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# Hardware Troubleshooting for Catalyst 8540/8510 MSRs and LightStream 1010 ATM Switch: Identifying the Issue

Document ID: 21334

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This document is part of a documentation set. Refer to the **Hardware Troubleshooting for Catalyst 8540/8510 MSRs and LightStream 1010 ATM Switch Index** page for the Introduction to this documentation set.

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## **Introduction**

### **Prerequisites**

- Requirements
- Components Used
- Conventions

### **Gather Information**

#### **Troubleshoot General Non-ATM Problems**

#### **Initial Troubleshooting**

- Online Diagnostics
- Accessibility Test
- OIR Test
- Snake Test
- Display the Online Diagnostics Configuration and Results

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- Use Bug Toolkit
- Search for Bugs Using the Cisco Bug ID
- Search for Bugs Using the Software and Hardware Product Name

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## **Introduction**

This document helps troubleshoot common hardware issues with Catalyst 8540/8510 MSR and LightStream 1010 ATM switches. It also provides pointers used to identify whether or not the fault is in the hardware. This document does not cover any software-related failures except for those that are often mistaken as hardware issues.

## **Prerequisites**

### **Requirements**

Before you begin this hardware troubleshooting process, read about known hardware issues for Catalyst switches in LAN Switches Field Notices.

## Components Used

The information in this document is based on these software and hardware versions:

- Catalyst 8540 MSR
- Catalyst 8510 MSR
- LightStream 1010

**Note:** The Catalyst 8500 series and LightStream 1010 hardware and software provide flexibility and performance in a single integrated ATM switch router. For example, your switch router could be configured to provide Layer 3 enabled ATM functionality delivered through the ATM router module (ARM) which provides routing between ATM and Layer 3 interfaces on a single platform. Or, your switch could be configured to function as a simple ATM backbone switch with no Layer 3 connectivity at all.

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.

## Gather Information

The first step to help you determine the cause of the hardware problem you are experiencing is to capture as much information about the problem as possible. The information listed here is essential in order to accomplish this:

- The console logs.
- The syslog information.
- Output from the **show tech-support** command.
- Complete bootup sequence if the switch router experiences boot errors.

## Troubleshoot General Non-ATM Problems

Refer to these documents in order to find troubleshooting, installation, booting, and configuration information for non-ATM related switch router problems:

- Hardware Installation Guide (Catalyst 8510 MSR and LightStream 1010)
- Processor Installation Guide (Catalyst 8510 MSR and LightStream 1010)
- ATM Port Adapter and Interface Module Installation Guide
- Catalyst 8540 CSR Route Processor and Interface Module Installation Guide
- Refer to the Internetwork Troubleshooting Guide for general information related to booting problems.

These documents focus on ATM-specific software configuration and command reference information:

- ATM and Layer 3 Quick Software Configuration Guide
- ATM and Layer 3 Switch Router Command Reference
- Guide to ATM Technology

# Initial Troubleshooting

This section describes the first steps to take when you start to troubleshoot your switch router.

## Online Diagnostics

Online diagnostics provide these available tests used to troubleshoot your switch router:

- Accessibility tests between the route processor and the interface modules and the route processor and the switch processor.
- Online insertion and removal (OIR) diagnostic tests.
- Snake tests through the switch router to ensure connectivity between the ports.

The switch router displays an error message on the console when it detects a hardware failure or problem.

**Note:** Online diagnostic tests only run on the primary route processor.

## Accessibility Test

The accessibility test ensures connectivity at a configurable interval between:

- The interface modules.
- The active switch processor.
- The standby switch processor, if it is present.

## OIR Test

OIR tests check the functionality of the switch fabric and interfaces on a per-port basis. The switch router performs these tests when the system boots up and when you insert an interface module into a slot. The OIR test sends a packet to the interface loopback and expects to receive it within a certain time period. If the packet does not reach the port within the expected time period, or the received packet is corrupted, an error is registered and the port is changed to an administrative down state. Packets that are 1000 bytes in size are used in the test.

## Snake Test

The snake test detects and reports port-to-port connectivity failures. The snake test establishes connections across all the active ports in the switch router, originating and terminating at the primary route processor. The route processor establishes a connection by sending a packet to each port in turn, which then terminates at the route processor. If the packet does not reach the route processor within the expected time period, or the received packet is corrupted, further testing is performed to isolate and disable the port that is the cause of the problem. The frequency of the test is configurable to minimize the impact on system performance. For snake test configuration information, refer to Configuring Online Diagnostics (Catalyst 8540 MSR).

## Display the Online Diagnostics Configuration and Results

Use this EXEC command to display the online diagnostics results:

- **show diag power-on** Displays power-on diagnostics tests and the test results.

## Example

This sample command output shows how to display the power-on diagnostic test information for the Catalyst 8540 MSR:

```
Cat8540MSR# show diag power-on

Cat8540 Power-on Diagnostics Status (.=Pass,F=Fail,U=Unknown,N=Not Applicable)
-----
Last Power-on Date: 2002/01/16   Time: 14:27:18

BOOTFLASH: N   PCMCIA-Slot0: N   PCMCIA-Slot1: N
NVRAM: N   ETHSRAM: N   SAR_SRAM: N   L2CACHE: N
SWACCESS: N   SWCELL: N
ATM TRAFFIC TEST
SLOT 0: N   SLOT 1: N   SLOT 2: N   SLOT 3: N
SLOT 4: N   SLOT 5: N   SLOT 6: N   SLOT 7: N
ETHERNET PAM ACCESS TEST
SLOT 0: N   SLOT 1: N   SLOT 2: N   SLOT 3: N
SLOT 4: N   SLOT 5: N   SLOT 6: N   SLOT 7: N

Power-on Diagnostics Passed.

Cat8540MSR#
```

## Example

This sample command output shows how to display the power-on diagnostic test information for the Catalyst 8510 MSR:

```
LS1010# show diag power-on
LS1010 Power-on Diagnostics Status (.=Pass,F=Fail,U=Unknown,N=Not Applicable)
-----
Last Power-on Diags Date: 01/11/15   Time: 08:37:13   By: V 4.54

BOOTFLASH: .   PCMCIA-Slot0: .   PCMCIA-Slot1: N
CPU-IDPROM: .   FCard-IDPROM: .   NVRAM-Config: .
SRAM: .   DRAM: .
PS1: .   PS2: .   N   PS (12V): .
FAN: .   Temperature: .   Bkp-IDPROM: .

MMC-Switch Access: .   Accordion Access: .
LUT: .   ITT: .   OPT: .   OTT: .   STK: .   LNK: .   ATTR: .   Queue: .
Cell-Memory: .

FC-PFQ
Access: .
RST: .   REG: .   IVC: .   IFILL: .   OVC: .   OFILL: .

TEST:
CELL: .

Access/Interrupt/Loopback Test Status:
Ports          0          1          2          3
-----
PAM 0/0 (155MM)    ...    ...    ...    ...
PAM 0/1 (155MM)    ...    ...    ...    ...
PAM 1/0 (FR4CE1)   ...    ...    ...    ...
PAM 1/1 (155UTP)   ...    ...    ...    ...
PAM 3/0 (DS3)      ...    ...    N        N
PAM 3/1 (E1CEUTP) ...    ...    ...    ...
PAM 4/0 (GEPAM)    ...    N        N        N
```

```

PAM 4/1 (GEPAM)      . . .      N      N      N

FRPAM#              ING-SSRAM  ING-SDRAM  EGR-SSRAM  EGR-SDRAM  LOOPBACK
-----
PAM 1/0 (FR4CE1)    .      .      .      .      .
 Ethernet-port Access: .      .      .      .      .
 Ethernet-port Loopback: .      .      .      .      .
 GEPAM Microcode:    .      .      .      .      .
 GEPAM CAM Access:   .      .      .      .      .

Power-on Diagnostics Passed.

LS1010#

```

## Check DDTs Database and Release Notes for Workarounds

This section describes different methods you can use to check for Cisco IOS® software bugs (defect tracking tool numbers [DDTS]) in your version of Cisco IOS software. Often, switch router problems have been fixed or a workaround determined in a more recent version of the software.

### Use Bug Toolkit

Bug Toolkit (registered customers only) allows you to search for known bugs based on a known bug ID, software version, feature set, product name, and keywords.

You can search for known ATM switch router software bugs using either of these options:

- Search for bugs using the Cisco bug ID (CSCdr99175, for example).
- Search for bugs using the software and hardware product name (Catalyst 8540 Switches, for example).

The process is different based on the search information you use.

### Search for Bugs Using the Cisco Bug ID

Complete these steps using the Bug Toolkit search tool to search for known ATM switch router software bugs using a known bug ID:

1. Enter the bug ID (CSCds28912, for example) in the data entry field and click **Search**.

The entire window is replaced with a "Bug Details" window with the search results.

2. Click **Save Bug** to complete any of these steps:

- ◆ Save the bug details to a bug group that you create for reference at a later time.
- ◆ Save your search criteria with a name that allows you to reference it at a later time.
- ◆ Enter your E-mail address to have E-mail updates to the bug mailed to you.

### Search for Bugs Using the Software and Hardware Product Name

Complete these steps to search for known ATM switch router software bugs using the product name with the use of the Bug Toolkit search tool:

1. Enter the product name (Catalyst 8540 MSR, for example) in the data entry field to find the product in the scrollable list. Click **Next**.
2. Select the product name from the list that appears and click **Next**.
3. From the list of product names that appear in the list, select the one you want to search for bugs and click **Next**.
4. The original search window is replaced by a new window that allows you to limit search results using one or more of these options:
  - ◆ Select a version to search. Either a major revision or a specific revision from the drop-down menus.
  - ◆ Enter keywords to search for the bug title and description in the data entry field.
  - ◆ Set Advanced Options.
5. When you have selected all the required search limiting fields, click **Next**.

The entire window is replaced with a "Bug Search Results" table that contains a list of bugs with your search criteria. Refer to the Bug reports listed in the "Bug ID & Title" column. An existing bug entry that describes the problem you have could possibly be fixed in a more recent version of the Cisco IOS software. Look in the "Fixed-in Version" column for a later version of the Cisco IOS software. An upgrade of your software may be all you need to do to solve your problem.

If a software upgrade is not listed as an option, double-click on the Bug ID and read the DDTS details. A workaround can potentially be listed there.

6. Click the **Save Bug** button to do perform any of these steps:
  - ◆ Save the bug details to a bug group that you create for reference later.
  - ◆ Save your search criteria by providing a name that allows you to reference it later.
  - ◆ Enter your E-mail address to have E-mail updates of the bug E-mailed to you.

## Check IOS Release Notes

Release notes describe the features and caveats for Cisco IOS software releases. The release notes are listed by both product and Cisco IOS release number.

**Note:** All information pertains to both the Catalyst 8540 CSR and Catalyst 8510 CSR platforms, unless differences between the platforms are noted in the text.

The "Caveats" section of the release notes lists known caveats for the switch router by tracking the DDTS number and the release number. It also indicates whether the caveat has been corrected.

The "Caveat Symptoms and Workarounds" section summarizes caveat symptoms and suggested workarounds for the switch routers. You can also search through this section online, using either a word string or the DDTS number.

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## Related Information

- [ATM and Layer 3 Switch Router Troubleshooting Guide](#)
  - [ATM Technology Support Pages](#)
  - [CRC Troubleshooting Guide for ATM Interfaces](#)
  - [Technical Support – Cisco Systems](#)
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