bus error when the processor tries to access a memory location that either does not exist (a software error) or does not respond properly (a hardware problem). A bus error can be identified by looking at the output of the <b>show version</b> command provided by the router (if not power-cycled or manually reloaded).</p> <p>Here are two examples of bus error crashes:</p> <pre>Router uptime is 2 days, 21 hours, 30 minutes System restarted by bus error at PC 0x30EE546, address 0xBB4C4 System image file is "flash:igs-j-1.111-24.bin", booted via flash .....</pre> <p>At the console prompt, the this error message might also be seen during a bus error:</p> <pre>*** System received a Bus Error exception *** signal= 0xa, code= 0x8, context= 0x608c3a50 PC = 0x60368518, Cause = 0x20, Status Reg = 0x34008002</pre> <p>For more information regarding this issue, refer to <a href="#">Troubleshooting Bus Error Crashes</a>.</p>
<a href="#">Reload due to a parity error</a>	<p>At the first occurrence, simply monitor the router. At the second occurrence, replace the corresponding hardware as described in <a href="#">Processor Memory Parity Errors</a>.</p>
<a href="#">Reload due to a bus error</a>	<p>Check the memory map of the <b>show region</b> command versus the address of the bus error. If the address is valid, this is most likely a hardware issue.</p> <p>If the address is invalid, there is a problem with the version of Cisco IOS Software that is running. Try the <a href="#">Output Interpreter</a> (<a href="#">registered</a> customers only) tool to display potential issues and fixes. For more information regarding this issue, refer to <a href="#">Troubleshooting Bus Error Crashes</a>.</p>
<a href="#">Reload due to</a>	<p>This is almost always a software problem. Upgrade to the latest Cisco IOS</p>

<a href="#">a software-forced crash</a>	Software release in your release train.
<a href="#">Reload due to a SegV error</a>	Segmentation violation (SegV) errors are always software-related problems. Upgrade to the latest Cisco IOS Software release in your release train, or use the <a href="#">Output Interpreter</a> ( <a href="#">registered</a> customers only) tool to display potential issues and fixes. For more information regarding this issue, you can also refer to <a href="#">SegV Exceptions</a> .
<a href="#">Reload due to watchdog timer expired</a>	Most of the time, these messages indicate a hardware issue. Replacing the CPU board usually solves the problem, unless other elements (for example, if a new module has been inserted, and it starts reloading) point to a specific piece of hardware. For more information on how to troubleshoot this problem, refer to <a href="#">Troubleshooting Watchdog Timeouts</a> .
<a href="#">What Causes a Router To Be Restarted By "Abort" or "Trace Trap"?</a>	<p>If you do not power-cycle or manually reload the router, the <b>show version</b> output displays this:</p> <pre>Router uptime is 1 minute System restarted by abort at PC 0x802737BC System image file is "flash:c2600-i-mz.120-4.T"</pre> <p>or</p> <pre>Router uptime is 2 minutes System restarted by trace trap at PC 0x3171310 System image file is "flash:c2500-jos56i-1.120-9.bin"</pre>
<a href="#">Why Does My Router Lose Its Configuration During Reboot?</a>	In most cases, this is the result of an improperly set configuration register. The configuration register is usually changed during password recovery to bypass the startup configuration upon reboot. Many times, the configuration register is not returned back to a normal setting.

For more information, refer to [Less Common Types of System Crashes](#).

## Continuous or Boot Loops

The router may experience a continuous loop that could be due to a hardware issue. A continuous loop never lets you gain access to the router (for example, you are not able to log in to enable mode), and the router continues to give scrolling error messages until it is powered-off.

If the router is experiencing a continuous loop, power-off the router and remove all Dial Feature Cards (DFCs) such as the CT1/CE1 PRI, CT3 or NextPort cards from the chassis, reseat all memory (RAM and Flash) modules, then power-on the router again.

If the continuous loop persists, this could be due to a corrupted or invalid Cisco IOS Software image on the Flash memory of the router. Try uploading a different Cisco IOS Software release as described in [Xmodem Console Download Procedure Using ROMmon](#).

If the same problem still continues with an empty chassis and a different Cisco IOS Software release,

then replace the memory (Flash and RAM) modules. If the problem persists, replace the chassis.

If the problem disappears after removing all DFCs, power-off the router again, re-insert the first network module and power it back on. Check if the router crashes again. Repeat this procedure until you identify the DFC causing the crash and replace the faulty DFC.

**Note:** If the router does not experience the continuous loop after following the troubleshooting steps above, the problem may be caused by a mis-seated network module. It is recommended that you monitor the router for 24 hours to be sure that the router continues to function without experiencing the issue again.

## Router Does Not Come Up at All

Try to connect to the router using the console port. Be sure to use the rollover cable that was shipped with the router (refer to [Identifying a Rollover Cable](#) for instructions on how to identify the cable) together with the RJ-45 to DB-9 or DB-25 adapter matching the serial port on your computer. Also, be sure that your terminal software is configured to 9600 bps, 8 databits, 1 stopbit, no parity. Power-cycle the router. If you still see no output at all within a period of one minute, replace the hardware.

For more information on connecting to the console port, refer to [Applying Correct Terminal Emulator Settings for Console Connections](#).

## Troubleshooting

This section provides troubleshooting references for different interfaces and devices.

### Troubleshooting Serial Interfaces

- [T1 Troubleshooting Flowchart](#)
- [Troubleshooting Serial Lines](#)
- [Loopback Tests for T1/56K Lines](#)

### Troubleshooting ISDN Interfaces

- [Troubleshooting ISDN Layer 1](#)
- [Troubleshooting ISDN Layer 2](#)
- [Troubleshooting ISDN Layer 3](#)

### Troubleshooting NextPort Modems

- [Identifying the Controllers and Modem Hardware On AS5xxx Platforms](#)
- [Configuring NextPort SPE Recovery](#)

- [Comparing NextPort SPE Commands to MICA Modem Commands](#)
- [Interpreting NextPort Disconnect Reason Codes](#)
- [NextPort SPE and IOS Software Version Reference Table](#)
- [Understanding NextPort SPE Versions](#)

## Troubleshooting Memory Problems

If your access server does not have enough memory, this can result in boot errors or other issues such as [%SYS-2-MALLOCFAIL: Memory Allocation Failure](#) errors.

## Troubleshooting Router Hangs

A Cisco 4000 Series Router may experience a router hang. A hang is when the router boots to a certain point and then no longer accepts any commands or keystrokes. In other words, the console screen hangs after a certain point. Hangs are not necessarily hardware issues and most of the time, they are software issues. If your router is experiencing a router hang, refer to [Troubleshooting Router Hangs](#).

## Information to Collect if You Open a Service Request

**If you still need assistance after following the troubleshooting steps above and want to [open a service request](#) ( [registered](#) customers only) with Cisco Technical Support, be sure to include the following information:**

- Console captures showing the error messages
- Console captures showing the troubleshooting steps taken and the boot sequence during each step
- The hardware component that failed and the serial number for the chassis
- Troubleshooting logs
- Output from the **show technical-support** command

You can attach information to your service request by uploading it using the [TAC Service Request Tool](#) ( [registered](#) customers only) . If you cannot access the TAC Service Request Tool, you can send the information in an email attachment to [attach@cisco.com](mailto:attach@cisco.com) with your service request number in the subject line of your message to attach the relevant information to your service request.

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## Related Information

- [Hardware Troubleshooting Index Page](#)
- [Technical Support - Cisco Systems](#)

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