Less Common Types of System Crashes

Document ID: 7957

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

Introduction

This document provides information about less common types of system crashes. It is recommended that you read Troubleshooting Router Crashes before you proceed with this document.

Prerequisites

Requirements

There are no specific prerequisites for this document.

Components Used

This document is not restricted to specific software and hardware versions.

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

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Identify the Cause of the Reload

If you do not power−cycle or manually reload the router, you can find the cause for the reload in the **show version** output, as shown here:

```
Router uptime is 3 days, 18 hours, 39 minutes
System restarted by [reload cause]
System image file is "flash:c2500−js−l.120−9.bin"
```

If you have the output of a **show version** command from your Cisco device, 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.

Troubleshoot

Some types of crashes clearly indicate a hardware or software failure, but others are not that obvious. In this case, common sense is your best ally. If a router operates properly for months and suddenly starts to reload every 20 minutes, the problem is most likely a hardware issue. If the router starts to crash after a configuration change, then the problem is probably software−related.

For hardware problems, try to identify the faulty card with the **show region** command for more recent Cisco IOS® Software versions. Alternatively, use deductive reasoning (for example, if the problem appears after the insertion of a new module, the new module is likely the cause). You can also perform additional tests (with the same module in another slot, or another module in the same slot, and so on) to identify the faulty equipment.

An upgrade to the latest version of your Cisco IOS Software release train eliminates all known software issues.

If you have the output of the **show stacks** command from your Cisco device, 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.

If the router still crashes after the upgrade, a new bug can be the cause of the problem. In this case, contact your Cisco technical support representative, and provide as much information as possible. Refer to Troubleshooting Router Crashes for more information.

Less Common Types of System Crashes

Address Error

Address errors occur when the software tries to access data on incorrectly−aligned boundaries; two−byte and four−byte accesses are allowed only on even addresses. An address error usually indicates a software bug, but faulty hardware can also be a cause (see the Troubleshoot section for details).

Arithmetic Exception

A software issue usually causes this type of error (see the Troubleshoot section for details).

Cache Error Exception

This type of crash occurs when the router detects bad parity. This issue is either a transient problem, or a hardware failure. For information on how to troubleshoot this issue, refer to Processor Memory Parity Errors.

Error − Level <x>

x is a number between 1 and 7.

This type of crash is usually hardware−related. Most often, a faulty CPU board causes this type of crash.

Error Interrupt

An error interrupt crash signifies that something other than the processor detected a fatal error. You require more information to determine the root cause. A crashinfo file or **show tech−support** command output is required to troubleshoot (refer to Troubleshooting Router Crashes). After you have collected this information, contact your Cisco technical support representative.

Format Error

Unless the circumstances clearly point to a hardware problem (see the Troubleshoot section for details), contact your Cisco technical support representative about this error.

Illegal Instruction

This error is most often software−related. However, faulty hardware can also cause this problem (usually faulty Flash memory or dynamic RAM (DRAM)). This problem can also occur due to a corrupt Cisco IOS Software image (see the Troubleshoot section for details).

Illegal Opcode Exception

A hardware failure causes this error (for example, failure of the CPU board). In some cases, a software problem can result in this error (see the Troubleshoot section for details).

Jump to Zero Error

This type of error often occurs when the Cisco IOS Software tries to execute data instead of code. Most of the time, a software bug causes this issue, but if the symptoms clearly point to a hardware failure, consider the possibility of a defective CPU (see the Troubleshoot section for details).

Line Emulator Trap

A `line 1010/1111 Emulator Error` occurs when the processor tries to execute an invalid instruction. The code 1010/1111 is not really relevant (the code depends on the invalid instruction you tried to execute).

The possible causes of line emulator trap errors are:

- A corrupted image (a Cisco IOS Software upgrade fixes this)
- Defective Flash memory or DRAM
- Software problem (see the Troubleshoot section for details)

Power−On

If the **show version** command output shows `restarted by reload` or `System returned to ROM by power−on`, you can infer that the router was either power−cycled, or that the power source went down for a few seconds. Verify your power source and troubleshoot the outlet circuit (power to router).

Note: A Cisco 7200 series router can crash due to a watchdog timeout, and report the crash as `System returned to ROM by power−on`, if the router uses an early hardware version of the port adapters mentioned here:

- PA−CT1/PRI
- PA−CE1/PRI−75
- PA−CE1/PRI−120
- PA−4E
- PA−5EFL
- PA−8E

If you think this problem affects your router, (after you make sure that the power source is not the issue), collect a **show tech−support** report, and contact your Cisco technical support representative.

Reload

If the **show version** command output shows `restarted by reload` or `system returned to ROM by reload`, you can infer that a user rebooted the router manually with the **reload** command. This is not a system crash.

Reserved Exception

For this type of crash, a reload occurs in order to ensure that the router does not transmit corrupt data. The cause can be either hardware−related or software−related (see the Troubleshoot section).

Restarted By Error

Unless the error clearly points to a hardware problem (see the Troubleshoot section), contact your Cisco technical support representative.

Sigtrap (Signal Trap) Exception

This is usually a software problem, and is another way to report a Software−forced Crash.

Undefined Trap

Unless circumstances clearly indicate a hardware problem (see the Troubleshoot section), contact your Cisco technical support representative.

Unexpected Hardware Interrupt

A hardware problem normally causes this type of crash (see the Troubleshoot section).

Unknown Failure

Unless circumstances clearly indicate a hardware problem (see the Troubleshoot section), contact your Cisco technical support representative.

Unknown Reload Cause

Here, the defect that caused the crash does not allow the router to record the reload reason. This issue can be related to hardware or software. Unless circumstances clearly indicate a hardware problem (see the Troubleshoot section), contact your Cisco technical support representative.

Check whether you can resolve the defect through an upgrade to the latest Cisco IOS Software version in your release train. Otherwise, collect additional information from the crashinfo file or from the console logs (refer to Troubleshooting Router Crashes), and contact your Cisco technical support representative.

Write Bus Error Interrupt

A hardware problem normally causes this type of crash (see the Troubleshoot section).

Information to collect if you open a TAC Case

If you still need assistance after you follow the troubleshooting steps that this document lists, and want to create a service request with the Cisco TAC, be sure to include this information to troubleshoot a system crash:
• **show tech−support** output (in enable mode if possible) • **show log** output or console captures if available • crashinfo file (if present and not already included in the **show technical−support** output) Attach the collected data to your case in non−zipped, plain text format (.txt). You can upload information to your case with the Case Query Tool (registered customers only) . If you cannot access the Case Query Tool, you can attach the relevant information to your case, and send it to attach@cisco.com with your case number in the subject line of your message. **Note:** Do not manually reload or power−cycle the router before you collect this information unless you need to troubleshoot a system crash. This action can cause important information to be lost that is needed in order to determine the root cause of the

problem.

Related Information

- **Troubleshooting Router Crashes**
- **Technical Support & Documentation − Cisco Systems**

Updated: Nov 29, 2006 Document ID: 7957